



- ◆ **Application of Neural Networks in Prediction of Enterprise Development in Global Environment**  
*Nataliia Parkhomenko, Iryna Otenko, Nataly Martynovych and Vasyl Otenko*



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- ◆ **The Relationship of Emotional Intelligence with Personality: A Systematic Review**  
*Ratiba Riyaz, Prof. (Dr.) Mushtaq Ahmad Darzi, Yusra Showkat Bakshi and Syed Shaista*



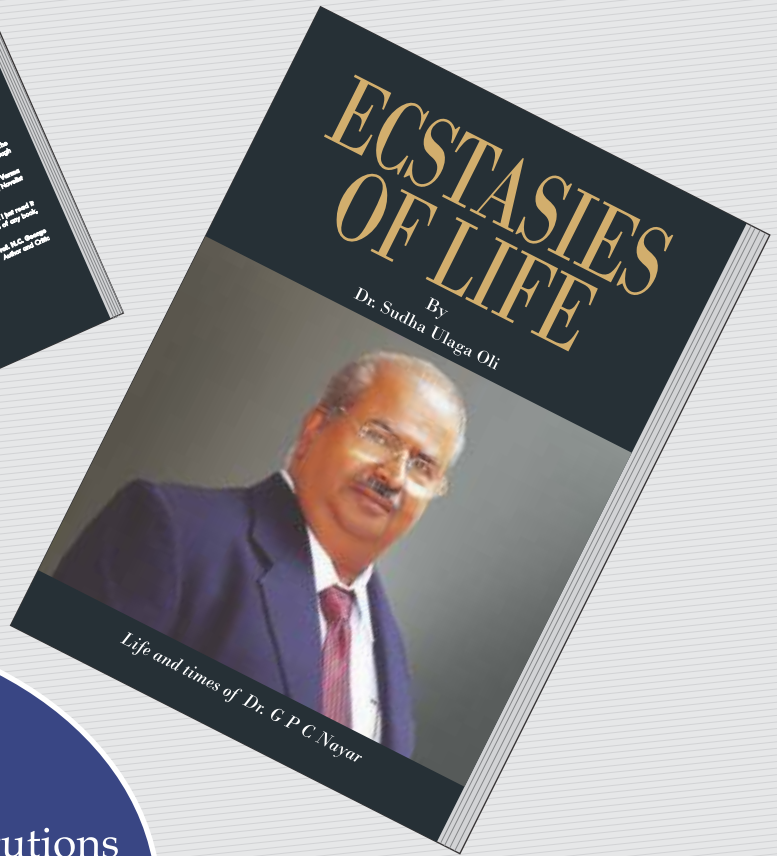
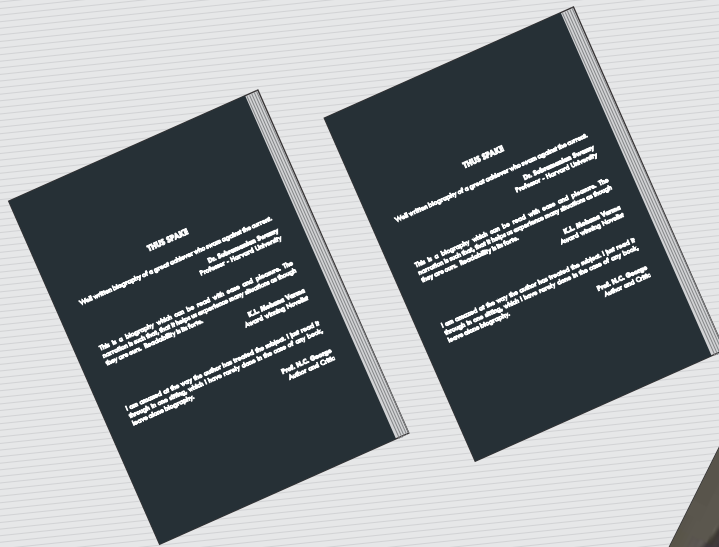
- ◆ **Exploring the role of Modern Human Resource Practices in SMEs Productivity: Structural Model Analysis**  
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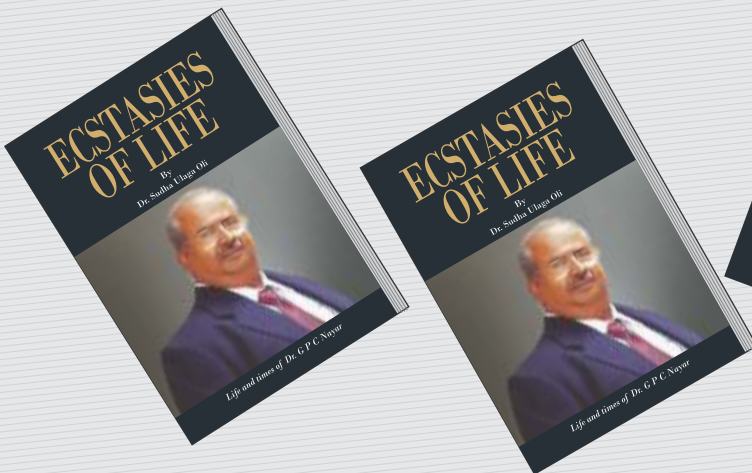
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- ◆ **Impact of Intellectual Capital Efficiency on the Financial Performance of the Indian Banks: The Role of Diversification as a Moderator**  
*Ms. Meena Rani and Prof. Meena Sharma*



Here's an entrepreneur who has created some excellent academic institutions in an unfriendly environment. It is a saga of trials and tribulations in an extremely readable manner by a consummate writer in English.



# Contents

January - March 2023, Vol. XX, Issue No. 1

## Articles

- 5 **Application of Neural Networks in Prediction of Enterprise Development in Global Environment**  
*Nataliia Parkhomenko, Iryna Otenko, Nataly Martynovych and Vasyl Otenko*
- 20 **Auditors' Competence, Audit Fee, Quality Control, and Audit Quality**  
*Hera Khairunnisa, Ayatulloh Michael Musyaffi, Christian Wiradendi Wolor and Hafifah Nasution*
- 33 **Exploring Catalysts that Support Employee's Transformation for Unlearning and Innovation by Challenging the Irreversibility of Absorptive Capacity: The Case of Commercial Banks in Egypt**  
*Said Abdo and David Edgar*
- 49 **Extrinsic Cues on Websites-Content Analysis on Natural and Organic Skin Care Products**  
*Dr. Ritu Narang and Dr. Radhika Sharma*
- 65 **The Reverse Mortgage Conundrum: Perspectives of Households in India**  
*Dr. Shruti Ashok and Dr. Madhu Vij*
- 79 **Household Coping Strategies under Covid 19 Economic Shocks: The Nigerian Experience**  
*Uno Ijim Agbor, Immaculata Ofu Obaji-Akpet, Pius Otu Abang, Otu Offiong Duke and Felix Onen Eteng*
- 92 **The Relationship of Emotional Intelligence with Personality: A Systematic Review**  
*Ratiba Riyaz, Prof. (Dr.) Mushtaq Ahmad Darzi, Yusra Showkat Bakshi and Syed Shaista*
- 109 **Exploring the role of Modern Human Resource Practices in SMEs Productivity: Structural Model Analysis**  
*Dr. Shobha Bhardwaj and Dr. Ajay Jain*
- 126 **Demography of Investors and Behavioral Biases – An Empirical Study**  
*Bushra Khursheed, Dr. Shalini Srivastav and Dr. Asheesh Pandey*
- 140 **Impact of Intellectual Capital Efficiency on the Financial Performance of the Indian Banks: The Role of Diversification as a Moderator**  
*Ms. Meena Rani and Prof. Meena Sharma*



## Chairman's Overview

The recent fire at the Brahmapuram solid waste treatment plant in Cochin, Kerala, has highlighted the urgent need for better waste management practices in India and the world. The thick smoke and toxic fumes emitted from plastic burning in the fire led to respiratory problems for city residents, and several were hospitalized. It took several days to bring it under control, resulting in significant environmental damage and untold long-term health effects. The incident highlights the shortcomings of waste management practices globally and in developing countries like India. 'Out of sight is out of mind' is the prevalent attitude towards environmental problems from poor waste management.

In 2020, the world generated around 2.24 billion tonnes of solid waste, amounting to a footprint of 0.79 kilograms per person daily. With rapid population growth and urbanization, annual waste generation is expected to increase by 73% from 2020 levels to 3.88 billion tonnes in 2050. India generates around 62 million tonnes of municipal solid waste per year, and less than 20% of it is processed scientifically. The rest is either dumped in landfills or burned in open spaces, leading to environmental pollution and health hazards. Land-disposed trash is a severe climate issue that drives not only global warming but also displacement, crime, and economic burdens. One of the most troubling waste management practices is richer, developed countries exporting trash to poorer, less-developed countries for recycling. These countries might not be handling the trash optimally, and this causes further damage to the environment.

Effective waste management ideally starts at the level of the individual household. There should be a focus on educating and equipping citizens to manage waste effectively by encouraging composting, proper waste segregation, sustainable lifestyle choices such as re-use and recycling, and choosing bio-degradable materials over use-and-throw plastics. In addition, the government and the business world must cooperate to bring in more green entrepreneurship ventures for effectively handling urban waste by investing in modern technologies and equipment for waste treatment, promoting waste reduction and segregation at the source, and incentivizing businesses to adopt eco-friendly practices. The government could also encourage public-private partnerships to facilitate the development of waste management infrastructure and create awareness among citizens about the importance of proper waste disposal.

The quote by Swedish teen climate activist Greta Thunberg is a call to action for each of us- "I'm telling you there is hope. I have seen it, but it does not come from the governments or corporations. It comes from the people."

Wishing our readers an enriching reading experience.

**Dr. G. P. C. NAYAR**

Chairman, SCMS Group of Educational Institutions.

# SCMS Journal of Indian Management

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## Editorial

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The first issue of 2023 carries ten articles diverse in terms of managerial disciplines, methodological approaches, and geographical settings. The lead article is by a team of Ukrainian authors who have used neural networks to assess the current state of businesses and propose optimum strategies for future development in the global environment. Next, we have a paper assessing the impact of auditors' competence, audit fee, and quality control on the audit quality of Public Accounting Firms in Indonesia. This is followed by a study based on commercial banks in Egypt. The authors propose a framework of catalysts that support employee transformation for unlearning and innovation by challenging the irreversibility of absorptive capacity.

An interesting study from the consumer behavior domain uses signaling theory to derive insights from a content analysis of extrinsic cues provided by marketers on the websites of natural and organic skincare products. In the next article, a team of researchers has analyzed the demographic factors influencing the awareness level of Reverse Mortgage products in India, providing actionable implications for practitioners and policymakers. This issue also contains an article that assesses the economic shocks faced by working-class household heads in Nigeria and describes the measures used to cope with these challenges.

An article containing a systematic review analyzing the relationship between personality traits and emotional intelligence concludes by identifying researchable gaps in the literature relevant to many different research domains. Then we have a study that explores the role of modern human resource practices in influencing the productivity of Small and Medium-sized Enterprises (SMEs) and concludes that employee empowerment is the most significant factor contributing to SME productivity.

A paper from the behavioral finance domain studies the relationship between the demography of investors and their behavioral biases. The findings have implications for investors and financial advisors seeking to mitigate the impact of behavioral biases. The final contribution investigates the moderating role of diversification on the impact of intellectual capital efficiency on the financial performance of Indian commercial banks. The study's findings give interesting insights into this area and allow exploring other knowledge-based sectors of the Indian economy for similar effects.

Wishing our readers a blessed and prosperous New Year!

**Dr. Radha Thevannoor**

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# Application of Neural Networks in Prediction of Enterprise Development in Global Environment

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This paper deals with the issue of prediction models of enterprise development in the global environment and the development strategy formation of the enterprise. The paper aims at using neural networks to assess the current and forecast the future state of enterprises and to propose the optimum development strategy for a different area of business. The research also used the methods of multiple regression to evaluate the correlation between initial features and general factors, which in our case are global and national development indicators. The results of the analysis were used for building a model of business systems development in Statistica 13.5 program. The model, based on selected indicators, identifies the current state of the enterprise and future development strategies and designs the optimum scenario and proposes its development for the long-term progress of the enterprise. This approach to prediction is applicable to global and domestic companies.

**Keywords:** prediction, enterprise development, global environment, neural networks, development strategy, global and national development indicators

## 1. Introduction

The development of the enterprise depends on many factors, such as current financial and economic indicators, inflation, exchange rates, cooperation with suppliers and consumers, competition policy and more. The task of predicting indicators of enterprise development is among the poorly formalized and partially unaware. The development of an unambiguous algorithm for determining the parameters of the state of development of the enterprise based on the values of influencing factors is a difficult task.

The research aims to form an intelligent technology for the prediction of enterprise development indicators based on modelling, taking into account the internal state of financial and economic parameters of development and the external influence of the global environment, which will allow management to make informed decisions about business activities. In accordance with the purpose of the scientific task, it is advisable to use a mathematical apparatus that will implement the technology of enterprise development management and be able to adapt to changing conditions. The developed automated technology for enterprise development management will use the accumulated base for rapid and adequate response to unforeseen events. We are talking about creating an expert system. One of the modern mathematical methods, which to some extent meets all the previously defined requirements, is the method of artificial neural networks. Artificial neural networks are used to improve the accuracy of forecasting the development of enterprises in a changing global environment.

To effectively diagnose the state of the enterprise, it is often necessary to reflect on the nonlinear relationships between many factors, in particular, indicators of the state of enterprise development. The basis for solving the problem of building a model of an intelligent automated control system for enterprise development is an artificial neural network. This approach to building a neural network allows for taking into account the background of the state of enterprise development and accumulating information to form an effective strategy for managing enterprise development in a global environment.

## 2. Literature Review

The principle of operation of the neuron is as follows: the input signals ( $x_n$ ), having the appropriate weights ( $w_n$ ), are added and passed through the transfer function, generate the

result and at the final stage the output is obtained. In addition, all neurons are interconnected and form certain layers, which form an artificial neural network (Jencova et al., 2021).

The input layer receives information from the external environment and transmits it to the next level, where it is analyzed and processed. After that, from the intermediate layer, the already processed information enters the source layer, from which it goes directly to the external environment. The transfer of information from one neuron to another is an important aspect of neural networks.

To effectively diagnose the state of the enterprise, it is necessary to reflect on the nonlinear relationships between many factors, in particular, indicators of the state. The mathematical apparatus of artificial neural networks makes it possible to take into account this feature and effectively replace the classical discriminant models (Breiman, 1996).

Using neural network technology, the strategies of different enterprises are evaluated, calculated and optimized. The error between the final calculation and the actual result is relatively small (Zhao et al., 2022).

The artificial neural network is used to construct the prediction model of influencing factors of development behaviour adopted by enterprises (Li et al., 2022).

Today, artificial neural networks solve the following tasks: price and production management, cost planning, determining the relationships between advertising costs, sales, competitors' prices, product prices, etc.; selection of optimal financial, pricing, and marketing strategies in terms of maximizing profits or sales; identification of factors influencing the parameters of the enterprise; forecasting consumer behaviour when changing marketing policy; finding the optimal advertising strategy, determining the segment of the most promising consumers for this product; management of business processes; monitoring of production processes with continuous adjustment of control parameters; technical diagnostics; creditworthiness assessment, forecasting of financial time series, forecasting of stock prices; linguistic analysis, etc.

The use of programs based on artificial neural networks simplifies calculations. Thus, the MATLAB software package allows you to solve technical problems, the Gene Hunter software package uses genetic algorithms to solve



combinatorial and optimization problems, the Neuro Shell Trader system is designed to predict and find effective trading strategies in financial markets, the Neuro Shell Classifier program is designed to solve problems image recognition and their assignment to one or another category, the package Statistical Neural Networks is designed to solve regression and time series prediction, and the add-on Excel Neural Package, which implements the concept of neural networks and can solve a wide range of financial, economic, statistical and management problems, using networks based on single-layer and multilayer perceptron.

The mathematical basis of the model is an artificial neural network of counter propagation, built based on a combination of a layer of Kohonen neurons of the so-called self-organization map, which aims to highlight common characteristics in the studied objects by clustering, and the original Grossberg star, which interprets the clustering (Anyaeche & Ighravwe, 2013).

### 3. Data and Methodology

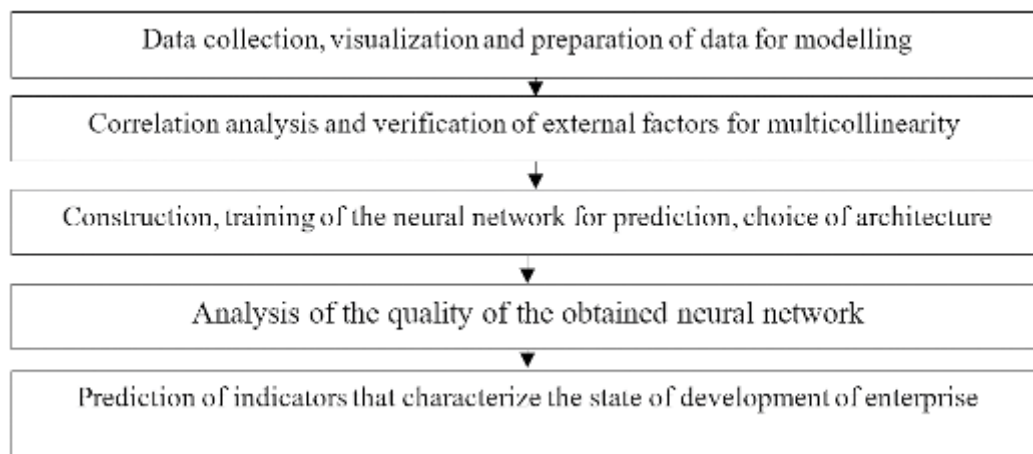
The methodical approach to predicting the development of the enterprise should be implemented by performing a certain sequence of steps (Figure 1).

At the first stage of construction of the model of prediction of development of the enterprise, we carry out a choice of factors, formation from them of educational examples and their representation on an entrance layer. In our problem, a set of the most informative indicators of financial and economic activity is a set of independent variables based on which the conclusion about a condition of the enterprise is

carried out. There are many such factors in modern analysis, but it is advisable to choose the most significant of them.

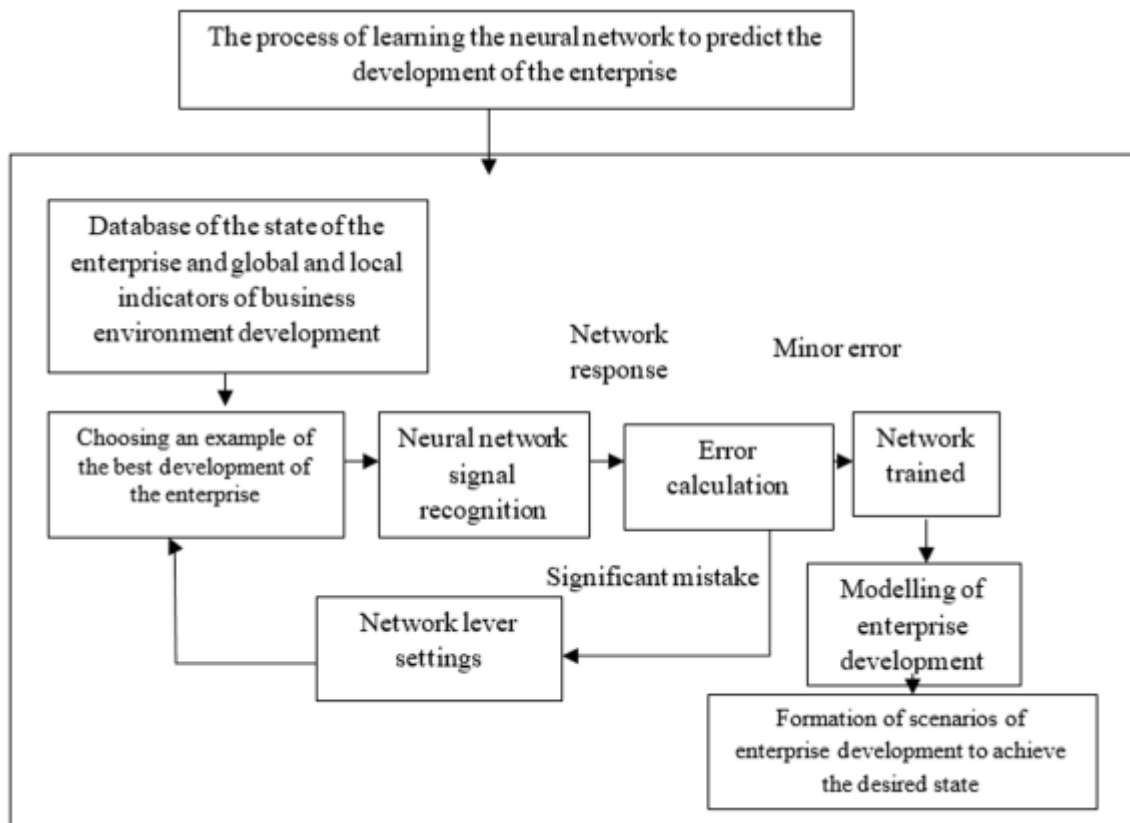
The toolkit of artificial neural networks of counter-propagation makes it possible to include in the model as many informative indicators as possible and does not require for its functioning prerequisites for the stationary nature of the studied process or the absence of multicollinearity in the input data (Boritz & Kennedy, 1995; Režňáková et al., 2020). During the formation of a model, the task of selecting the most significant independent factors takes into account the degree of influence on the performance indicator. A large number of elements of the input vector increase the noise of the input signal. From a mathematical point of view, this task is reduced to the optimal compression of information about the state of the enterprise, i.e. the display of initial information with a minimum number of parameters at a given level of accuracy or minimization of information loss at a given number of generalized coordinates. The neural network consists of a competing layer, which is represented in this case by the Kohonen map, and the source layer is the source star of Grossberg. The Kohonen neuron layer learns "without a teacher" and does not need the desired network response to correctly adjust the synaptic weights. It is due to the implementation of this procedure in the search for hidden dependencies in the structure of indicators of the business system. This neural network learning algorithm provides a two-dimensional mapping of multidimensional input vectors, performing their clustering (Tumpach et al., 2020).

After forming all the examples to submit them to the inputs of the neural network in order to train it, we can choose the structure of the Kohonen map. The number of parameters



**Figure 1. The process of predicting the development of the enterprise based on neural networks**

*Source: Author's approach*



Source: Author's approach

**Figure 2. Methodical approach to the formation of intelligent technology for prediction of the development of the enterprise based on the use of artificial neural networks**

(connection weights) of each neuron in the Kohonen layer coincides with the number of indicators in the generated input examples, which for our model will be equal to eleven elements for global business systems and twenty-three elements for domestic enterprises.

The advantage of methods based on neural networks is the lack of need for strict mathematical specification of the model. Neural networks allow taking into account the influence of factors influencing the results. Neural networks should be used where there is a large amount of data. In this case, various nonlinear interactions between factors are automatically taken into account. It is advisable to use neural networks in problems with incomplete information, as well as in problems that are characterized by intuitive solutions.

The methodical approach presents the formation of intelligent technology for prediction and the development of the enterprise based on the use of artificial neural networks (Figure 2).

The main difference of this approach to modelling the development of enterprises in comparison with alternative approaches is to solve forecasting problems by recognizing pattern images in the structure of indicators and assigning recognizable images to clusters that characterize different classes of change of the studied indicator (Turdubaev et al., 2021).

The main idea of the study to assess the impact of global environmental factors on the parameters of enterprise development is that development trends can be assessed based on the properties of enterprises, namely adaptability, reliability, flexibility, mobility, and sufficiency (Stefko & Sojka, 2015; Vuković et al., 2020). This takes into account the main property of the potential which is the integrity, which is the result of the interaction of its components; priority of economic goals of the enterprise and economic results of its activity, which allows achieving long-term development goals due to the effective functioning of the enterprise; the maximum degree of adaptability to changing

conditions of the internal and external environment, which is determined by its sustainability and economic security.

The first and second provisions allow choosing among all indicators of activity the economic indicators characterizing profitability of the enterprise (intensity of use of resources, efficiency of economic activity and business activity of the enterprise). The third provision necessitates the use of liquidity and financial stability of the enterprise. Indicators of solvency, profitability and business activity are used to assess the financial and economic development of the enterprise. And although these characteristics are closely interrelated, they are independent areas of analysis.

In this research, we form a model for the prediction of the development of the enterprise, based on many indicators of their activities, namely, for global business systems: x1 – net sales, x2 – operating profit, x3 – net assets, x4 – current liquidity ratio, x5 – return on investment capital, x6 – return on assets, x7 – return on investment, x8 – financial leverage, x9 – return on operating activities, x10 – average share price, x11 – earnings per share, etc. The following performance indicators were used to study domestic business systems: x1 – assets, x2 – equity, x3 – net income, x4 – the cost of sales, x5 – net profit (loss), x6 – return on assets, x7 – return on equity, x8 – material consumption, x9 – labour intensity, x10 – average salary, x11 – profitability ratio.

Given the rather large volume of statistical data on the activities of enterprises as a method of modelling and evaluation of strategic priorities, factor analysis based on the model of multiple regressions was chosen. The description of business systems development processes is carried out with the help of a system of indicators that characterize the state of these processes (Boichenko et al., 2021; Valaskova et al., 2018). Determining the minimum number of factors that are sufficient to describe the initial system of indicators and their correlations is solved by the method of principal components (Malyarets et al., 2020). According to the standard procedure, a matrix of loadings of weight coefficients is obtained. Factor loads are characteristics of the stochastic relationship between the initial features and general factors, which in our case are global and national development indicators. The module Statistics, Advanced Models, Multiple Regression of the statistical package Statistica 13.5 is used to perform factor analysis calculations.

To test the hypothesis of the impact on key performance indicators of global environmental factors, the following global indicators were selected for the study of global corporations: Vary 1 – consumer price index; Vary 2 – changing the current account balance; Vary 3 – GDP growth rate in constant prices; Vary 4 – change in GDP at purchasing power parity; Vary 5 – GDP growth rate per capita, %; Vary 6 – GDP deflator; Vary 7 – market capitalization, %; Vary 8 – the average world price of Brent oil; Vary 9 – change in quotation on the Dow Jones index, %; Vary 10 – change of quotations by index S&P, %; Vary 11 – change of quotations according to the FTSE index, %.

A representative amount of data for analysis and forecasting was a seven-year observation for 2013-2019. For the research of Ukrainian business systems (Ukrainian case), national indicators of economic development were added as parameters of influence, 23 indicators were selected as studied parameters, among which: Vary 1 – nominal GDP growth rates in hryvnia equivalent, %; Vary 2 – nominal GDP growth rates in dollar equivalent, %; Vary 3 – inflation index, %; Vary 4 – dynamics of external debt, %; Vary 5 – real wage index, %; Vary 6 – unemployment rate, %; Vary 7 – export coverage ratio by import, Vary 8 – index of industrial output, %; Vary 9 – volume of direct investments of the world countries in the economy of Ukraine, million USD; Vary 10 – balance of investment activity in Ukraine, %; Vary 11 – official exchange rate of hryvnia against the dollar (average for the period); Vary 12 – official exchange rate of hryvnia against the euro (average for the period); Vary 13 – hryvnia devaluation index; Vary 14 – the average world price of Brent oil; Vary 15 – producer price index; Vary 16 – the share of scientific and technical work performed in GDP, %; Vary 17 – the share of enterprises engaged in innovation, %; Vary 18 – the share of unprofitable enterprises in Ukraine, %; Vary 19 – return on assets of Ukrainian banks, %; Vary 20 – return on equity of Ukrainian banks, %; Vary 21 – change in quotation on the Dow Jones index, %; Vary 22 – change of quotations by index S&P, %; Vary 23 – change of quotations according to the FTSE index, %.

A sample with data from global and national indicators (Table 1) for 2013-2019, formed based on monitoring reporting and statistical data of international and domestic agencies, was used to train the network.

The list of initial data (Table 1), which characterizes the impact of exogenous factors on the development of global business systems, was based on the study of the global environment, separation of general parameters and indicators, analysis of global economic trends and trends in

business systems in the global economic space. Indicators that characterize the impact of exogenous factors on the development of domestic business systems (in the case of Ukraine) change according to the current situation (Table 2).

**Table 1. Initial data characterizing the influence of exogenous factors on the development of global business systems**

Indicator	Year						
	2013	2014	2015	2016	2017	2018	2019
<i>Consumer price index</i>	3,6	3,2	2,7	2,7	3,2	3,6	3,5
<i>Changing the current account balance</i>	6,43	2,93	-43,31	29,1	57,97	-29	16,05
<i>GDP growth rate in constant prices</i>	-20,27	-7,95	16,41	-5,1	-2,24	1,97	-2,32
<i>Change in GDP at purchasing power parity</i>	4,54	5,92	5,36	3,79	2,07	3,74	4,92
<i>GDP growth rate per capita, %</i>	1,3	1,9	2,1	1,4	1,7	1,7	1,5
<i>GDP deflator</i>	2,3	2,8	2,9	1,8	2,1	2	2,2
<i>Market capitalization, %</i>	91,1	91,9	111,2	97,1	94,7	91,6	89
<i>The average world price of Brent oil, USD per barrel</i>	112,3	110,91	56,29	37,35	65,47	66,57	54,91
<i>Change in quotation on the Dow Jones index, %</i>	26,5	7,52	-2,23	13,42	25,05	-5,63	13,94
<i>Change of quotations by index S&amp;P, %</i>	29,6	11,39	-0,73	9,54	19,42	-6,24	17,31
<i>Change of quotations according to the FTSE index, %</i>	14,43	-2,71	-4,93	14,43	7,63	-12,4	10,8

Source: World Bank's World Development Indicators

**Table 2. Initial data characterizing the influence of exogenous factors on the development of domestic business systems (in the case of Ukraine)**

Indicator	Year						
	2013	2014	2015	2016	2017	2018	2019
<i>Nominal GDP growth rates in hryvnia equivalent, %</i>	3,3	7,7	26,3	20,4	25,2	19,3	11,7
<i>Nominal GDP growth rates in dollar equivalent, %</i>	4,3	-28,1	-31,3	2,9	20,2	16,7	17,5
<i>Inflation index, %</i>	100,5	124,9	143,3	112,4	113,7	109,8	104,1
<i>Dynamics of external debt, %</i>	-5,2	-11,1	-6	-4,4	2,7	-1,6	6,1
<i>Real wage index, %</i>	106,8	86,5	90,1	106,5	118,9	109,7	111,4
<i>Unemployment rate, %</i>	7,7	9,7	9,5	9,7	9,9	9,1	8,6
<i>Export coverage ratio by import</i>	0,9	1,06	1,01	0,93	1,08	1,08	0,97
<i>Index of industrial output, %</i>	95,3	89,3	86,6	102,4	101,1	103	99,5
<i>Volume of direct investments of the world countries in the economy of Ukraine, million USD</i>	51705,3	53704	40725,4	3615 4,5	31230,3	31606,4	32905,1
<i>Balance of investment activity in Ukraine, %</i>	-43,4	-92,7	907,4	8,5	-32,9	7,6	2,6

<i>Official exchange rate of hryvnia against the dollar (average for the period)</i>	7,993	11,8867	21,8447	25,5513	26,5966	27,2005	25,8456
<i>Official hryvnia exchange rate against the euro (average for the period)</i>	10,61	15,7159	24,2287	28,2919	30,0042	32,1429	28,9518
<i>Hryvnia devaluation index</i>	100	197,3	150,8	112,2	104,5	99,3	85,5
<i>The average world price of Brent oil, USD per barrel</i>	112,3	110,91	56,29	37,35	65,47	66,57	54,91
<i>Producer price index</i>	101,7	131,7	125,5	135,8	116,6	114,3	92,5
<i>The share of scientific and technical work performed in GDP, %</i>	0,8	0,69	0,64	0,48	0,45	0,47	0,43
<i>The share of enterprises engaged in innovation, %</i>	13,6	16,1	17,36	18,9	16,2	16,4	15,8
<i>The share of unprofitable enterprises in Ukraine, %</i>	34,1	33,7	26,3	26,6	27,2	25,7	23,3
<i>Return on assets of Ukrainian banks, %</i>	0,12	-4,07	-5,46	-2,48	-1,94	1,65	4,35
<i>Return on equity of Ukrainian banks, %</i>	0,81	-30,46	-51,91	-26,56	-15,96	10,73	34,18
<i>Change in quotation on the Dow Jones index, %</i>	26,5	7,52	-2,23	13,42	25,08	-5,63	13,94
<i>Change of quotations by index S&amp;P, %</i>	29,6	11,39	-0,73	9,54	19,42	-6,24	17,31
<i>Change of quotations according to the FTSE index, %</i>	14,43	-2,71	-4,93	14,43	7,63	-12,48	10,8

Source: Ukrstat

The fact of the non-linearity of the original data is beyond doubt. Let's analyze the importance of independent factors and the degree of their influence on the initial parameters, and determine the type of functional dependence.

#### 4. Results and Discussion

Enterprises that have been among the top best corporations in the world in recent years have been selected as objects of diagnosing the relationship between the key parameters of business systems development on exogenous factors of global and national influence. We will present a study on the example of the activities of Arcelor Mittal International Metallurgical Company and its Ukrainian division Arcelor Mittal Kryvyi Rich.

Arcelor Mittal is one of the largest metallurgical companies in the world, controlling more than 10% of the global steel

market. The company is registered in Luxembourg, has facilities in 18 countries, and sells products in 160 countries. According to Forbes Global, Arcelor Mittal ranks high in the ranking of large companies in terms of revenue, net profit, asset size and market capitalization. Arcelor Mittal Kryvyi Rich is a metallurgical plant, one of the largest mining and metallurgical enterprises in Ukraine. Arcelor Mittal Kryvyi Rich is a unique enterprise in terms of capabilities and scale, which includes an ore mining department, a mining and processing plant, agglomeration, coke and metallurgical production. The company specializes in the production of long products, namely fittings, rolled products, strips, and blanks. The company is a significant exporter of Ukraine.

The correlation analysis conducted in the STATISTICA package allowed us to assess the relationship between exogenous factors and key parameters of the enterprise. The



existence of a factor relationship was determined using pairwise correlation coefficients. The results of the analysis proved that not all selected exogenous factors correlate with the key parameters of the enterprise. Such factors were excluded from the list of exogenous variables in the construction of neuron models and, accordingly, forecasting the future state of enterprise development. The results of the multifactor regression analysis performed in the STATISTICA package for all key parameters and the correlation matrix of key Arcelor Mittal indicators and exogenous global indicators present relatively balanced results (Table 3).

The research confirmed the feasibility of including a number of exogenous factors in the forecast models. The results of a study of the relationship between the parameters of business systems development and global indicators by Arcelor

Mittal show that the business system is weakly affected by changes in stock prices on the stock exchange. That is, in the future, when forming a model of development of this business system and forecasting its development, the impact of these parameters can be ignored. A high correlation has a value of [-1; -0.5] and [0.5, 1], with negative values indicating a negative correlation or inverse relationship, and a plus sign indicating a direct relationship.

Each of the parameters of the study of the business system correlates with these indicators. The correlation matrix of key indicators of Arcelor Mittal Kryvyi Rich and exogenous global to national indicators present different results as compared with the main company (Table 4). According to the studied objects, there is a correlation between financial leverage and the consumer price index, between earnings per share and the GDP deflator, and between net sales and market capitalization.

**Table 3. Correlation matrix of Arcelor Mittal key indicators and exogenous global indicators**

Indicators	Consumer price index	Changing the current account balance	GDP growth rate in constant prices	Change in GDP at purchasing power parity	GDP growth rate per capita, %	GDP deflator	Market capitalization, %	The average world price of Brent oil, USD per barrel	Change in quotation on the Dow Jones index, %	Change of quotations by index S&P, %	Change of quotations according to the FTSE index
<i>Net sales</i>	0,818988	-0,16510	-0,4973	0,264298	-0,03219	0,2800	-0,5842	0,870875	0,078307	0,260102	-0,26821
<i>Operating profit</i>	0,308524	0,450254	-0,3746	-0,63353	-0,31595	-0,6624	-0,5737	0,043069	0,128137	-0,04429	-0,07504
<i>Net assets</i>	0,774645	-0,01621	-0,6789	0,278946	-0,18521	0,2173	-0,6668	0,920229	0,237506	0,418845	-0,07360
<i>Current ratio</i>	0,898304	-0,31398	-0,3825	0,243464	-0,22173	-0,0452	-0,6822	0,523787	-0,16934	0,002897	-0,31445
<i>Return on invested capital</i>	0,396579	0,595287	-0,4487	-0,68970	-0,47200	-0,7711	-0,6956	-0,02288	0,279274	0,110521	0,105350
<i>Return on assets</i>	0,388822	0,563131	-0,4056	-0,70592	-0,43441	-0,7648	-0,6650	-0,03879	0,239123	0,063629	0,056506
<i>Return on investment</i>	0,292909	0,518759	-0,3891	-0,67972	-0,38590	-0,7321	-0,5892	-0,02544	0,187058	0,002108	0,013551
<i>Financial leverage</i>	-0,674325	-0,54278	0,5157	0,558388	0,560673	0,7269	0,8777	-0,06229	-0,31833	-0,23198	-0,14508
<i>Profitability of operating activities</i>	0,238129	0,517358	-0,3924	-0,65998	-0,37717	-0,7190	-0,5590	-0,02447	0,181684	-0,00614	0,021819
<i>The average stock price</i>	0,430777	-0,21475	-0,5006	0,353145	0,098954	0,4760	-0,2521	0,971513	0,099115	0,255790	-0,23335
<i>Profit per share</i>	0,461564	0,548429	-0,4898	-0,73382	-0,54298	-0,8038	-0,6819	0,011976	0,316791	0,149284	0,128261

Source: Authors' calculations based on Arcelor Mittal

The results of studying the correlation between global and national indicators and performance parameters of leading domestic companies that are part of global or national business systems show that almost all of these indicators affect the development of business systems in the global environment. It should be noted that each business system should be studied individually. According to this approach, it is possible to receive the most realistic forecasts for enterprise development. The results of an analysis by Arcelor Mittal Kryvyi Rich (Ukraine) showed a lack of correlation between key parameters of the company with indicators such as inflation, investment balance, and change in quotations on the Dow Jones index. In this case, the following high-level correlations are observed.

First, there is a relation between the net income parameter and the nominal GDP growth rates in the dollar equivalent. Secondly, there is a relationship between the parameters of net income, cost of sales and wage index. Third, the parameters of net income, cost of sales, rate of return, and earnings per share correlate with the index of industrial production. Fourth, the parameters of net income and earnings per share are related to the indicator of foreign direct investment in the economy. Fifth, the cost of sales depends on the devaluation index of the hryvnia. Sixth, the size of assets depends on the intensity of innovation of business systems. All identified dependencies will be used to form models of business systems development and forecast scenarios for their future activities.

Among the exogenous factors of global influence, the most important on the key parameters of global systems were: Vary 4 – change in GDP at purchasing power parity, Vary 6 – GDP deflator, Vary 7 – market capitalization, %, with the least impact had Vary 9 – change in quotations for Dow Jones index, % and Vary 11 – change in quotations on the FTSE index, %. Regarding exogenous factors of global and national influence on key parameters of national business systems had Vary 2 – nominal GDP growth rate in dollar, %, Vary 4 – external debt dynamics, %, Vary 5 – real wage index, %, Vary 8 – industrial production index, %, Vary 9 – volume of direct investments of the world in the economy of Ukraine, million dollars, Vary 12 – official hryvnia exchange rate against the euro (average for the period), Vary 13 – hryvnia devaluation index, Vary 15 – produce price index, Vary 17 – the share of enterprises engaged in innovation, %.

Minimal impact was also provided by the parameters Vary 21 – change in quotations on the Dow Jones index, % and Vary 23 – change in quotations on the FTSE index, %.

The consequences of changes in the state of the enterprise are the likelihood of approaching a crisis or catastrophic situation, which may lead to loss of opportunity to purchase the necessary range of raw materials due to insolvency of suppliers, increasing the cost of material resources, which may adversely affect price competition; destruction of partnerships with stakeholders; depreciation of assets, which will increase costs and increase the percentage of marriage; increase production costs, reduce the number of orders and contracts for the sale of products; cost increase; increase in the amount of illiquid working capital; reduction of sales due to the lack of revenue from sales of products, etc. (Parkhomenko & Otenko, 2019).

Thus, the current factor system reflects not only the strategic priorities and the complete structure of the state of development processes, identifies the most important factors, but also determines the structure of each factor and the relationship between indicators that determine each factor. This research allows us to identify, systematize and classify the whole set of factors that determine the state of enterprise development processes in the global environment, to develop methods for measuring quantitative characteristics of the impact of these factors, forming on this basis tools for managing these processes. Therefore, determining the relationship between the key parameters of business systems development and exogenous global and national indicators requires further study to forecast the development of enterprises.

We present the results of experiments on forecasting the development of enterprises using economic and mathematical models built on neural networks of counter-propagation. For forecasting, we will use a methodical approach to modelling and forecasting using the Statistical application package.

The original time series was converted into input image vectors, each of which contains data for the last seven years. During the calculations, a number of economic and mathematical models based on neural networks of different configurations were built to determine the most adequate set of explanatory variables, the required number of neurons in

Table 4. Correlation matrix of key indicators of Arcelor Mittal Kryvyi Rich (Ukraine) and

Indicator	Nominal GDP growth rates in hryvnia equivalent, %	Nominal GDP growth rates in dollar equivalent, %	Inflation index, %	Dynamics of external debt, %	Real wage index, %	Unemployment rate, %	Export coverage ratio by import	Index of industrial output, %	Volume of direct investments of the world countries in the economy of Ukraine, million USD	Balance of investment activity in Ukraine, %
Assets	0,567662	0,343887	0,081306	0,560180	0,289756	0,5376	0,596804	0,430092	-0,80933	-0,001363
Equity	0,188383	0,094780	0,188364	0,303323	0,042944	0,1115	0,794363	-0,10419	-0,27355	0,121556
Net profit	0,634062	0,631731	-0,13939	0,742429	0,619314	0,4006	0,514953	0,670086	-0,95701	-0,084053
The cost of sales	0,559790	0,588867	-0,13321	0,845267	0,580560	0,2956	0,340955	0,573289	-0,93636	0,001039
Net profit (loss)	0,620412	0,380707	0,010575	0,161605	0,380644	0,3915	0,581480	0,526016	-0,61478	-0,014107
Return on assets	0,719503	0,346425	0,094397	0,198644	0,357085	0,5150	0,616361	0,513614	-0,68679	0,042053
Return on equity	0,448300	0,168644	-0,04395	-0,04474	0,202260	0,4548	-0,16519	0,518822	-0,39227	-0,091688
Material intensity	-0,22659	0,100970	-0,18763	0,444212	0,157665	-0,525	-0,65752	-0,13638	0,007250	0,204385
Labour intensity	-0,86517	-0,07351	-0,37149	-0,05179	-0,15342	-0,853	-0,55222	-0,31915	0,597907	-0,168500
Profitability ratio	0,458723	0,340708	-0,04289	0,038537	0,312460	0,5042	0,693957	0,518739	-0,46178	-0,267462
Average salary	0,132401	0,646723	-0,38836	0,853411	0,551278	-0,093	0,205425	0,546116	-0,73523	-0,192398
Profit per share	0,620744	0,380577	0,010696	0,161291	0,380878	0,3907	0,580234	0,525720	-0,61445	-0,013119

Source: Authors' calculations based on Arcelor Mittal

the Kohonen layer and the number of learning circuits for efficient operation of the model. As a result of using such a neural network, we obtain specific forecasts for the development of enterprises, depending on the values of key indicators (Narinder et al., 2021).

Thus, eleven factor models for the global business system and eleven factor models for the domestic business system for prediction were formed, which passed additional testing, namely, built a normal probabilistic graph of residuals (values were placed along the line), histogram of residual distribution balances had a normal distribution, scatter plot of predicted values and balances (there should be no pronounced trend).

Thus, with the help of the STATISTICA Neural Networks software package, neural networks were built for forecasting purposes. The construction of a mathematical model for a new set of initial data gave the resulting response with an accuracy of not less than 5%. This model reflects the relationship between exogenous factors (Vary 1-Vary N) as inputs of the model and key parameters of business systems as outputs of the model. In the future, the model can be used to predict the development of the enterprise for future periods. The Statistical Nonlinear Estimation module was used to build the model. We build a neural network that will select an adequate function that best approximates the original data.

## exogenous global to national indicators

Official exchange rate of hryvnia against the dollar (average for the period)	Official hryvnia exchange rate against the euro (average for the period)	Hryvnia devaluation index	The average world price of Brent oil, USD per barrel	Producer price index	The share of scientific and technical work performed in GDP, %	The share of enterprises engaged in innovation, %	The share of unprofitable enterprises in Ukraine, %	Return on assets of Ukrainian banks, %	Return on equity of Ukrainian banks, %	Change of quotations by index S&P, %	Change of quotations by index S&P, %	Change of quotations according to the FTSE index, %
0,884322	0,910126	-0,18783	-0,66770	0,0125	-0,90861	0,522956	-0,82486	0,294994	0,262433	-0,46037	-0,57352	-0,385729
0,247071	0,303168	0,055517	0,126644	-0,329	-0,23063	-0,28124	-0,24750	0,209641	0,242661	-0,38433	-0,34023	-0,691964
0,945723	0,966230	-0,50014	-0,70487	-0,136	-0,95412	0,399618	-0,84688	0,414433	0,373114	-0,23993	-0,42178	-0,232501
0,926370	0,924066	-0,53367	-0,76274	-0,280	-0,95004	0,372554	-0,93001	0,491272	0,442180	-0,17442	-0,30557	-0,075971
0,607006	0,656752	-0,25651	-0,36788	0,2456	-0,49847	0,341104	-0,37346	0,019651	-0,01402	-0,40769	-0,61703	-0,536431
0,708112	0,750195	-0,21926	-0,48579	0,3098	-0,59772	0,471298	-0,47572	-0,02608	-0,06601	-0,44409	-0,66847	-0,532380
0,480333	0,461804	-0,16533	-0,64041	0,5893	-0,44284	0,791659	-0,30864	-0,17694	-0,24108	-0,09021	-0,30463	0,190524
-0,096686	-0,17375	-0,38036	-0,13068	-0,617	0,071188	-0,28291	-0,19753	0,330986	0,302934	0,445152	0,556026	0,642883
-0,707960	-0,71514	-0,05878	0,622071	-0,648	0,601033	-0,78288	0,45033	0,390633	0,430026	0,337684	0,597850	0,337937
0,478289	0,547034	-0,06697	-0,17897	0,3575	-0,45846	0,303949	-0,17407	-0,03065	-0,02660	-0,31413	-0,51508	-0,518192
0,676690	0,694194	-0,59340	-0,47559	-0,604	-0,77334	0,015131	-0,77634	0,800549	0,772472	-0,14602	-0,15480	-0,059295
0,606432	0,656039	-0,25714	-0,36788	0,2456	-0,49743	0,340758	-0,37300	0,019012	-0,01477	-0,40700	-0,61646	-0,535689

In the first stage of modelling, the network is trained on a test set, which assesses the significance of inputs, as not all exogenous factors affect the studied indicator Y. The share of influence of some factors may be so small that ignoring them will not lead to significant deviations. The modelling procedure is implemented in STATISTICA using three modes: automated and custom neural networks, as well as the method of multiple subsamples. In the mode of automated and custom neural networks, a multilayer perceptron (MLP) was used, and in the mode of multiple subsamples a radial basis function (RBF).

The network configuration is defined. The STATISTICA Neural Networks (SNN) add-on simplifies this process by

using the Intelligent Problem Solver procedure, which automatically reduces the dimension of the designed network by highlighting the most significant external factors and searching for neural networks by analyzing networks of different typologies. The algorithm of such search involves the search of a number of neural network configurations and the selection of the best in terms of minimum errors at the output of the network and maximum performance. We can identify possible alternative options for enterprise development.

The most probable or inertial development of the enterprise is possible according to the basic variant. This option characterizes the management of enterprise development in



terms of retrospect, without significant changes in the components and the absence of significant changes in the global environment. Such a development scenario may lead to a decrease in competitiveness, a lack of positive changes in activities, and does not involve the implementation of innovative projects. The scenario of a pessimistic scenario of enterprise development is the worst-case scenario. The scenario of optimistic development envisages positive tendencies of change of state, acceleration of innovative changes, the introduction of new projects, restructuring of the enterprise, development of potential through the use of opportunities, the introduction of strategic tools of threat detection, the definition of development priorities, ways of solving problem situations (Drobyszko et al., 2020).

As a result, 15 neural networks were obtained for each key indicator of the enterprise. The quality of each of them is checked based on histograms of the distribution of residues (residues have a normal distribution), diagrams of scattering of the target and "yield" (the result of the architecture). Analysis of the control performance of models and graphs has identified a favourable architecture for predicting a multilayer perceptron with one hidden layer and seven hidden neurons. Forecasts for key indicators of enterprise development, taking into account global and national indicators, are based on neural network models, namely, trained and tested neural networks. In Table 5 we can present

the final results of forecasting the development of Arcelor Mittal taking into account the influence of exogenous factors.

The developed forecast of key parameters of Arcelor Mittal's development under the condition of forecasts on exogenous global indicators shows rather positive dynamics of development of all companies.

Positive dynamics will be observed in terms of net sales, operating profit, and return on investment. Net assets and financial leverage will remain at about the same level. The current liquidity ratio will remain within the normative values, although it will decrease, which should be noted by management and preventive measures should be taken.

The value of return on invested capital, return on assets, and earnings per share over the next two forecast periods is a matter of concern and requires management decisions. There will be a negative trend in the reduction of the company's share price, which should be noted and determine the possible consequences of such changes.

The forecast results of the development of the Ukrainian division of the international company Arcelor Mittal Kryvyi Rich (Table 6) show positive trends in the company's development, namely the gradual increase in the company's assets, constant equity, doubling net income, rapid growth in net income.

**Table 5. The most reliable forecast of key parameters of Arcelor Mittal's development, taking into account the impact of exogenous global indicators**

Indicators of enterprise development	Forecast period				
	2021	2022	2023	2024	2025
<i>Net sales</i>	72025,87	71992,88	72084,56	72081,44	72041,80
<i>Operating profit</i>	2125,431	2118,700	4193,067	5449,406	6500,510
<i>Net assets</i>	90444,86	90285,49	89657,33	90006,27	90213,60
<i>Current ratio</i>	1,361579	1,340751	1,208951	1,286119	1,286119
<i>Return on invested capital</i>	-4,95000	-2,19000	5,71000	12,22000	11,99000
<i>Return on assets</i>	-2,30000	-1,02000	2,36000	5,54000	5,85000
<i>Return on investment</i>	1,67054	4,50032	9,26973	11,42982	12,59987
<i>Financial leverage</i>	37,56833	37,66271	37,60252	37,58788	37,62490
<i>Profitability of operating activities</i>	1,510000	3,830000	7,300000	7,900000	8,600000
<i>The average stock price</i>	42,47247	44,72562	16,70215	27,43355	28,85213
<i>Profit per share</i>	0,18000	-2,00000	1,87000	4,48000	5,07000

Source: Authors' calculations



**Table 6. The most probable forecast of key parameters of Arcelor Mittal's development in Kryvyi Rich (Ukraine) taking into account the impact of exogenous global and national indicators**

Indicators of enterprise development	Forecast period				
	2021	2022	2023	2024	2025
<i>Assets</i>	51580477	65512989	86970044	89902488	91617964
<i>Equity</i>	46733853	46869198	46790197	47005866	46812509
<i>Net profit</i>	26557176	38471193	54003795	66783638	66645009
<i>The cost of sales</i>	31690005	29785350	54970633	56719505	56257098
<i>Net profit (loss)</i>	-1517018	-1180487	2704116	5061847	9509163
<i>Return on assets</i>	-3,64475	-1,58390	3,33975	5,68344	9,73558
<i>Return on equity</i>	-4,33935	-1,31771	4,87672	9,89805	10,64439
<i>Material intensity</i>	0,708283	0,660271	0,682095	0,680831	0,649023
<i>Labour intensity</i>	0,058747	0,058964	0,058349	0,058292	0,058228
<i>Profitability ratio</i>	0,999376	1,083519	1,105106	1,170145	1,243019
<i>Average salary</i>	6126,53	6900,96	8588,73	11113,19	14285,89
<i>Profit per share</i>	-0,39000	-0,310000	0,700000	1,310000	2,460000

Source: Authors' calculations

Despite the unsatisfactory results of return on assets and return on equity during the two forecast periods, we continue to see a positive trend of increasing and increasing financial strength. The indicators of the average salary at the enterprise, which is a positive social component of the business system, also have a positive upward trend. It is clear that the high material consumption of the metallurgical enterprise, in the forecast period tends to decrease. The capacity of the business system is low, which will remain at about the same level during the forecast period. The profitability ratio also has positive dynamics, which indicates the strengthening of the business system's position in a competitive changing market in a global environment.

## 5. Conclusion

The results of modelling well approximate the actual data; the total square error is 3%. This allows us to conclude that the simulated neural networks will be sensitive to variations in input parameters and accordingly can be used to predict the development of the enterprise in the future. According to the results of forecasting over the next 5 forecast periods, the financial condition of many enterprises is expected to improve in many financial indicators. However, for some parameters, management should pay attention to their dynamics, possible negative trends, or stability over a long

period of time, and, accordingly, adjust the strategy of business systems.

Practice shows that the use of neural networks to predict the development of the enterprise depending on the correctness of the configuration of forecast models allows for obtaining high-precision results with minimal time. The proposed methodological approach, which is based on neural network tools, allows for modelling the state of enterprise development in different scenarios of the impact of global environmental factors. The proposed tools for forecasting the key parameters of enterprise development taking into account changes in global factors will allow the company's management to timely adjust its development strategy. It should be noted that the use of a neural network, which is based on a combination of layers Kohonen and Grossberg, avoids situations in which it is impossible to draw a clear conclusion about the state of the enterprise.

Also, the range of models for diagnosing the state of development of enterprises based on the apparatus of artificial neural networks can be expanded using different sets of explanatory variables. Such neural networks can be used to analyze the company's activities in relation to various functions (financial support, marketing activities, sales policy, etc.) and diagnose the development of business

systems for analytical purposes and to ensure various management decisions, such as investing. The built models allow increasing efficiency of management of development of the enterprise.

Thus, the method of modelling can be a tool for assessing the global environment and enterprise development. Regarding the identity of such models for enterprises of one industry or field of activity, it is necessary to take into account the general list of exogenous parameters and the actual realistic data on the state of development of the enterprise itself. It should be noted that each company in the process of development in a global environment, has its own unique experience, and capabilities, and works with significant amounts of information, based on its inherent abilities using the acquired knowledge and information. That is, there can be no single model of development common to all systems, each model is unique.

Thus, the development of the enterprise takes place in one scenario or another, determining the vector of development and change. This vector is limited to pessimistic and optimistic scenarios. Appropriate boundaries allow us to assess the possible future state of the enterprise, which is determined by the dynamics of indicators, strategic potential, and emerging risk situations. Risky events can be predicted, but it is impossible to determine the exact time of their occurrence. Coincidences must be limited by certain limits of the possibilities within which management decisions are made.

The most probable baseline scenario determines the strategic direction of the enterprise, based on the conditions of the global environment, and changes in the internal and external environment. That is, the choice of target orientation is more important than developing a strategy for enterprise behaviour within the current scenario.

If the vector of enterprise development deviates towards the pessimistic scenario, management decisions should be aimed at preventing the vector from going beyond the critical values of indicators. In this case, the company should focus on a survival strategy, according to which business systems reduce the production of unprofitable and unprofitable goods, reduce the number of employees, limit innovative modernization development programs, decide to eliminate certain units and minimize costs. That is, the help of various means of the enterprise ensures viability in the target market.

If the vector of development deviates towards an optimistic forecast, enterprises have the opportunity to improve. In this

case, growth and diversification strategies are appropriate, which include increasing market share, expanding production, increasing profits and more. In order to influence the results of the planned scenarios, the company should be able to use available resources to increase the probability of the most favourable scenario.

The formation of enterprise development scenarios allows to form possible options for strategies in the early stages of strategic planning and determine the conditions for adaptation and flexibility through the timely identification of threats and opportunities, as well as to assess the degree of achievement and effectiveness of management decisions. A prerequisite for scenario forecasting is constant monitoring of the situation. Factors that affect the state of development of the enterprise and may contribute to the deviation from the most likely scenario are retrospectives and futures. Timely detection of these factors allows you to prepare the company for future changes in the external environment. Futures factors do not guarantee that the company will grow smoothly and will maintain stable dynamics, as at any time there may be unforeseen adverse circumstances that are accidental, under the influence of which the company may deviate from the most likely development scenario. In case of deviations from the scenario, corrective actions must be taken. The use of a scenario approach in the management of enterprise development allows us to form flexible and reliable strategies, gain confidence in management decisions and determine directions for action if events occur in one way or another.

Thus, to determine the strategic direction of enterprise development in the global environment, a system of indicators is formed. The factor system reflects the strategic priorities and structure of development processes, identifies the most important factors, and determines the structure of each factor and the relationship between indicators. Factors' assessment reveals the degree of influence of factors and their focus on the process of enterprise development. As a result of the research the set of factors determining the state of development processes is revealed, systematized and classified, and the technique of measurement of quantitative characteristics of influence of factors is developed. On this basis, the tools for forecasting the development of the enterprise based on modelling are formed. As a result, according to the forecast development scenarios, the following development strategies can be distinguished: gradual development; unsustainable development due to insufficient degree of adaptability; decline and crisis due to

loss of adaptability. The strategy of gradual development is most used among the studied companies.

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# Auditors' Competence, Audit Fee, Quality Control, and Audit Quality

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The COVID-19 pandemic limits public social activities due to the virus spreading in overcrowded areas. It becomes a challenge for Public Accounting Firms to provide quality financial statement audit services to auditees. Therefore, this study aimed to analyze the influence of auditors' competence as well as audit fee and quality control on audit quality during the COVID-19 pandemic. Data were collected through a survey filled by 100 auditors at Public Accounting Firms (KAP) in Indonesia. The survey was distributed through Google Forms for two months in 2021. The data were processed and analyzed using the Partial Least Square (PLS) method with Smart PLS 3 software. The results indicated that auditors' competence and audit quality control positively affect audit quality. Meanwhile, the audit fee does not significantly affect audit quality. This study implies that Public Accounting Firms should optimize employees' soft skills in recruitment and training activities. Additionally, the firms are expected to improve supervision and increase the auditors' work commitment to strengthen audit engagement quality.

**Keywords:** *audit quality, auditor competence, audit fee, audit quality control, public accounting firms, COVID-19 pandemic.*

## 1. Introduction

The COVID-19 pandemic caused shocks in several aspects (Pasupati & Husain, 2020). The first case of the infection was reported in Indonesia in March 2020. Subsequently, the government issued several policies, including Large-Scale Social Restrictions (PSBB) in 2020 and Enforcement of Restrictions on Community Activities (PPKM) in 2021. The restrictions limited economic activities, such as commerce, tourism, aviation services, and other industries (Faradiba et al., 2020; Horwath, 2020). Although the policies aimed to slow the spread of the virus, they have the potential to disrupt people's daily lives (Muhyiddin & Nugroho, 2021). For instance, there is increased uncertainty over several companies' business performance (ACCA, 2020; Horwath, 2020). This could increase the potential for manipulation of the corporate financial performance unable to withstand the pressure during the pandemic (Albitar et al., 2020).

Auditors with a crucial role in providing public assurance have been impacted by business uncertainties and declining company performance (Albitar et al., 2020) due to increased manipulations. It means auditors must hone their professional scepticism to provide opinions on financial statements based on the circumstances and evidence. This is essential because the quality of audits also affects stakeholders' trust in the financial statements (Halim et al., 2014) and the detection of misstatements (Lenz & Hahn, 2015). The quality of audits has been defined by previous studies. However, this study focused on three pertinent factors involved in audit quality, including auditors' qualifications, audit fees, and quality assurance.

Audit quality should be maintained even during the COVID-19 pandemic and its effect on social distancing policies. Auditors must be digitally literate to provide services, meaning their competence has become a determining factor (Castka et al., 2020). According to Mansouri et al. (2009), auditors' competence significantly influences fraud detection. The ability to detect misstatements in financial reports requires thorough planning, fieldwork, and reporting (Rahmina & Agoes, 2014). Furthermore, auditors need to adequately understand regulatory requirements throughout the audit engagement period (Hardiningsih et al., 2019). This is consistent with Hien et al. (2019) that auditors' competence impacts audit quality. It necessitates fieldwork training to improve auditors' competence to conduct a quality audit. However, the COVID-19 pandemic made it challenging for Public Accounting Firms to train auditors offline (Albitar et al., 2020). Hikmayah and Aswar (2019)

and Sagita and Harindahyani (2020) found no significant relationship between audit quality and auditor competence. However, these studies only examined auditors' experience based on their competence.

In 2020, the audit fee received by Public Accounting Firms decreased due to the impact of the COVID-19 pandemic (Albitar et al., 2020). This deteriorated the auditee's financial condition and limited procedures implemented by the audit engagement team (Financial Reporting Council, 2020). Meanwhile, Indonesia's Public Accounting Firms have the right to set audit fees based on the service delivered to auditees (IAPI, 2018). In line with this, there are different opinions regarding the impact of the fee on audit quality. Pham et al. (2017) stated that the audit fee negatively impacts quality. This is because a higher audit fee reduces the auditors' work independence. In Nigeria, Ganesan et al. (2019) found that a higher audit fee increased the quality of audits performed. Another study showed that the financial crisis in Australia increased the audit fee (Xu et al., 2011).

Quality control requires development and improvement (Financial Reporting Council, 2020), and is an indicator in formulating the audit quality of Indonesia's Public Accounting Firms firms determined by regulators (IAPI, 2018). This study focused on audit quality control which is hardly examined in previous studies. Therefore, this variable was used as a determinant of audit quality. The audit's quality control system that contributes to audit development in 2020 is still inadequate. For instance, risk determination and audit procedures are not in line with risk assessment, and there is miscommunication in the team regarding audit procedures (Financial Reporting Council, 2020). The inadequacy of quality control also occurs in the leadership aspect. Therefore, this study examined audit quality control that focuses on commitment and leadership's role.

Based on the preceding explanation, this study aimed to prove and analyze 1) the influence of auditors' competence on audit quality, 2) the effect of audit fees on audit quality, and 3) the effect of audit quality control on the audit. The study question was whether audit quality is influenced by competence, audit fees, and engagement quality control during the COVID-19 pandemic. The indicator used to measure competence was based on soft and hard skills. In contrast, previous studies used indicators based on experience. The indicator used to measure audit quality control is also based on quality control theory, as opposed to regulation or audit standards. Therefore, the results



contribute to the expansion of the literature on audit quality in the pandemic era. The findings are crucial for Public Accounting Firms or regulators to create competency improvement and quality review procedures.

## 2. Literature Review

### 2.1 Audit Quality

The audit quality represents the auditor's ability to find and report material financial misstatements (De Angelo, 1981). The quality is viewed from the ability to detect and report the client's accounting system weakness. These two aspects of audit quality are supported by the auditor's technological capabilities, appropriate audit procedures, and the sampling process. Reporting on accounting system weakness is influenced by the auditor's independence (De Angelo, 1981). Furthermore, the quality could be measured through reporting audit findings with objectives and significant issues. It is also determined by the auditor's ability to support clarity in audit reports (Kuntari et al., 2017).

### 2.2 Auditor Competence

Competence is crucial and beneficial for employees to help an organization develop a competitive edge (Puteh et al., 2015). It has various definitions depending on an employee's organizational role and position (Hoffmann, 1998). Competence is generally divided into American and British approaches (Hoffmann, 1998). According to the American Approach, competence is an attribute of a person (Hoffmann, 1998). British approach views competence as a standard and overall performance of employees. However, discussion about employee competence is not limited only to technical ability or hard skills. Several important factors related to organizational success are supported by functional, communication, leadership, and cognitive competencies (Puteh et al., 2015).

Public Accounting Firms should assign auditors with competence and expertise in audit engagement (Financial Reporting Council, 2020). Many challenges during the COVID-19 pandemic forced auditors to make decisions on various uncertainties. The decision-making ability includes communicating effectively, choosing strategies, building team trust, negotiating skills, intelligence, individual self-development, and leadership sensitivity (Nadziakiewicz, 2016). Moreover, soft skills are important for the success of the auditor's work (Nadziakiewicz, 2016). They are often examined in internal audit studies, though this study also

measured competence through soft skills.

Competence could be obtained by auditors through formal education or relevant training organized by professional associations (Siregar et al., 2012). It could also be attributed to the length of the auditor's experience in audit work. Auditors with more experience in a certain job are highly proficient in carrying out their tasks (Usman, 2016). Public Accounting Firms improve the competence of their auditors by creating a policy on measuring the ratio of training hours.

Some studies categorized competence in the knowledge and experience aspects (Putra, 2018). Auditor knowledge is reflected in accounting and auditing, business processes, educational backgrounds, and training (Putra, 2018). Furthermore, competence is seen from auditors' experience such as the number of hours worked, clients, and industry types. Auditors with more experience are highly competent, which affects their work performance (Putra, 2018). Previous studies on audit quality analyzed competence from the aspects of knowledge and experience. However, other aspects also define competence, such as skills and attitude (Martini et al., 2020). Based on this explanation, the following hypothesis was proposed.

**H1:** Auditor competence significantly affects audit quality.

### 2.3 Audit Fee

Service fees or compensation are determined by work performance, merit, external base, competency, and equity bases (Akter & Husain, 2016). The fairness of providing service rewards improves employee work performance (Sukriyani, 2021). Compensation for auditors comprises service rewards such as salaries, overtime pay, and out-of-pocket expenses determined by estimating audit fees in an agreement. The audit fee services vary with Public Accounting Firms depending on audit risk and its components. These components include the complexity of audit services, auditor experience required in an engagement, cost structure, and other professional considerations (Kuntari et al., 2017; Rahmina & Agoes, 2014; Yuniarti, 2011). The fee is measured through indicators such as efforts to gain new clients and retain old clients (Kuntari et al., 2017).

An audit fee is also a certain nominal amount charged to the auditee for the auditing services (Oyedokun, 2018). The fee depends on aspects such as the complexity of services

provided, the risks set in an engagement, and the human resources consisting of partners, managers, and seniors (Oyedokun, 2018). A higher audit fee increases the quality of audits achieved in an engagement. The resources in a team, the auditors' experience, and the complexity of audit work and procedures allow auditors to increase the service fee (Yuniarti, 2011). The fee is used by Public Accounting Firms to fund operational activities in providing services to the auditee (Yuniarti, 2011). When the audit fee is inadequate, the auditor must consider potential risks and provide services under audit standards and codes of ethics (Institut Indonesian Public Accountant, 2018). Large local Public Accounting Firms ask for larger fees than small-scale local firms. Also, they prioritize employee training, development, and peer review, and use of computers in audit work (Choi et al., 2010).

During the COVID-19 pandemic, global audit fees from Public Accounting Firms fell by about 20% (Financial Reporting Council, 2020). The decrease was due to clients' liquidity risks for their large operational activities (Albitar et al., 2020). Public Accounting Firms are expected to set optimal audit fees by considering all procedures performed during the pandemic. However, some procedures may not be optimally performed during the pandemic, such as direct observation or stock take in substantive testing. A proper audit fee also affects auditors in performing their tasks during the pandemic. Based on this discussion, the following hypothesis was formulated.

**H2:** Audit fees significantly affect the quality of the audit.

#### **2.4 Audit Quality Control**

The quality control concept is inseparable from quality development consisting of several stages. These stages are sensitivity to an opportunity and need, work goal development, achieving goals, employee training, initiation of predecessor projects, supervisory roles, appreciation of work performance, and reporting on work quality development (Juran & Feo, 2010). Based on Malcolm Baldrige National, work quality development is divided into leadership, assessment, and employee appreciation. It focuses on Human Resource (HR) development, continuous quality improvement, dexterity, results, social responsibility, information management, and strategic planning (Lenka et al., 2010). Furthermore, quality development requires a continuous process and some concepts, such as the Quality Control Circle (QCC). According to QCC, there are certain expectations in an organization, such as rewards and appreciation for

employees in improving performance, behaviour, and knowledge. Quality control in the QCC concept is proved by human development mechanisms (Pratiwi et al., 2019). In line with this, an organization achieves goals through optimal quality control.

During the COVID-19 pandemic, auditors faced challenges in obtaining audit evidence through direct procedures. This forced the audit team to choose the relevant procedures or seek alternatives while paying attention to work quality and the potential risk established or revised by an audit agreement team.

Auditors should respond to the COVID-19 pandemic by reducing audit risks to acceptable levels. This requires strengthening quality control policies on engagements related to the supervision of agreement teams. Furthermore, Public Accounting Firms implement a quality control system to ensure every agreement is subject to applicable standards and rules (IAPI, 2018). The quality control system includes aspects such as the leader's responsibility, relevant ethical requirements, as well as acceptance and continuation of client engagements. Other aspects include the assignment of the audit engagement, audit fieldwork performance, supervision, and audit work documentation (Ramadhani et al., 2017). Relevant ethical requirements must be implemented in agreement practice because they affect audit quality (Ramadhani et al., 2017). In line with this, the following hypothesis was proposed.

**H3:** Quality control significantly affects audit quality.

#### **2.5 Literature Gap**

The introduction and literature review showed at least two gaps in this study. First, there are no soft skill indicators in measuring auditor competence. The competency indicators in previous studies focused on experience and knowledge in performing tasks. Competence is a characteristic that contributes to achieving goals (Dessler, 2020). During the COVID-19 Pandemic, auditors must be more adaptable in hard and soft skills to adapt to the dynamic audit procedures. Second, no study has used quality control variables as a determinant of audit quality. In previous studies, the engagement quality control variable was formed through indicators referring to the code of ethics or quality rules applicable to external auditors. In this study, indicators referred to the quality management for service companies (Lenka et al., 2010). As a service provider, a Public Accounting Firm focuses on the quality of work supported by human resource development. Quality is also formed through a commitment from management and a

comprehensive supervisory role (Lenka et al., 2010). Several preceding inconsistencies in preceding studies are also the gaps underlying this study. Therefore, the significant scope of this study is the audit quality in Public Accounting Firms.

### 3. Methods

This study used quantitative methods by conducting a Structural Equation Model (SEM) analysis with the SMART PLS 3 version. Data were obtained by carrying out online surveys in 2021 due to social restrictions imposed in Indonesia during the COVID-19 Pandemic. The analysis unit comprised external auditors from Public Accounting Firms selected using the convenience sampling technique. This sampling method was chosen because the auditor population data could not be obtained. Other studies stated that a minimum of 100 samples is recommended to achieve reliable results (Ding et al., 1995). According to Jannoo et al. (2014), the ideal sample in SEM analysis is 100-150 samples. The sample of this study was 100 auditors that filled out the survey via Google form distributed through WhatsApp and E-mail within two months. Data processing through SEM analysis entailed three phases, including 1) evaluation of the measurement or outer model, 2) evaluation of structural or inner models, and 3) hypothesis tests. First, the measurement or outer model was evaluated using a validity test to determine the outer loading value of each

indicator. An outer loading value exceeding 0.7 is considered a valid indicator item (Khan & Ibrahim, 2015). Similarly, an Average Variance Extracted (AVE) above 0.5 is considered a valid indicator. The reliability of each variable is seen from the value of Composite Reliability (CR). In this case, the indicator meets the reliability characteristic when the value exceeds 0.7 (Musyaffi et al., 2022). Second, the structural or inner model was evaluated based on the values of R Square, F Square, and Q Square. The R Square or coefficient of determination describes the ability of predictions over the model's accuracy. The rule of thumb of R Square is that 0.75, 0.5, and 0.25 indicate substantial, moderate, and weak values, respectively (Hair et al., 2014). The F Square test measures the effect of predictive variables on the structural models. Moreover, the model fit test was performed using Q-Square testing, where a value close to 1 means the model has predictive relevance (Hair et al., 2014). Third, hypotheses were tested by comparing between P-value and level of error (5%). P-value was defined by conducting a bootstrapping analysis in SMART PLS 3.

Indicators were reflected in various questions and measured through the Likert scale with scores 5, 4, 3, 2, and 1 for Strongly Agree (SS), Agree (S), Simply Agree (CS), Disagree (TS), and Strongly Disagree (STS), respectively. Table 1 shows the measurements used in this study.

**Table 1. Variable Measurement**

Variable	Indicator	Source
Competence (X1)	<ol style="list-style-type: none"> <li>1. Technical training</li> <li>2. Knowledge of client's business conditions</li> <li>3. Leadership skills (decision -making and problem - solving)</li> </ol>	(Putra, 2018)
Audit Fee (X2)	<ol style="list-style-type: none"> <li>1. Complexity of work</li> <li>2. Identified audit risk</li> <li>3. Adequate fees meet audit team experience</li> <li>4. Cost structure setting</li> <li>5. Work schedule planning</li> </ol>	(Rahmina & Agoes, 2014) ; (Yuniarti, 2011)
Audit Quality Control (X3)	<ol style="list-style-type: none"> <li>1. Quality of client acceptance and engagement process</li> <li>2. Quality of ethics codes that were required to be implemented</li> <li>3. Quality of supervising role</li> <li>4. Commitment to Human Resource Development</li> <li>5. Focus on results</li> <li>6. The role of visionary leaders</li> </ol>	(Ramadhani et al., 2017)
Audit Quality (Y1)	<ol style="list-style-type: none"> <li>1. The audit result clearly explains the audit conclusions</li> <li>2. Completeness and timing in reporting audit results</li> <li>3. Auditors achieve audit objectives supported by technology</li> <li>4. The auditor achieves the audit objectives supported by proper sampling techniques</li> <li>5. Auditors achieve the audit objectives supported by the ability to set samples</li> </ol>	(De Angelo, 1981) ; (Putra, 2018)

Source: Self-processed, 2021

The indicators in Table 1 were developed from previous studies to support the objectives and the literature gap. Audit quality was measured by De Angelo's theory which focuses on accounting system weakness finding and reporting.

**4. Result**

The results were obtained through data processing with SMART PLS 3 by conducting a structural equation modelling analysis. Table 2 shows the demographics of 100 respondents. The results were presented on the evaluation of the measurement and structural models, as well as hypothesis testing.

**Table 2. Demographics of Respondent**

No	Characteristic	Total	Percentage
<b>1</b>	<b>Gender</b>		
	<i>Woman</i>	58	58%
	<i>Man</i>	42	42%
<b>2</b>	<b>Location</b>		
	<i>Java</i>	96	96%
	<i>Sumatera</i>	3	3%
	<i>Sulawesi</i>	1	1%
<b>3</b>	<b>Experience</b>		
	<i>1 year</i>	40	40%
	<i>1 to 3 years</i>	24	24%
	<i>3 to 5 years</i>	13	13%
	<i>More than 5 years</i>	23	23%
<b>4</b>	<b>Formal Education</b>		
	<i>Diploma</i>	12	12%
	<i>Bachelor</i>	80	80%
	<i>Master</i>	7	7%
	<i>Doctoral</i>	1	1%
<b>5</b>	<b>Position</b>		
	<i>Junior Auditor</i>	57	57%
	<i>Senior Auditor</i>	28	28%
	<i>Assistant Manager</i>	6	6%
	<i>Manager</i>	7	7%
	<i>Partner</i>	2	2%
<b>6</b>	<b>Working Method</b>		
	<i>Full Work from Home (WFH)</i>	7	7%
	<i>Full Work from Office (WFO)</i>	18	18%
	<i>Both WFH and WFO</i>	75	75%

Source: Self-processed, 2021

Table 2 shows that 58% of the respondents were women and 42% were men. Online questionnaires were distributed to auditors on Java, Sumatera, and Sulawesi islands due to the COVID-19 pandemic. The demographic table shows that most respondents have been working for at least one year. The formal education was dominated by 80% bachelor's, followed by 12% diploma, 7 % master's, and 1% doctoral degrees. Furthermore, 57% of the respondents were junior auditors, followed by 28% senior auditors, 6% assistant managers, 7% managers, and 2% partners. During the pandemic, 75% of the respondents worked for WFO and WFH, 18% adopted full WFO, and 7% worked from home.

**4.1 Evaluation of Structural or Outer Model**

The structural model was evaluated by assessing the value of construct reliability and validity (Hair et al., 2014). The evaluation was presented by outer loading, Cronbach's alpha (CA), Average Variance Extracted (AVE), and Composite Reliability (CR) calculations (Hair et al., 2014). Table 3 shows the evaluation results.

**Table 3. CA, CR, and AVE Test Results**

	<i>Cronbach's Alpha</i>	<i>Composite Reliability</i>	<i>Average Variance Extracted</i>
	(CA)	(CR)	(AVE)
<i>Competence (X1)</i>	0.736	0.849	0.653
<i>Audit Fee (X2)</i>	0.871	0.907	0.661
<i>Quality Control (X3)</i>	0.896	0.920	0.658
<i>Audit Quality (Y)</i>	0.904	0.929	0.723

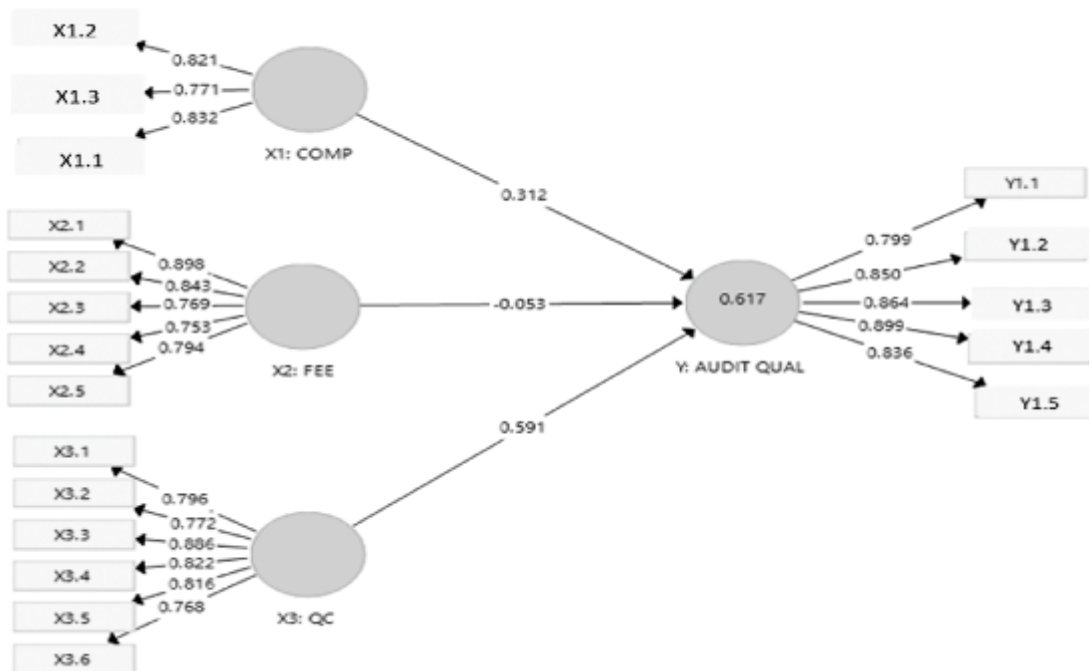
Source: Smart PLS 3, 2021

The CA values for independent and dependent variables exceed 0.7, meaning they are valid. The AVE value for all variables also exceeds 0.5, indicating that the data meets the validity requirements. The data reliability was evaluated from the CR test value, which also exceeds 0.7. This value suggests that the data meet reliability criteria. The outer loading test was also performed on the model and obtained the results presented in Table 4.

**Table 4. Loading Factor Test Results**

	<i>X1: COMP</i>	<i>X2: FEE</i>	<i>X3: QC</i>	<i>Y: AUDIT QUAL</i>
<i>X1.1</i>	0.832			
<i>X1.2</i>	0.821			
<i>X1.3</i>	0.771			
<i>X2.1</i>		0.898		
<i>X2.2</i>		0.843		
<i>X2.3</i>		0.769		
<i>X2.4</i>		0.753		
<i>X2.5</i>		0.794		
<i>X3.1</i>			0.796	
<i>X3.2</i>			0.772	
<i>X3.3</i>			0.886	
<i>X3.4</i>			0.822	
<i>X3.5</i>			0.816	
<i>X3.6</i>			0.768	
<i>Y1.1</i>				0.799
<i>Y1.3</i>				0.85
<i>Y1.4</i>				0.864
<i>Y1.5</i>				0.899
<i>Y1.6</i>				0.836

Source: Smart PLS 3, 2021



**Figure 1. Research Model**

Source: Smart PLS 3, 2021



From Table 4, X1 is an auditor competence variable with three indicators X1.1, X1.2, and X1.3 with loading factor values of 0.832, 0.821, and 0.771, respectively. X2 is the audit fee variable with five indicators, including X2.1, X2.2, X2.3, X2.4, and X2.5 having loading factor values of 0.898, 0.843, 0.769, 0.753, and 0.794. The third variable is audit quality control, which has six indicators of X3.1, X3.2, X3.3, X3.4, X3.5, and X3.6. These indicators have loading factor values of 0.796, 0.772, 0.886, 0.882, 0.816, and 0.768, respectively. The audit quality variable has the biggest and smallest outer loading factor values of 0.899 and 0.799.

**4.2. Inner Model Evaluation**

The inner model was evaluated with R-Square and F-Square testing, as well as model fit. The R-Square testing value reflects the model's prediction accuracy.

The PLS algorithm test produced the outputs shown in Figure 1, where the R-Square value is 0.617. It means the model's prediction accuracy is moderate (Hair et al., 2014). R-Square value of 0.617 indicates that the entire exogenous constructs moderately influence endogenous constructs. Additionally, the inner model was evaluated by assessing the F-Square value.

**Table 5. F-Square Testing Results**

	<i>Audit Qual (Y)</i>
<i>Audit Qual (Y)</i>	
<i>Comp (X1)</i>	0.168
<i>Fee (X2)</i>	0.006
<i>QC (X3)</i>	0.388

Source: Smart PLS 3, 2021

Table 5 shows that the F-Square value of the quality control variable is 0.388, exceeding 0.36. This means the X3 variable significantly influences the structural model. The

audit competence variable has an F-Square value of 0.168, indicating that the influence on the structural model is moderate because its criteria are between 0.15 to 0.35. Meanwhile, the audit fee variable has little influence on the structural model, as shown by a value of less than 0.02.

The other inner models were evaluated by model fit testing based on the Q-Square value as follows:

$$Q\text{-Square} = 1 - (1 - R\text{-Square})^2$$

$$Q\text{-Square} = 1 - (1 - 0.617)^2$$

$$Q\text{-Square} = 0.853311$$

The calculation shows that the Q-square value exceeds 0, indicating the predictive value of relevance. A Q-square value close to 1 is recommended because it indicates better prediction accuracy. The construct model has a value of 85.3311%, meaning it has met the predictive relevance.

**4.3 Hypothesis Test**

This study proposed three hypotheses tested at an error rate of 5% on the Smart PLS 3 application by the bootstrapping analysis. The testing involved comparing the P-value contained in the smart PLS 3 output with a 5% error rate. The hypothesis was accepted when the P-value is less than the error rate. A P-value exceeding the error rate indicated that the hypothesis was rejected. Table 6 shows the hypothesis test results.

The results indicate that the first hypothesis is accepted. The P-value of 0.000 means that auditor competence influences audit quality. The second hypothesis test obtained a P-value of 0.501, exceeding the error level, implying that audit fees do not significantly affect audit quality. In contrast, the third hypothesis that quality control affects audit quality was accepted.

**Table 6. Hypothesis Test Result**

	<b>Original Sample</b>	<b>Sample Mean</b>	<b>Standard Deviation</b>	<b>T Statistic</b>	<b>P-Value</b>
<i>Comp (X1) → Audit Qual (Y)</i>	0.321	0.320	0.072	4.466	0.000
<i>Fee (X2) → Audit Qual (Y)</i>	-0.065	-0.039	0.097	0.673	0.501
<i>QC (X3) → Audit Qual (Y)</i>	0.599	0.593	0.107	5.598	0.000

Source: Smart PLS 3, 2021

## 5. Discussion

### 5.1 Auditor Competence (X1) and Audit Quality (Y)

Table 6 shows that competence influences audit quality. The quality is improved when the audit is performed by a competent and independent person to produce relevant evidence in decision-making (Francis, 2011). Audit quality is achieved when the assignment on audit engagements is performed by a competent individual experienced and knowledgeable in audit tasks (Putra, 2018). Human resources for the audit engagement team is also crucial in achieving quality during the financial statement audit process (Albitar et al., 2020). Furthermore, employee competence and commitment are essential in determining their performance (Martini et al., 2020). Audit quality also comprises human resource development through technical and supporting training. During the COVID-19 pandemic, the government limits social communities to suppress the spread of the virus. Subsequently, the pandemic has forced Public Accounting Firms to implement technical training for auditors (Albitar et al., 2020).

The issue of auditor competence during a pandemic arises in discussions about organizing training and the auditors' ability to obtain proper evidence. Several procedures are difficult to perform offline, such as stock-taking, cash name, and physical observation ((IFAC), 2020). These challenges require auditors to understand the client's circumstances to design alternative procedures. The social limitations caused by the COVID-19 pandemic should not discourage auditors to gain competence in hard and soft skills. The auditors could learn during the pandemic by utilizing social media (Rahim & Ali, 2021). The use of technology is a solution for implementing employee training during the pandemic (Zhong et al., 2021). The utilization of applications such as Microsoft Teams and Zoom is an attempt to optimize employees' remote work (Prasad & Vaidya, 2020). Moreover, audit quality is achieved by increasing soft skill aspects, including communication, the understanding of clients, teamwork, and strong good character (Lenz & Hahn, 2015). The results showed that auditors are capable of participating in technical training in maintaining competence. This is seen in the online audit training organized by universities, professional organizations, and the government. The COVID-19 pandemic also requires employees to make decisions and work more independently. These results support previous studies that organizational task complexity makes auditors need adequate soft skills (Nadziakiewicz, 2016). Furthermore, the finding proposes

that Public Accounting Firms should select and develop auditors' capabilities by providing soft and hard skill training.

### 5.2 Audit Fee (X2) and Audit Quality (Y)

The results showed that audit fee does not significantly affect audit quality. Declining global economic conditions place companies in a difficult position (Abdul-Rahman et al., 2017), affecting the audit fee received by auditors (Abdul-Rahman et al., 2017). This finding supports a previous study that compensation does not affect employee performance but affects personal satisfaction (BL, 2021). Previous studies showed that audit fees significantly and negatively affect audit quality (Pham et al., 2017). High audit fees make auditors dependent on their clients. Moreover, other studies found that audit fees do not affect audit quality, and auditors should prioritize their independence when conducting audit engagement (Rochmatilah et al., 2021). Auditee's declining economic conditions caused by the COVID-19 pandemic have put Public Accountant Firms under budget pressure, causing changes in audit quality (Albitar et al., 2020). Therefore, Public Accounting Firms could anticipate the pandemic by implementing a digitalization system (ACCA, 2020).

The findings showed that auditors work professionally and responsibly for the public interest. In Indonesia, the auditors work according to the Professional Standards of Public Accountants (SPAP) which contains features such as a code of ethics and auditing standards. This finding supports previous studies that financial statement audits are conducted by professional auditors for public interests (Himawan et al., 2019). Auditors consider other essential matters, even when the audit fee decreases. During the COVID-19 pandemic, audits must be conducted in compliance with relevant standards and codes of ethics. As a result, this study showed that audit fees do not significantly affect audit quality.

### 5.3 Quality Control (X3) and Audit Quality (Y)

The results showed that audit quality control significantly affects audit quality. Quality control is fundamental in achieving a quality audit by a Public Accounting Firm (KPMG, 2015). In this regard, the engagement quality control system is a tangible form of public accounting firms' commitment to audit standards and codes of ethics (Ramadhani et al., 2017). The firms strive to improve service quality by implementing audit standards and codes of ethics (Ramadhani et al., 2017). Therefore, quality control systems

increase company competitiveness, employee job satisfaction, and work motivation (Pratiwi et al., 2019).

Public Accounting Firms should maintain the work quality of engagement during the COVID-19 pandemic that restricts social activities. The restrictions caused changes in communications and physical observation. These changes require optimal supervision and commitment by utilizing technology to keep the engagement team within monitoring. Teamwork reviews could also be conducted through online meetings. Therefore, Public Accounting Firms' commitment to improving work quality becomes a part of quality control aspects that increase audit quality (Ramadhani et al., 2017).

## 6. Conclusion

This study aimed to determine and analyze the influence of auditor competence, audit fees, and audit quality control on audit quality during the COVID-19 pandemic. The results showed that auditor competence (X1) significantly and positively affects audit quality (Y) during the pandemic. In contrast, audit fee (X2) does not significantly affect audit quality (Y), while quality control (X3) has a positive effect.

This study showed that competence is emphasized on hard skills and is closely tied to the auditor's ability, such as leadership. It means that Public Accounting Firms need to improve the quality of human resources by focusing on the auditors' leadership aspect. Furthermore, the study provides a scientific contribution that the audit fee is not a driving factor in creating quality work in public accounting firms. In this regard, auditors must maintain public interest and trust in financial statement information. A moral responsibility must be given by public accountants as professionalism by implementing standards and codes of ethics. Additionally, practitioners and regulators should maintain the supervision process using technology to improve quality control.

**Limitations and Suggestions:** This study has several limitations, first, questionnaires were only distributed online due to the COVID-19 pandemic. Future studies should distribute questionnaires online and offline to obtain more responses. Second, the analysis unit was limited to external auditors in Public Accounting Firms. Therefore, future studies could use internal auditors in the private and government sectors, as well as external auditors. Third, the factors determining audit quality were limited to the auditor's competence, audit fees, and quality control. This means further studies should investigate other factors that determine audit quality such as technical expertise and the auditors' fraud detection ability.

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# Exploring Catalysts that Support Employee's Transformation for Unlearning and Innovation by Challenging the Irreversibility of Absorptive Capacity: The Case of Commercial Banks in Egypt

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## A b s t r a c t

The purpose of this research is to explore catalysts that support employees' transformation for unlearning and innovations by challenging the irreversibility of absorptive capacity.

The qualitative research uses a semi-structured interview design with a sample of six senior managers of commercial banks operating in Egypt to investigate the underpinning constituents that support the transformation phase for innovations.

Findings indicate that senior managers are pressured by the strategy paradox of competitive counterparts and increasing customer demand and had to implement unlearning by transforming their apprentices and newly appointed employees to the new organizational paradigm, standards and regulations, before new learning and resulting innovation could occur. This challenges the principles of the irreversibility of absorptive capacity. The research, therefore, proposes a framework which contains the catalysts that support employees' transformation for unlearning by challenging the irreversibility of such absorptive capacity and locates the transformation phase as a backbone of the process.

Therefore, through an empirical investigation of the role of the transformation mechanism on commercial banks' absorptive capacity, this research extends and challenges the notion of linearity and irreversibility of absorptive capacity. It extends and develops the context of absorptive capacity held, by empirically establishing that the realized *transformation* phase can precede the *potential* phase of the model and expands the current literature by proposing a novel framework for managerial implications.

**Keywords:** *absorptive capacity, commercial banks, qualitative, linearity, banking industry, unlearning, innovation, transformation*

## 1. Introduction

Organizations are increasingly required to react to hyper-environmental changes that can constitute an existential threat, specifically during the pandemic period of COVID-19 (Orth & Schuldis, 2021). This has compelled academics and practitioners to reflect and delve deeply in the search for moderators that could motivate learning and transform knowledge into a value-creation process based on that learning (Rupčić, 2021). However, the recent business environment has been fashioned by a transformation from the old approach of 'expectedness,' comprising of sporadic activity with linear change, to the innovative approach of rapid, fundamental and disruptive change. Consequently, the continued existence of organizations may be contingent on their capacity for fostering the creativity of their individuals through a continuous process of learning and, sometimes, 'unlearning' (Cegarra Navarro & Dewhurst, 2006). Organizational unlearning has been extensively examined as an essential prerequisite for effective adaptation to environmental changes, supporting organizational learning and improving an organization's performance (Tsang & Zahra, 2008). According to Harvey and Buckley, unlearning is conceptualized as "a systematic removal of information that is outdated or no longer useful to management decision-making" (2002, p. 375).

Unlearning is unlike forgetting (Klammer & Gueldenberg, 2019). Forgetting occurs over time and is inadvertent while unlearning is intentional and built on giving to yield specific results by transforming systems, processes and behavioural routines. However, unlearning is mostly very challenging since it entails individuals assessing and changing intellectual models, developing a new perspective of their expected reality and planning innovative designs of behaviour that might be appropriate for new situations (Rupčić, N., 2021). Nevertheless, organizational unlearning has not yet received sufficient consideration in the literature or in scholarly research, making theory-building difficult (Tsang & Zahra, 2008; Klammer & Gueldenberg, 2019). Instead, prominence has been afforded to concepts of absorptive capacity.

An organization's absorptive capacity is the degree of prominence it allows for ways of transforming knowledge into new products, processes or services to aid innovation (Zahra & George, 2002). Thus, absorptive capacity is an important dynamic determinant for developing a company's

innovativeness (Cepeda-Carrión et al., 2010). Zahra and George (2002) labelled two types or stages as either *potential absorptive capacity* or *realized absorptive capacity* and proposed four features of absorptive capacity, each performing dissimilar but complementary functions in clarifying how absorptive capacity can affect innovation performance. Potential absorptive capacity (PACAP) comprises acquisition and assimilation, while realized absorptive capacity (RACAP) includes transformation and exploitation. Thus, potential absorptive capacity constitutes the backbone for realized absorptive capacity, by maintaining a comprehensive variety of potential decisions (March, 1972).

In the same vein, the latter view has recently emphasized the significance of the potential absorptive capacity for two causes. First, it is crucial in the process by which organizations acquire new knowledge, and second, owing to its ability to assimilate information after analyzing, processing, interpreting, and understanding the knowledge (Hurtado-Palomino et al., 2022).

However, adopting the linearity of the absorptive capacity model (Zahra & George, 2002), may hinder the unlearning process, established earlier, that starts by transforming the existing knowledge and routines and replacing them with new, innovative, and contemporary knowledge before the acquisition step begins in the PACAP. Thus, transformation as a component of RACAP can be perceived as a preparatory step in the process of absorptive capacity while PACAP acquisition and assimilation can be seen as a second phase for new knowledge fishing, pooling, and application to achieve organizational innovation through the unlearning process.

Simply because it will be more difficult for organizations to learn without first unlearning (Hedberg, 1981), the role of unlearning in the current research is based on the premise that it occurs before the acquisition of knowledge phase in the PACAP because "learning cannot occur until after there has been unlearning" (Starbuck, 1996), since "unlearning must precede the learning of new behaviours" (Hedberg, 1981). Therefore, our paper explores the role of irreversibility in the transformation phase, in a non-linear way, in the process of the absorptive capacity model proposed by Zahra and George (2002) and supported by senior managers of the commercial banks for achieving innovations through the unlearning process.

## 2. Literature Review

### 2.1 The Unlearning Process

Well-established and embedded knowledge can constitute a hindrance to the practice of adapting to new situations, and the acquisition of new knowledge (Wang et al., 2017). For change to occur, it is often necessary to discard the principles and beliefs that may hinder change. By failing to eradicate outdated knowledge and routines, firms will not attain new capabilities or evolve effectively; this is the essence of unlearning (Kmieciak, 2020). Although there is increasing interest in the subject, scholars in unlearning still identify a serious lack of conceptual and empirical research, resulting in a demand for theoretical and practical research to better understand organizational unlearning (Klammer & Gueldenberg, 2019).

Unlearning can be seen as a prior phase or precondition for learning in organizations (Wang et al., 2013). Thus, unlearning has been defined as the "discarding of old routines to make room for new ones, if any" (Tsang & Zahra, 2008) or the "intentional displacement of well-established patterns of action and understanding due to an exogenous disruption" (Fiol & O'Connor, 2017). Unlearning can be seen as a situation where individuals can modify their established customs and routines, forget old understandings, and replace these with innovative customs and knowledge (Cepeda-Carrión et al., 2010). As such, creativity might be constrained by old knowledge and ingrained practices that become a burden (Moorman & Miner, 1997). Indeed, in a time of crisis, old beliefs, routines, and behaviours ought to be first cast off by organizations via unlearning (Starbuck, 2017). This research is based on the premise that transformation, as a second component of RACAP (realized absorptive capacity), has to do with replacing old routines and beliefs, and has to be investigated as a reversible process of deliberately rejecting routines that are engrained in existing mental models (Klammer & Gueldenberg, 2019) that occur before the PACAP which comprises acquisition and assimilation in the unlearning process. This contention is investigated through the lens of the absorptive capacity model proposed by Zahra and George (2002) as a theoretical frame for this research.

### 2.2 The Benefits of Unlearning for Organizations

The unlearning processes can be essential for organizational survival and success and its performance (de Holan & Phillips, 2011). Unlearning aids innovation and rejuvenation of organizations and is accompanied by a

number of strategic advantages, renovating outdated structures, reforming organizational practices, or readjusting employees' resources (Azmi, 2008). In addition, unlearning current knowledge and behaviours has been considered an enabler for absorbing new, knowledge or behaviours, and innovation (Becker, 2008).

A number of scholars highlight the significant role of organizational unlearning as an enabler of organizational change (Becker, 2010; Hislop et al., 2014). Unlearning facilitates the creation, application, and exploitation of innovative technologies (Cegarra Navarro & Cepeda-Carrión, 2013), the generation and application of new knowledge arrangements (Cepeda-Carrión et al., 2010) and enables an alignment towards absorptive capacity via internally and externally assimilated knowledge (Cepeda-Carrión et al., 2012; Cegarra-Navarro et al., 2014). It also permits for a retrieval of knowledge from unintentional forgetting (Wensley & Cegarra-Navarro, 2015), and increases the rate of organizational innovation (Leal Rodriguez et al., 2015), ultimately providing better value for their customers (Sinkula, 2002). Thus, by casting off obsolete routines, which constrain the construction of innovative routines, individuals will be able to devise and present new routines (Zhao et al., 2013). Unlearning can allow for innovative knowledge to be embedded in organizations' memories and, as a result, create prospects for innovations and creativity (Zahra et al., 2011). Since it paves the way for new knowledge acquisition and creation (Wang et al., 2013), it appears that unlearning is a step ahead, before the acquisition phase, in the absorptive capacity model (Zahra & George, 2002), a possibility which is unexplored in the existing literature. Thus, to the authors' current knowledge, no prior study has tried to investigate the role of unlearning as a transformational reversible process for achieving innovations in organizations via Zahra and George's (2002) absorptive capacity model.

### 2.3 Triggers of Unlearning

It has been argued unlearning is a new concept (Orth & Schuldis, 2021). It has been argued by Schein (1993) that most forms of unlearning and transformation start with fiascoes, which have created actions that result in unfavourable prospects for employees or organizations, such as dropping revenue, increasing costs, fiscal shortages, public disapproval, or changes of management. As a result, practices emerge in which deep-rooted habits of thinking and acting are rejected and innovative behaviours can be adopted. Moreover, once organizations are confronted with

problematic circumstances and enter a state of turmoil, which escalates tension, it often propels new learning or unlearning (Nonaka & Takeuchi, 1995). However, organizational unlearning and processes do not follow a linear sequential order (Grisold et al., 2020). Therefore, the transformation phase of the absorptive capacity model proposed by Zahra and George (2002) can be seen as a reversible process that might be situated before the PACAP stage that comprises acquisition and assimilation in the unlearning process for achieving innovations in organizations.

#### 2.4 Conceptual Framework

Referring back to the influential paper by Cohen and Levinthal (1990) the term absorptive capacity (ACAP) was used to refer to an organization's capacity to value, assimilate, and apply new knowledge. Later research by Zahra and George (2002) proposed a significant reconceptualization of absorptive capacity, shown in Figure 1, in which they differentiated among four subsections that constitute an organization's ACAP. The first of these is acquisition capacity, where organizations identify and acquire valuable external knowledge and take on new information. The second is assimilation capacity, referring to an organization's habits, systems, practices, and routines that allow effective processing, valuation, and interpretation of the knowledge obtained from external sources (Kim, 1997). Transformation capacity refers to the organization's ability to develop and improve the routines that enable relating the existing knowledge in the organization to the newly acquired and integrated knowledge. This phase allows organizations to change how they see themselves and understand the competitive environment (Zahra & George, 2002). This phase is deemed to be highly relevant to the unlearning process and is being investigated in the current

research because it is accomplished by adding or deleting knowledge or simply interpreting knowledge in a different way (Albort-Morant et al., 2017). It appears, therefore, that the transformation phase is the first step prior to knowledge acquisition in the absorptive capacity framework proposed by Zahra and George (2002). As pointed out above, it has been argued that "unlearning must precede the learning of new behaviours" (Hedberg, 1981), and the term innovation is rooted in the Latin term "innovare", which involves a certain degree of transformation of something, through the introduction of some novelty (Albort-Morant et al., 2017). In addition, Zahra and George (2002) suggest that ACAP has four different but complementary phases.

Earlier literature on the determining factor of innovation performance has emphasized only the effect of one form of capability, either innovation capability or absorptive capacity (Khan et al., 2022) excluding the current research that identified the gap in the literature regarding the investigation of the interactive effect of unlearning and absorptive capacity on innovation performance.

However, this research aims to challenge the linearity between the two subgroups of absorptive capacity by focusing on the transformation phase, because in this phase employees must discard, transform, and replace traditional routines, beliefs, and behaviours so as to support the remaining phases needed to achieve innovations in their organizations. Increasingly, it is found that the processes of unlearning and organizational learning do not follow a linear sequential sequence in which one thing after the other takes place (Yildiz & Fey, 2010). Therefore, developing absorptive capacity might aid organizational unlearning by permitting firms to acquire, assimilate, and transform external knowledge accordingly to their environment (Martelo-Landroguez et al., 2018).

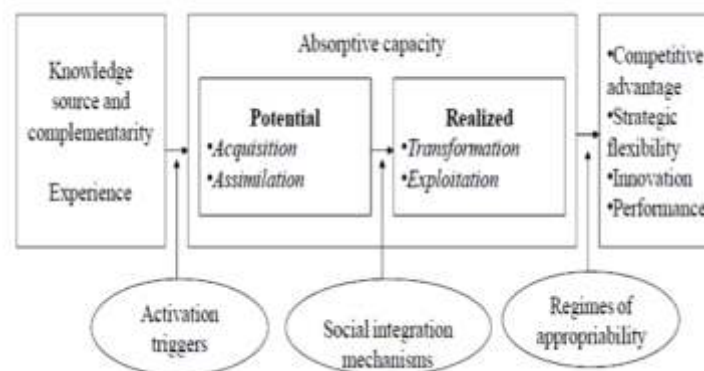


Figure 1. Absorptive Capacity Model (Zahra & George, 2002)



Exploitation capacity, according to Zahra and George (2002), refers to “an organizational capability that is based on the routines that allow firms to refine, extend, and leverage existing competencies or to create new ones by incorporating acquired and transformed knowledge into its operations” (p. 190). They claim that if all four phases do not culminate in knowledge exploitation to a commercial end, they are futile. However, the aim of the current research is to challenge the linearity of the model by exploring which moderating effects underpin the transformation phase through the organizational unlearning process of the ACAP model from Zahra and George (2002) to achieve innovation in their organization.

### **2.5 Research Questions**

Based on a study of 43 papers on organizational unlearning, Tsang and Zahra (2008) came up with three constituents that can be framed as questions to show whether organizational unlearning has really taken place. The first is whether knowledge or beliefs were cast off; the second is whether there is a significant judgement on the rejected routines and practices, and the third is whether knowledge or beliefs have been substituted by new knowledge or beliefs. These questions will be incorporated into the main research question to make sure that unlearning has been successful.

The aim of the research is to challenge the linearity of the model by exploring which catalysts underpin the transformation phase through organizational unlearning via the lens of the ACAP model from Zahra and George (2002) for achieving innovation in the participating organizations.

To answer the overarching research question above, the following questions have to be addressed.

1. What were the main triggers of unlearning in commercial banks operating in Egypt?
2. Which benefits did the senior managers reap from implementing unlearning that enabled them to achieve innovations in their organization?
3. What are the roles of organizational top management in supporting and paving the organizational ground towards unlearning to ensure that old routines, practices, and beliefs have been discarded and replaced with new mindsets and practices?
4. Which skills/mechanisms are being utilized by senior managers to cope with the challenges of unlearning to achieve innovation?

## **3. Method**

### **3.1 Research Method and Design**

A qualitative approach was applied to explore how senior managers of commercial banks operating in Egypt challenge the linearity of the ACAP model devised by Zahra and George (2002) to achieve innovation in their organizations. This was achieved by exploring which moderating effects underpin the transformation phase through organizational unlearning.

### **3.2 Participants**

A purposeful sample is very usual in qualitative research. Nystrom and Starbuck (1984) recommended that in investigating learning and unlearning subjects, researchers should target members of senior/corporate management since they perform an essentially significant part in constructing the dominant logic that affects the manner in which those organizations perform. Therefore, the current research aimed to recruit six senior managers of commercial banks operating in Egypt.

### **3.3 Profiles of six Senior Managers (SMs) of Commercial Banks operating in Egypt**

Six participants agreed to take part in the research, five males and one female. All the participants were Egyptian nationals based in Cairo and were General Managers working in banking, with between 17 and 30 years of experience. The length of the interviews ranged from 39 to 67 minutes. Interviews were conducted in Arabic language and have been translated into English by the researcher.

### **3.4 Sample Size**

It has been argued by qualitative research gurus that there is not one simple response to the question of the ideal sample size for conducting semi-structured interviews, since it is dependent on several factors linked to methodological, epistemological, and practical issues (Vasileiou et al., 2018). However, Braun and Clarke (2013) recommend 6–10 participants for semi-structured interviews in medium-sized projects, while Kuzel (1992) suggests six to eight interviews when researching a homogenous sample. Therefore, the current research targeted six senior managers from commercial banks operating in Egypt, where issues of innovation and change are highly relevant, since this industry is intensively based on customer and technology aspects, and its role is significant for the economic development and sustainability of the individual industry as well as the country (Alabdooli et al., 2021).

### 3.5 Interview Transcription, Analysis, and Code Processing

To support the analysis, the researcher briefed separately remarks and thoughts that arise during the period of or after every interview. The researcher personally transliterated the six interviews to make sure that all nuances of the dialogues were obtained. As recommended by King (2004), the researcher adopted an analytical approach for analyzing the interview transcripts which was template analysis as a form of thematic analysis where the researcher discount a template that represents themes identified in the raw data in the template (Table 1 in Appendix 1).

The researcher utilized Malpass's technique of first, second and third-order constructs to produce the concepts (Malpass et al., 2009). First-order constructs characterize the opinions of research participants, while second order-constructs are the researchers' interpretation of research participants' interpretations (Atkins et al., 2008). Second-order constructs were identified, cross-compared and assist in developing third-order constructs, demonstrating the interpretations of the researchers' interpretation of research participants' opinions (Malpass et al., 2009).

To ensure the validity and reliability of the results we ensured we had a strong, well-defined and tested theoretical foundation for our research design. This was supported by research methods being carefully constructed and consistently applied. The use of the Malpass technique provided for a degree of coherence, consistency and reliability in the identification and comparison of concepts and constructs. The relative context and chronological timeframes reinforced that the results and associated discussion would be reliable in their contextual influence but also valid in terms of the contributions being made to the original research questions and the contributions to the application in the field at the time.

### 4. Findings and Discussion

The participants agreed that the turmoil and challenges of the Covid pandemic had been major catalysts of unlearning. However, they also pointed to innovations, an increase in revenues and customer satisfaction as the benefits of unlearning. In addition, they emphasized the role of organizational top management in supporting unlearning practices. They identified flexibility, and motivation, together with tolerance to support the consolidation of new understandings as they emerge. These aspects of the unlearning process and the interviewees' perspectives are discussed point by point in the subsections below.

#### *4.1 Financial turmoil, shortage of human resources, and political crises were the triggers of unlearning for innovation during the pandemic of COVID-19*

It is generally agreed that the significance of banks for trade and industry and social fortune is non-negotiable (Liang & Reichert, 2020). Banks constitute an important section of the economy and the organizational plans they embraced will affect the retrieval of the economy during and after the Covid-19 pandemic. Banks enable trade, nationally and internationally, and disruption in this structure would influence the entire society. The COVID-19 epidemic has brought about a range of changes in the banking structure, stimulating the sector to abandon old ways of functioning. Banks have had to seek unprecedented and innovative processes and procedures to cope with the financial and political turmoil and shortage of human resources which are the consequences of the pandemic while adopting innovations and financial technologies to satisfy their client's needs. In this period of crisis, banks have played an important role in helping the community to cope with the pandemic, through support for the state, small and large businesses, and individuals. To contribute to the resilience of companies, individuals, and other organizations, banks need to adapt accordingly to the challenges brought by the COVID-19 pandemic.

It has been argued that financial technologies have a vital role in the banking industry of the Middle East; yet practical evidence about the relationship is absent. Consequently, it will be imperative for those banks to seek to provide value to investors by unlearning and rejuvenating services and processes (Alabdooli et al., 2021).

The six general managers of the commercial banks operating in Egypt interviewed in this study emphasized the role of the crisis created by the Covid-19 pandemic, financial failure, and other recent crises as the triggers leading to the adoption of unlearning in their organization to achieve innovation and customer satisfaction.

*"I tried to halt the guidelines and innovate to please our clients in delicate ways: for instance, I do not track walk-the-walk of the central bank by asking for high charges from our customers, tried to think differently by implementing financial technologies like digital invoicing, leasing and insurance," (S)*

*"In the pandemic Covid-19 the shortage of human resources constitutes challenges on how I can satisfy the demands of our clients in a timely manner in an innovative method. We shift from the traditional face-to-face customers to*

*implementing the “financial technologies” and allocated for every single client an employee for his/ her guidance through their transaction either cash withdrawing, consultancy, or other services which are unprecedented in our bank” (S)*

*“First Abu Dhabi Bank has acquired our bank as a result of the challenges that Lebanon (the origin of our bank) has been facing for 6 months in terms of the financial fiasco, political turmoil, and market instability. This acquisition will aid in supporting customers in Egypt by providing a wide range of unprecedented banking services and technology that meet the needs of individuals and companies and as a link for trade and investment between the Middle East, North Africa and the world” (A)*

In the above excerpts, the interviewees emphasized that the period of the COVID-19 pandemic, together with environmental changes, were among the main triggers for unlearning and casting off their accustomed practices in their banks by thinking out of the box, so as to survive. They achieved this by breaking any fixed regulations which appeared unsuccessful, maximizing their learning capacities from others and innovating. These findings corroborate current academic arguments that organizations are required to respond to environmental changes such as the COVID-19 outbreak that can constitute a hazard to their survival (Orth & Schuldis, 2021).

This relates to concerns regarding organizations' ability to learn from others and become accustomed to future challenges and foresee and absorb external disturbances, while simultaneously tracking their essential goals (Witmer, 2019). The interviewees explained how customer pressures, different demands, and shortage of human resources due to the COVID-19 safety measures stimulated them to have recourse to financial technologies so as to accelerate their ability to meet customer demands and innovate. Thus, increasing customer pressure and environmental regulations can be deemed as external causes for unlearning (Cegarra Navarro et al., 2010).

Respondent A also emphasized the effect of the acquisition of their originally Lebanese-based bank by First Abu Dhabi Bank, as a result of the challenges that Lebanon had been facing in terms of a financial fiasco, political turmoil, and market instability. This acquisition can be deemed as a trigger of unlearning the bank's old routine and beliefs, and he explained how it would result in innovative banking services and technology that meet the needs of individuals and companies and foster international trade and cross-

border investment. This also confirms the findings by Schein (1993) that most forms of unlearning and transformation start with fiascos. In the same vein, Nguyen (2017b) posits that failures and crises are important triggers for unlearning. Thus, through unlearning, organizations can successfully tackle and learn from a crisis, by fostering innovative ways of thinking, and casting off old mental prototypes and practices (Duchek, 2019).

As a result of this approach, novel services and banking products based on the implementation of technology will totally transform the way the banking industry works and operates (Alabdooli et al., 2021). However, this transformation phase through unlearning must precede the acquisition phase of the knowledge development process, to support employees' absorptive capacity for innovations, thus challenging the notion of irreversibility in the absorptive capacity model proposed by Zahra and George (2002). Based on the respondents' reposted experiences and actions, it can be said, that a variety of external pressures, including the COVID-19 pandemic, changing environment, customer pressures and a financial fiasco were the triggers of unlearning in the case of these commercial banks operating in Egypt.

#### ***4.2 Innovations, increase in revenues and customer satisfaction are the benefits of unlearning***

It has been argued that the inability to make use of external knowledge is a detrimental constituent of innovative competencies (Cohen & Levinthal, 1990). An organization's absorptive capacity is the supporting value for transforming knowledge into innovative processes products and services for unleashing innovation (Newey & Zahra, 2009). As such, transformation capacity in the absorptive capacity serves as a phase of the unlearning process in organizations.

*“As a result of thinking differently from traditional regulations imposed by the central bank of Egypt, by implementing financial technologies like digital invoicing, leasing and insurance etc., I achieved an increase in our clients in spite of the current epidemic Coronavirus; our clients are crowding to register through our different applications. Thus our clients do not need to hold our employees for a longer time; we reduce the crowds and queues in our banks, and we save facilities and extra efforts.” (W)*

*“As a commercial bank, we are facing fierce competition from the governmental banks that give 15% annual interest rate; therefore I'm trying to deviate from the traditional*

*rules and guidelines by means of innovations and implementing financial technologies in our banks, so as to come out with creative ideas to allure clients from other banks to our own” (T)*

*“We are not traditional in our bank, we like to innovate, adopt and implement creative ideas and solutions to maintain the loyalty of our clients. Our headquarters gave us the green light to do so – we have to unlearn continuously as such, we have innovated by creating products in our bank, for instance, retailing loans, personal loans with stable interest rates, car loans, loans for professionals, and payroll to some organizations. I have also created a daily interest on savings which is 5.75%. This allows our clients to get visas so they can make different transactions and reduced the requirements for loans than the rest of commercial banks operating in Egypt, thus we innovated to increase our customers, revenues and dominate the market.” (G)*

In the above quotes, the senior managers of the commercial banks emphasize that by thinking out of the box and through unlearning, so that they need not follow the traditional ways used by their banks, they have been able to apply financial technologies to facilitate transactions and bank operations with their clients, thus saving effort, resources and time and achieving innovations and reaping the benefits of extra revenues and luring additional customers as well as retaining existing ones by maintaining customer loyalty and satisfaction.

This view corroborates the argument of Alabdooli et al. (2021) that the influence of financial technologies on the banking and financial industry is extraordinary in terms of the applications of technological innovations, modern technological structural improvement, and this approach functions in changing the clients' prospects (p.123). These unlearning organizations are always looking for means to develop their approaches and philosophies so as to increase their share of clients (Cepeda Carrion et al., 2015).

In the same vein, Momaya (2019) states that financial technologies develop the traditional business model by decreasing bank operating expenses, enhancing service effectiveness, supporting risk control competencies, and generating improved customer-oriented business models for clients, thus refining the bank's performance.

Unlearning is considered an important aid in realizing customer satisfaction, service delivery, effectiveness, efficiency, and lower transaction charges (Alabdooli et al., 2021). This is because organizational readiness for change, through unlearning or under unforeseen situations, affects

the absorptive capacity in an organization (Orth & Schuldis, 2021). Organizational change is the culminating phase of a transformation procedure (Akgün et al., 2007b); thus, the transformation phase of the absorptive capacity model is at the forefront of the unlearning process and can be deemed as a prerequisite phase of the unlearning process for innovations, viewed through the lens of the absorptive capacity model of Zahra and George (2002).

#### **4.3 The role of organizational top management in supporting unlearning practices**

The principle of the unlearning context is seeking to change the focus of organizational beliefs, customs and behaviours by altering the cognitive structures, central assumptions, dominant logics and mental models that lead to behaviour aimed at achieving competitive advantage (Cepeda Carrion et al., 2012). Consequently, the effect of that unlearning context is linked to its capacity to pave the ground for innovative practices and to enable an alignment to absorptive capacity via acquiring knowledge from outside and inside the organization (Cegarra-Navarro et al., 2014). Therefore, an organization working in a dynamic environment should possess the capability to renovate its knowledge repository so as to remain creative (Jantunen, 2005). Accordingly, senior /top managers should construct an internal context where the freshly proliferated knowledge gets assessed and combined with current knowledge so as to be operationalized in innovative services and products. Hence, the unlearning context is the way that organizations can improve and create room for innovative knowledge, not just a mechanism for discarding obsolete knowledge in organizations (Nystrom & Starbuck, 1984).

It has been recommended that superior methods and mechanisms are needed to make sure that unlearning should be implemented, and obsolete knowledge and beliefs replaced by innovative ideas and attitudes through effective managerial practices. In the remaining sub-sections, this process is explored by investigating the unlearning context through the model of Cegarra-Navarro and Sánchez-Polo (2008), which comprises three constituents of the organizational unlearning context, namely: the examination of lens fitting, consolidation of emergent understandings, and a framework for changing individual habits (Cegarra-Navarro & Sánchez-Polo, 2008, in Delshab et al., 2021). These constituents are explored in sections 4.4, reporting and discussing interviewees' views on the role of flexibility and training in the examination of lens fitting, section 4.5, discussing the ways in which motivation and managerial skills were used by these managers to support the framework



for changing individual habits, and section 4.6, exploring how the managers used tolerant approaches to support emergent understandings.

#### **4.4 Flexibility and training for multiculturalism support the examination of lens fitting**

The examination of lens fitting denotes a disturbance of the members' habitual, comfortable state of being, and it is through such a framework that individuals in an organization will have access to new perceptions (Delshab et al., 2021).

*“The way we behave and deal with ourselves and the clients, in terms of communicating, listening trying to build relationships based on trust, flexibility, and commitments as well as quick services to our clients make them disregard the two or three percent that differ the governmental banks from the international banks like ours so as to keep their loyalties. I listen to our employees' and clients' feedback and address feedback as appropriate in terms of new services, attitudes, and products, I have to know my employee's behaviour in detail and try to update the current services with new and updated ones. Thus, being ever-updated and innovative is part of our culture”.* (S)

*“I always keep an eye on other services provided by our competitors' banks and try to outperform them by renewing our services, and products by attending with my employees training courses, seminars, and conferences to renew our skills and knowledge, and through experts sending from our headquarters in Qatar in finance and risk management so as to apply this acquired knowledge and know-how into innovative services and products to our clients continuously”.* (S)

*“Our apprentices and newly recruited employees have to attend cross-culture training courses, local and international ethics courses, so as to acquire our know-how and be transformed prior to joining our staff since we were acquired by First Abu Dhabi Bank that has a ubiquitous international presence with multicultural employees and global mindsets; therefore our local employees have to have their values and beliefs transformed accordingly, so as to meet that global standards through training before getting fully employed”.* (A)

The above quotations illustrate how the interviewees investigated the examination of lens fitting, so as to ensure that an unlearning organization had been implemented and old routines and practices had been replaced with contemporary ones. These senior managers posited that their managerial skills, which they saw in terms of listening, flexibility, and an inclusive knowledge of the attitudes of

their employees, supported their employees in implementing the unlearning process by transforming their bank products and services and addressing feedback acquired from either employees or clients. This confirms the views of other scholars. For instance, it has been argued that the success of organizational unlearning is contingent on the key executives' insights toward the unlearning context, since they have a comprehensive understanding of each individual action and play a critical role, once they support unlearning as a way to adopt strategic flexibility in their organizations (Akgun et al., 2007; Wang et al., 2019; Delshab et al., 2021). Moreover, executives need to adopt flexibility to allow the unlearning process to take place (Thomke & Reinertsen, 1998).

These senior managers also emphasized the role of external experts sent from their headquarters to train them and their employees, even at the level of apprentices and newly recruited employees, to adopt global standards and multicultural ethics to deal with their new global partners. This also corroborates the suggestion of Akgün et al. (2006) that an easy and straightforward method to break traditional contexts and promote lateral thinking is to summon external experts to contend with current strategies and policies for implementing unlearning in organizations. These findings confirm the contention that the transformation phase of the absorptive capacity model must precede the acquisition of knowledge and its assimilation, and unlearning since organizations will make it more difficult for employees to learn without first unlearning (Hedberg, 1981; Akgün et al., 2007). This confirms the irreversibility of the transformation phase in a non-linear process, changing the linear assumption of the absorptive capacity model proposed by (Zahra & George, 2002). As such, the transformation phase in RACAP could be considered as a backbone for the PACAP phase in the model for achieving innovations.

#### **4.5 Motivation and managerial skills support the framework for changing individual habits**

This subsection refers to a “framework for changing the individual habits”, which refers to “the challenge of inhibiting wrong habits when an individual has not only understood the new idea but is quite motivated to make the change” (Cegarra & Sánchez, 2008, p.3).

*“I teach my employees to work under pressure and to be patient, smiley, and friendly with our customers, I send them to our headquarters in Lebanon for vacations, I gave them pre-paid vouchers, extra points to get an additional month of payment etc. This is how to encourage them to perform and innovate. They have to leave their problems and personal attitudes outside the bank.”* (T)



*“Once wrong behaviour or tension arises from either tellers or creditors, without informing them, reallocate them in the customer services so as promote them and enhance their culture, self-control, and interact with the real life, of our different applications and services.” (G)*

In the above quotes, the senior managers emphasize that they challenge the unsatisfactory routines and habits of their employees by motivating them, for example, by giving them incentives, such as vacations or bonuses to help them to change their habits and be free to innovate by leaving their problems outside the bank. This corroborates previous scholars' conclusion that reflection should be devoted to considering in what way employees and groups need to be encouraged to reflect outside their existing boundaries and how the structures of knowledge could be made more apparent (Cegarra & Sánchez, 2008, p. 13).

In addition, senior managers stated that once a behavioural problem arises, rather than disclosing the reason, they try to transform these behaviours by relocating their employees and reshuffling their positions in the banks so as to enhance their behavioural culture, and foster self-control competencies. In this way, the employees experience the benefits of these positions themselves through the transformation process and can start new positions with fresh ideas for innovations. This concurs with the argument that in order to support someone in changing a fruitless routine, the preeminent way is to begin, not by informing them how bad the practice is, or that they should halt it, but rather through working to help them understand the benefits they can obtain from the routine (Perkins, 2001). Thus, such organizations try to discourage bad behaviours and unsuitable values, practices, and routines prior to introducing concepts or knowledge-based changes into an organization's practices (Delshab et al., 2021), since absorptive capacity denotes the presence of organizational abilities to cope with and utilize external knowledge (Martelo-Landroguez et al., 2018). These findings illustrate how motivation and managerial skills support employees through the transformation phase of employees' absorptive capacity and pave the organizational context for innovations.

#### ***4.6 Tolerance as a learning opportunity supports the consolidation of emergent understandings***

This section focuses on the role of tolerance and the consolidation of emergent understandings in bringing about “changes in the organization's structure or processes that must be made in order for members to consistently enact new ideas or methods” (Cegarra & Sánchez, 2008).

*“In addition, privacy and punctuality are the foundation stone of our work in the banking industry. We cannot carry on finishing the rest of our tasks at home; therefore, I have to break the bank daily routines in terms of one task per employee and delegate more than ten tasks to each employee so as to be finished within our normal office hours. Of course, they are rewarded once they achieve it by extra points, bonuses and extra time compensations” (G)*

*“At the end of the day, we review, if any drop or problem arises, all the employees in the default area and I review together and will not be allowed to leave the bank as they were used to until they correct and work on this drop. It might last until 6 or 7 o'clock p.m. We do not punish them, as we are all in the learning process, but ensure that this fault will not reoccur. I do not believe in a workplace based on punitive and imperative actions. I strongly believe in harmonization, encouragement, allow for the first mistake provided learning.” (G)*

In the above quotes, the interviewees emphasize their endeavours to reinforce the unlearning context through the consolidation of emergent understandings by encouraging their employees to abandon old routines, as they used to work at just one task in their bank and adopting new routines and practices, by staying at their desks to accomplish their assigned tasks. These practices were supported by motivations, bonuses, and extra reimbursements, so as to facilitate unlearning and innovation. This agrees with other academic standpoints. For instance, Becker (2010) posited that to increase the recognition of innovative ideas through the consolidation of emergent understandings, organizations can give compliments and provide inspiration for executives to discard obsolete knowledge, different procedures, and routines. Motivations in terms of rewards, and awards can instigate members of an organization to change and enable the fruitful application of the unlearning context (Delshab et al., 2021)

In addition, the senior managers emphasized that through the consolidation of emergent understandings and the unlearning process, their intolerance of faults and errors was nullified and that rather than attracting punishment, such mistakes were considered as a way to relearn from errors in order that they would not recur. This confirms the views of Cegarra and Sánchez (2008) that audits of problems and errors might be a way of restructuring and transforming employees' mindsets and ought not to be perceived as means of ascribing culpability and blame or punishment. Instead, the situation should be understood as an opportunity to learn about innovative opportunities. They suggest that

organizations should condone 'benevolent failure' (ibid. p. 5-14).

Consequently, tolerance of faults and errors as learning opportunities supports the consolidation of emergent understandings for employees' transformation in commercial banks operating in Egypt. Moreover, the consolidation of emergent understandings aids executives to incessantly expect opportunities and respond to them before their rivals (Cegarra & Sánchez, 2008).

Overall, the results in the previous subsections confirm that the organization's unlearning context is an essential factor for both potential capacity and realized absorptive capacity (Cegarra-Navarro & Sánchez-Polo, 2008). Therefore, paving the way for and generating an unlearning context would support the required conditions to unlearn, making room for innovative learning actions and improving a manager's capability and readiness to become involved in these activities (Delshab et al., 2021).

## 5. Conclusion

This empirical research represents a novel attempt to investigate and challenge the linearity of the Absorptive Capacity model (Zahra & George, 2002) by exploring, through the lens of this model, the catalysts that underpin the transformation phase through the organizational unlearning process to aid the achievement of innovation in commercial banks operating in Egypt.

The transformation phase of the Absorptive Capacity model is the main phase that supports the whole model, which emphasizes the reversibility by implying that the realized capacity phase can precede the potential capacity phase of the model and thus refuting the notion of irreversibility that implies the model is linear and sequential.

In the period of COVID-19, which has been characterized by chaos, turbulence and financial turmoil, senior managers of the commercial banks operating in Egypt were under pressure: on one hand, there was a shortage of human resources, financial turmoil, and political crises, and on the other hand, customers experiencing different and urgent needs, along with the competitive environment in which they were functioning. Therefore, they had recourse to the unlearning process by breaking the usual rules, casting off their accustomed practices, and implementing financial technology that completely transformed the way that the banking industry operates in terms of accelerating different transactions, ease of inter/intra communications, and innovative ways of responding to their customers. Thus, according to the lens of the Absorptive Capacity model, the

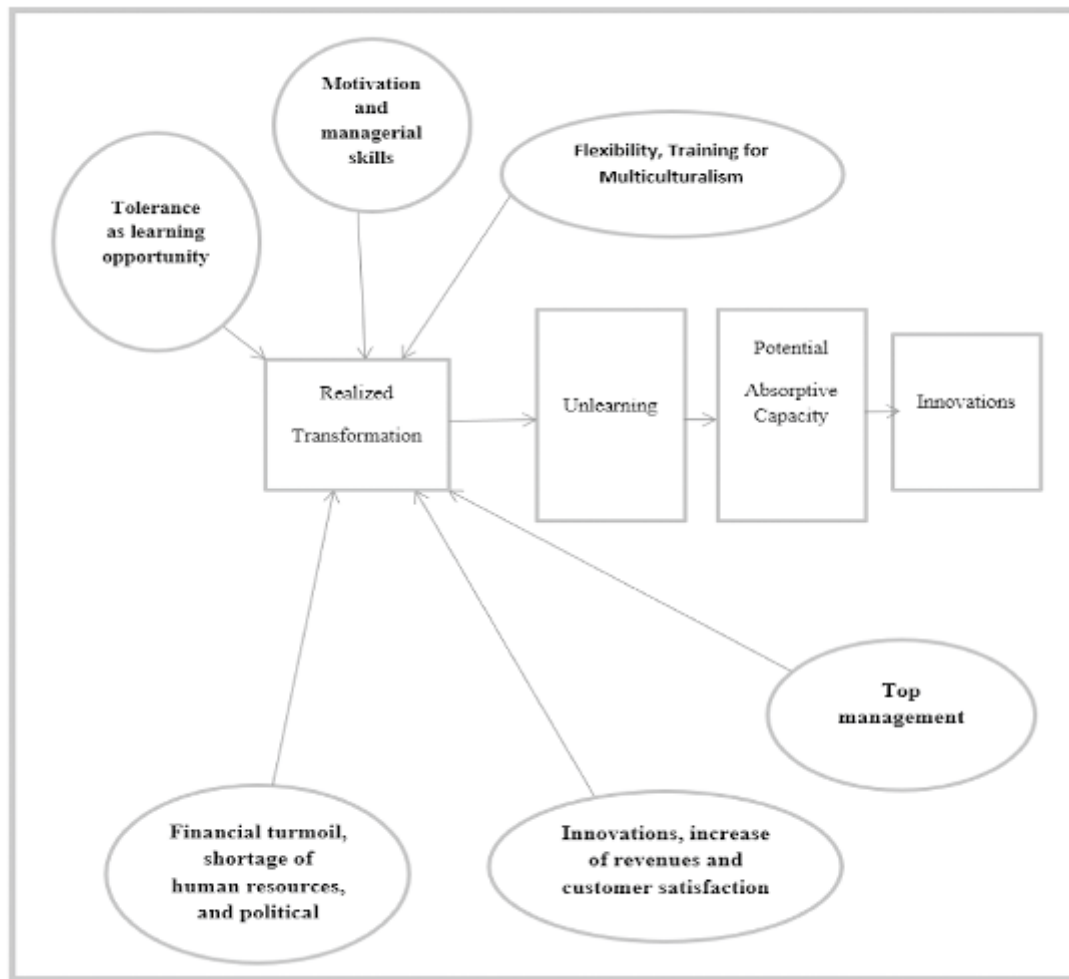
transformation phase was triggered by financial turmoil, a shortage of human resources, and political crises for innovation during the pandemic of COVID-19.

In addition, senior managers initiated the change in their banks by applying innovative means that enabled them to lure more customers, while maintaining customer loyalty and satisfaction among their existing customers and in the meantime increasing the revenues of their banks, This inclusive change was deemed as the culmination of transformation, which also emphasizes that transformation is at the forefront of the phases of Absorptive Capacity and is supported by innovations, an increase of revenues and customer satisfaction.

Moreover, effective managerial practices utilize mechanisms to make sure that unlearning has been implemented and obsolete knowledge and beliefs have been replaced by innovative ideas and attitudes. By investigating an unlearning context through the model of Cegarra-Navarro and Sánchez-Polo (2008) we also found that the three constituents of that model each yield different beneficial outcomes that pave the organizational context for the unlearning process to prevail. The finding of the current research is that flexibility and training for multiculturalism support the examination of lens fitting by transforming employees in accord with their organizational ethics and policy to achieve innovations. In fact, employees' transformation must be in place before they are recruited to a particular post, which contradicts the inherent linearity of the Absorptive Capacity model (Zahra & George, 2002) and emphasizes the reversibility of the latter model, which is a unique contribution of the current research.

Furthermore, it was found that the senior managers tried to address bad behaviours and unsuitable values, practices, and routines prior to introducing new concepts or knowledge-based changes into an organization's practices. It was also found that motivation and managerial skills support a framework for changing individual habits. The findings of this research are illustrated in the proposed framework illustrated in Figure 2, showing that motivation and managerial skills support a framework for changing individual habits through the transformation phase of employees' absorptive capacity and pave the organizational context for unlearning and innovations. Thus, it is emphasized that transformation must be reinforced and supported by senior managers in organizations.

The current research also found that tolerance, as a learning opportunity, supports the consolidation of emergent understandings, as senior managers perceived mistakes,



**Figure 2. Framework for external and internal catalysts that support employees' transformation for unlearning in their organization**

errors, and faults as opportunities for learning and the unlearning process and, therefore, errors do not need to be punished. Transformation and utilizing faults as a way of learning for innovations emphasizes the role of the transformation phase, which must be nurtured, reinforced, and promoted in organizations. Figure 2 shows the proposed framework, illustrating catalysts that support employees' transformation for unlearning in their organizations, based on the findings of this study.

**5.1 Implications for Managers**

Managerial implications can stem from the proposed framework that illustrates catalysts that support employees' transformation for unlearning in their organizations. By implementing unlearning and nurturing the area of

transformation, senior managers will reap several beneficial outcomes that will lead to innovations and in turn increase their revenues and customer demand, especially in the hyper-competitive environment and in a situation like the time of the epidemic. The current research has empirically investigated and suggested that promoting organizational context will assist managers to reinforce their employee's absorptive capacity, in the form of skills and ability, so as to be able to create innovative services and products offered by their organizations. The period of the epidemic has presented challenges for managerial performance in the banking industry. Therefore, managers have to be armoured with new ways of functioning and versatile skills to motivate group members for creating innovations, using the framework shown in Figure 2.

### 5.2 Limitations and recommendations for future research

The current research experienced several limitations in terms of lack of accessibility to senior managers, as they were remarkably busy, especially during the Covid-19 safety measures, with tight time schedules, postponing the interviews several times, and were very overwhelmed in the workplace by clients' needs. In addition, the concept of unlearning is new in the wider business environment, and the majority of participants were not aware of the meaning of this concept, which fortunately, meant the study yielded pure and unique results.

Future research will require continuing and developing mechanisms to support unlearning organizations, especially through transforming the outlook of their apprentices and newly recruited employees so as adjust and familiarize themselves with their ethics, goals, values, rules, and code of conduct. The current research selected six senior managers in commercial banks operating in Egypt, based on their strategic positions as the main source of knowledge about the banks and their absorptive capacity to unlearn. Forthcoming research might select a larger sample from other levels, such as frontline managers or functional managers who have direct and frequent contact with clients and stakeholders. Moreover, the current research was conducted within the context of commercial banks in Egypt. Forthcoming research might also consider utilizing the proposed framework of the current research in different bank categories, such as governmental banks, or a comparison between commercial and governmental banks in a different timeline from that of the current research.

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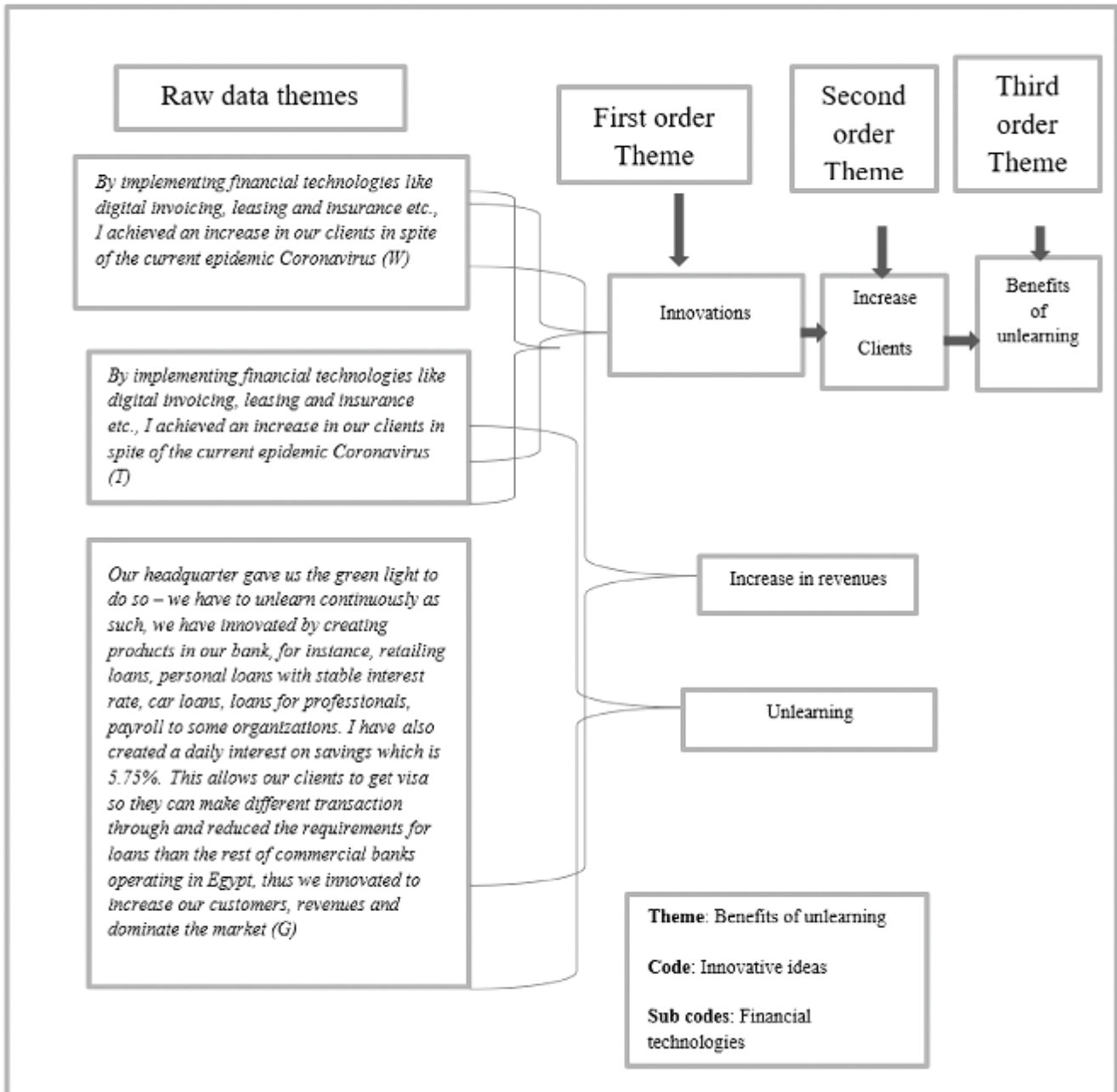
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### (Appendix) 1

Template, Table 1 illustrates the interview coding process.



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# Extrinsic Cues on Websites- Content Analysis on Natural and Organic Skin Care Products

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This study identifies and examines the extrinsic cues provided by companies' websites on natural and organic skincare products, using signalling theory as the theoretical model. Based on information available on websites, product descriptions and customer reviews were analysed using content analysis. The study reiterates the impact of signalling theory on consumer perception. Extrinsic cues provided by marketers appear to play an important role in not only providing information to consumers but also shaping their perceptions and attitudes. The findings of the current study reveal that appearance consciousness is the dominant extrinsic cue signalled by descriptions of various brands on companies' websites. It is also the single most important signal perceived by users of organic skincare brands. The study has several managerial implications as it highlights that consumers are most receptive to signals related to skin benefits, packaging and price of organic skin care products. This implies that marketers need to invigorate their efforts to convince customers that organic skin care products will yield noticeable results. They also need to experiment with the packaging of organic skin care products to render them more appealing to customers.

**Keywords:** *signal, extrinsic cues, organic, natural, skin-care, appearance consciousness, environment consciousness, certification, packaging*

## 1. Introduction

The world is witnessing a paradigm shift in the attitude of people towards their life and consumption pattern. Organic products are a result of organic farming, which avoids the use of chemicals, pesticides, antibiotics, synthetic fertilizers and other substances. The demand for organic products has risen because consumers are increasingly becoming conscious of their health (Magnusson et al., 2001; Wandel & Bugge, 1997), nutritional value, environmental concerns and taste (Bourn & Prescott, 2002; Fotopoulos & Krystallis, 2002; Zanolli & Naspetti, 2002).

Green and organic skin care cosmetics are steadily claiming a substantial market share at the global level (Raska & Shaw, 2012). According to a report by Grand View Research (2015), the global market of organic skin care products is likely to reach \$15.98 billion by 2025. This is because consumers are increasingly looking for natural and organic labels in skin-care, hair-care and cosmetic products. Another report by Persistence Market Research (2016) states that the organic beauty market is expected to be worth \$22 billion dollars by 2024, which is suggestive of an eight to ten percent annual growth. London-based Future Market Insights (2019) expects the global organic cosmetic market to double in the next eight years to fifty-four billion dollars by 2027.

Organic personal care products include hair care, skincare, cosmetics, oral care, feminine hygiene products and deodorants. The ingredients of these products are grown without the use of any synthetic fertilizers, genetically modified organisms, sewage sludge etc., thereby making organic products desirable among green consumers (Amberg & Fogarassy, 2019). Existing studies have empirically established several reasons, which drive consumers to buy organic skincare products. Consumers' perceived value i.e. the trade-off between price and quality (Sweeney & Soutar, 2001), health consciousness (Johri & Sahasakmontri, 1998), environmental consciousness (Prothero & McDonagh, 1992; Polonsky & Mintu-Wimsatt, 1995; Dembkowski, 1998; Paladino, 2005) and desire to maintain a youthful look using cosmetic products made of minimal chemicals i.e. appearance consciousness (Todd, 2004; Tirone, 2007) are the key drivers of consumer purchase intention of organic personal care products.

On the other hand, some studies posit that even though organic products are beneficial in the long run (e.g., absence of harmful chemicals, and safe for the environment), they are

costlier than their counterparts at the time of purchase (Drozdhenko et al., 2011; Joshi & Rahman, 2015). A plausible reason for this is that organic products are unable to achieve the benefits of economies of scale, as they cannot be produced in bulk. Due to their high prices, they remain unattractive among consumers who are less willing to buy them. It is difficult for marketers to lower the prices of these products; however, there is scope for increasing and highlighting the organic products' benefits (Berger, 2019). In the era of e-commerce, the key is to devise effective marketing strategies for organic products using signalling theory to attract customers. Signalling theory addresses the issue of asymmetric information between buyers and sellers. The sender (brand of organic products) tries to convince the receiver (plausible consumer) of the desirability of the products that are being offered (Gambetta, 2009; Spence, 1973).

There are numerous studies on signalling theory and green consumption, which posit that environment-friendly products are more appealing to consumers when they signal traits like pro-social values or social status through product consumption. Signalling may help to reduce the attitude behaviour gap among consumers (Babutsidze & Chai, 2018; Iredale & van Vugt, 2012). However, to the best of the researchers' knowledge, there has been no pertinent research undertaken that attempts to identify and analyse signals used by natural and organic skincare brands to attract consumers. This study seeks to remedy this void in the literature and expand the existing research on signalling and environment-friendly products by focusing on natural and organic skincare products. The purpose of this paper is threefold: (i) to identify B2C (Business to Consumer) extrinsic cues of natural and organic skincare brands (face creams, body lotions, serums and cleansers) as reflected in their product description on their website (ii) to detect dominant extrinsic cues in the product descriptions of skin care and (iii) to discern the signals perceived by consumers.

## 2. Theoretical Framework

### 2.1 Signalling Theory

The signalling theory was developed in economics (Spence, 1973) and biology (Zahavi, 1975). It suggests ways of overcoming skewed communication between the sender and the receiver. The sender tries to convince the receiver of a desired quality that the former possesses; however, the 'quality' in question is not directly observable (Gambetta, 2009). The qualities of the products may not be directly

observable by the receiver; hence, the sender uses certain signals or cues to make the product offering attractive. Consumers face an information deficit in which they must assess products and services based on incomplete, misleading, or otherwise imperfect information. In this asymmetric information environment, in which one side holds more or better information than the other, consumers rely on cues or signals as a means of evaluating product quality (Darby & Karni, 1973; Kirmani, 1997; Kirmani & Rao, 2000). These signals seek to assure customers (i.e., the less-informed party) that the seller's product is of good quality. Signals serve as perceivable indicators of hidden qualities of products/services, which consumers can interpret and act upon (Bergh et al., 2014). They aid in reducing consumer uncertainty and fostering purchase decisions regarding the seller (Bente et al., 2012). A cue acts as a signal only if it is intentionally communicative, and its goal "is to alter the receiver's beliefs or behaviours in ways that benefit the signaller" (Donath, 2011, p. 3). In the context of business-to-consumer ("B2C") internet commerce, the information asymmetry typically relates to the difficulty that consumers have in distinguishing between "trustworthy" and "untrustworthy" web merchants. Asymmetric information can prevent consumers from making an accurate assessment of products, as they are wary of the quality of the products. Due to the unfamiliar and impersonal nature of the internet, signals can play a powerful role in influencing the purchase decision of consumers.

Richardson et al. (1994) state that signals can be extrinsic and intrinsic. Extrinsic cues are related to the product but not inherent to the product. Intrinsic cues are attributes of the product itself. A change in extrinsic signal does not alter the fundamental nature of the product as compared to intrinsic cues (Wells et al., 2011). For example, the price of a personal computer (PC) is an external cue; the internal components such as the processor are internal cues. Consumers use both intrinsic and extrinsic cues to assess product quality; however, extrinsic cues may be more influential in certain contexts as they are more readily available and more comprehensive. Consumers who have a lower need for cognition (i.e., individuals who are less apt to engage in elaborative thinking) (Chatterjee et al., 2002), are also more likely to rely on extrinsic cues. Common extrinsic attributes used as signals include brand (Erdem & Swait, 1998), product description (Chu & Chu, 1994), price (Dawar & Parker, 1994), warranties, and store environment (Baker et al., 1994; Bloom & Reve, 1990).

## 2.2 Signalling and Green Consumption

Existing research on green consumption and signalling theory reveals that when consumption of environment-friendly products allows consumers to express or signal personal traits like social status or prosocial values, the gap between attitude (pro-environment) and behaviour (purchase of environment-friendly products) can be bridged (Babutsidze & Chai, 2018; Iredale & van Vugt, 2012; Whitfield, 2011). This is because the consumer gains an advantage in social interactions and may be willing to pay a premium price for environment-friendly products (Berger, 2019; Griskevicius et al., 2010). Another study on signalling theory and environmental products states that signals affirm the credibility of the advertiser's claim and help to improve the customers' attitudes towards the product (Erdem & Swait, 1998). In a laboratory experiment conducted by Griskevicius et al. (2010), it was revealed that consumers who wanted to depict a certain social status preferred green products. Thus, consumers also signal a status symbol when they choose green products. In the following segments of the study, we seek to discern the primary signals used by the organic skincare brands in their product descriptions, available on their websites. We will also identify signals perceived by consumers from the product descriptions of skin care products (available on websites).

## 3. Methodology

Qualitative research is useful in an emerging empirical context (Whittle et al., 2020) and often uses existing theory as a basis for interpreting data, to gain new insights into the phenomenon under investigation (Bansal & Corley, 2012). Since our study seeks to uncover the nature of signals currently used by natural and organic skincare brands to communicate with consumers, we have used content analysis (Abbott & McKinney, 2013). This approach allows a high level of objectivity and complexity reduction (Krippendorff, 2004).

The approach was used because it allows researchers to derive inferences from the text in claims (in our case, product descriptions of natural and organic skin care products on websites) and provide a scientific description of claim content. As such, content analysis is useful both in the context of justification for establishing patterns which help to support existing theories and in the context of discovery for establishing patterns on which to formulate new theories (Kolbe & Burnett, 1991). In other words, content analysis is



useful to identify content usage and patterns (Torres et al., 2007).

### **3.1 Data collection and Sample Identification**

In the months of January and February, web searches were conducted using the terms ‘natural skin care brands’ and ‘organic skin care brands’ on Indian-based versions of two search engines (Google, Yahoo). The first three pages were catalogued for each keyword entered generating 86 websites. The first three webpages were catalogued based on a study by Hindman et al. (2003), who concluded that researchers can focus on the most heavily linked sites in internet-based research as these are the most widely read and influential. Websites that overlapped or were inactive were removed yielding a final sample of 53 websites. The inclusion criteria of the websites were as follows: The language used on the website is English; the primary purpose of the website is to sell natural and organic skin care products (face creams, body lotions, face and body masks, serums, eye creams etc.).

The shortlisted websites were divided between the two researchers. On clicking the link of the respective natural or organic skincare brands, the researchers selected only the facial care segment. This led to a host of facial care products i.e. sunscreen, moisturisers, serums, masks, facial mists etc. From each brand, the researchers selected one product, which was the ‘best seller’, winner of popular choice awards like Harper’s Bazaar Conscious Beauty Award (as claimed by the brand’s website). On websites where there was no mention of a best-seller, the researchers chose the first facial product, which was ‘sold out’ indicating the popularity of the product. An Excel sheet was prepared in which the name of the brand, name of the product selected and product description was copied from the websites. This method of selecting products yielded a final sample of 101 global natural/ organic skincare brands.

To analyse signals perceived by customers, the researchers collected customer reviews of the shortlisted brands. The first two reviews of the facial products were taken from the websites, yielding 198 reviews.

### **3.2 Data Analysis**

Coding or categorizing the data has an imperative role in analysis. It entails subdividing the data as well as assigning categories (Dey, 1993). Miles and Huberman (1994) point to two methods of creating codes. The first one is ‘inductive’

whereby the researcher does not pre-code any data until s/he has collected it, tested its functions and determined its. This is the ‘grounded’ approach originally advocated by Glaser and Strauss (1967). The other method preferred by Miles and Huberman (1994), is to create a provisional ‘start list’ of codes (deductive) prior to fieldwork. That list comes from the conceptual framework, list of research questions, hypotheses, problem areas and/or key variables that the researcher brings to the study.

Further, Strauss and Corbin (1990) postulate that category names can be derived from the existing pool of concepts that researchers already possess from their disciplinary and professional reading, or borrowed from the technical literature, or are the words and phrases used by informants themselves. The categorization matrix can be regarded as valid if the categories adequately represent the concepts, and from the viewpoint of validity, the categorization matrix accurately captures what was intended (Schreier, 2012).

Existing literature states that the major drivers of purchase intention of organic and natural skincare products are health consciousness (Johri & Sahasakmontri, 1998), environmental concern (Prothero & McDonagh, 1992; Polonsky & Mintu-Wimsatt, 1995; Dembkowski, 1998; Paladino, 2005) and appearance consciousness (Todd, 2004; Tirone, 2007). These are included in Table 1 (codes 1 to 3) using deductive techniques of coding.

Following the deduction of the above-mentioned codes from existing literature, the researchers used open and focused coding using the inductive technique for the remaining codes. This was carried out with the help of NVIVO software and traditional methods of coding (sticky notes, display boards, coloured pens). NVIVO software was chosen because it is designed to assist in coding and organizing qualitative data (Zamawe, 2015). This dual mode of coding involved brainstorming and enabled greater interaction (Maher et al., 2018) between authors leading to a more rigorous analysis procedure.

According to Glazer (2016), open coding is primarily guided by a rule, which is to constantly ask the data, “what is the study of?” This question limits descriptions by having to have them related to the core problem and possible emerging core categories. Since this study seeks to examine signals in product descriptions of natural and organic skincare products, the researchers divided the data and scrutinised each statement to identify signals related to ‘natural’ and ‘organic’.

Another category was developed as ‘certification’. Certification of organic products serves three functions (Lohr, 1998). First, it assures consumers that a product which is not observably different from non-organic products was processed, and packaged according to rules that limit or ban synthetic inputs and that protect the environment. Second, it assures producers that unscrupulous use of the term organic does not defraud them of price premiums and market share that can be earned from certified foods. Third, it makes the market more efficient by reducing information asymmetry along the marketing channel from producer to consumer. Since the products chosen by the researchers were natural and organic, signals related to certification were considered important by the researchers.

In addition to sustainability related to the intrinsic attributes of the product, some brands communicated the

sustainability of their products through sustainable extrinsic attributes i.e. packaging on the website. The statements related to packaging assured the reader/consumer that sustainable packaging of their product is an attempt towards reducing global environmental footprint. Since existing literature (Magnier & Schoormans, 2015) supports the fact that sustainable packaging positively influences the perceived ethicality of the brand and purchase intentions, statements related to the packing of the product were ascribed to a code ‘packaging claims’.

After several rounds of discussions, re-examining product descriptions, and comparison of personal notes, the researchers mutually identified four additional signals via the inductive technique of content analysis (as shown in Table 1, codes 4 to 7) i.e. natural claim, organic claim, certification claim and packaging claim.

**Table 1. Coding description using deductive and inductive techniques**

<i>S. No.</i>	<i>Code</i>	<i>Description</i>	<i>Example (Statements from data collected)</i>
1.	<i>Health Concern</i>	<i>Expresses that product is safe for skin and body.</i>	<ul style="list-style-type: none"> <li>● <i>avoidance of harmful chemicals is predictably paramount in the end products.</i></li> <li>● <i>it can certainly complement a healthy lifestyle</i></li> </ul>
2.	<i>Environmental Concern</i>	<i>Product does not harm the environment; without the use of pesticides, synthetic chemicals, and animal testing</i>	<ul style="list-style-type: none"> <li>● <i>this progressive brand offers ultra-potent, high-quality, cruelty-free skincare and wellness products (including health tinctures</i></li> <li>● <i>uses natural ingredients and biotechnology where possible to minimize its footprint and protect what needs protecting: our Earth</i></li> </ul>
3.	<i>Appearance consciousness/ Skin benefits</i>	<i>Products that express or alter images Product leads to enhancement of skin/ addressing skin concerns</i>	<ul style="list-style-type: none"> <li>● <i>it promises a powerful lifting effect while helping restore and regenerate epidermal tissue</i></li> <li>● <i>promises to restore radiance to your skin with its white willow bark and pomegranate enzymes</i></li> </ul>

4.	<i>Natural Claim</i>	<i>Plant based</i>	<ul style="list-style-type: none"> <li>● <i>“Made from wild and freshly-harvested ingredients”</i></li> <li>● <i>“The natural formula instantly brightens up the skin. “</i></li> </ul>
5.	<i>Organic Claim</i>	<i>Chemical free/GMO-free</i>	<ul style="list-style-type: none"> <li>● <i>“Prioritizing both certified-organic and wild-harvested ingredients.”</i></li> <li>● <i>“The philosophy is simple, and the brand believes the highest-quality organic ingredients create the best-performing products.”</i></li> </ul>
6.	<i>Certification claim</i>	<i>Approved by a recognised certification body</i>	<ul style="list-style-type: none"> <li>● <i>“...USDA-certified organic products contain the very best ingredients and nutrients.”</i></li> <li>● <i>“...is certified-organic by COSMOS, which guarantees that no toxic pesticides, herbicides, or chemicals were used in the production or manufacturing process.”</i></li> </ul>
7.	<i>Packaging Claim</i>	<i>The material used to wrap/protect the product</i>	<ul style="list-style-type: none"> <li>● <i>“...minimalism in their packaging is offset by the wild, sensual aromas that infuse their preparations.”</i></li> <li>● <i>“The clean, modern-meets-old-school packaging is deeply appealing to both men and women, as are the exquisite textures and the refreshing scents.”</i></li> </ul>

After codes were identified, the researchers created a new project in Nvivo software and named it “Signalling organic and natural skin care products”. The data comprising product descriptions was imported into Nvivo. The next step was to create codes according to the themes identified in the data and ascribe the related statements to the theme. The researchers manually created seven nodes on NVIVO software. When all the material information was coded, a visual representation of the data became an essential

prerequisite for displaying the results. At this level, charts, tables and figures were created.

#### 4. Findings

The first test that was run by the researchers on the codes created on NVIVO software was to visualise the hierarchy chart of codes. Hierarchy charts enable us to see patterns in our coding or view the attribute values of cases and sources.



Source: NVIVO software

Figure 1. Hierarchical chart of codes

Table 3. Comparison of coding references

Codes	Number of coding references	Aggregate number of coding references
Codes\\Certification Claim	15	15
Codes\\Environmental Concern	30	30
Codes\\Health concern	38	38
Codes\\Natural Claim	29	29
Codes\\Organic Claim	47	47
Codes\\Packaging Claim	12	12
Codes\\Skin Benefits	195	195

It is clear from the hierarchal chart (In Figure 1 and Table 3) that statements related to the skin benefits of the product dominated the product description with 195 references in the data. This was followed by organic claim, health concern, natural claim, environmental concern, and certification claim and the least referred code was packaging with just 12 references

4.1 Signals conveyed in product descriptions

4.1.1 Health Concern

Thirty-eight references i.e. 3.61% coverage was related to health in the sample data. Examples of health-related statements in the product description are as follows:

*“The Barcelona-based skincare company centres their products on free-form amino acids.”*

*“Matcha green tea is not only great for your internal health but also your skin as...”*

*“.....Skincare doors is organic, paraben-free, non-GMO and certified vegan.”*

*“Permaculture techniques are used for growing the ingredients, and avoidance of harmful chemicals is predictably paramount in the end products, too.”*

*“The brand takes a holistic approach to health and beauty, looking at the root cause of a skin issue rather than fixing the symptom.”*

4.1.2 Environmental Concern

Signals related to environmental concern received 3.62% coverage with 30 references (30 brands). The brands that included environmental concern as a signal highlighted the

delicate relationship between nature and science, non-toxic formulas, conscious attempts to reduce carbon footprint, sustainable sourcing of ingredients, cruelty-free processing and even charity towards the planet. Some examples are as follows:

*"I am 100% vegan - good for the planet and for you"*

*"...Face Wash is not tested on animals. It is free from animal-derived raw materials, sulphates, parabens, silicones and fragrance."*

*"...Is constantly seeking the latest scientific advances to botanical extracts, and takes sourcing seriously, tracing ingredients to their origins to ensure that their cultivation and production are sustainable for the local community, as well as the environment."*

*"The brand has been using sustainable farming and green practices to create natural, organic, and biodynamic products since 1958."*

#### 4.1.3 Skin Benefits

Signals related to skin benefits of the facial care products addressed skin concerns like acne, inflammation, dullness, dryness and ageing. This signal received a maximum of 195 references (by 101 brands) and a coverage of 20.13% in the sample data. Promissory phrases like, "promises to restore radiance to your skin", "Promising to tighten skin", "key to maintaining glowing, youthful skin", "reduce free radical damage and brighten hyperpigmentation, like dark spots and melisma" were used by all 101 brands. By running a word frequency query (stemmed words with minimum length 5) the following word cloud (As shown in Figure 2) revealed the prominent words used related to skin benefits.



**Figure 2. Word cloud of skin benefits**

Source: NVIVO software

#### 4.1.4 Natural Claim

The use of the word 'natural' had a coverage of 2.12% with twenty-nine references. Most brands used the phrase 'natural product', 'natural skin-care, natural beauty', '100% natural', 'natural formula', and 'natural extracts'. One brand used the phrase 'plant based' and another described the product as 'freshly harvested'.

*'A deeply purifying natural and organic mask that detoxifies and brightens the complexion.'*

*'Products with natural extracts may change colour over time.'*

*'The natural formula instantly brightens up the skin.'*

#### 4.1.5 Organic Claim

In the data sample of 101 facial care product descriptions, there were 47 references to the term 'organic'. 7 brands built upon the term with further description. For example:

*"everything that passes through the Pai Skincare doors is organic, paraben-free, non-GMO and certified vegan. They say good things come in small packages."*

*"Prioritizing both certified-organic and wild-harvested ingredients, all of True Botanical's products carry the MADE SAFE seal."*

#### 4.1.6 Certification Claim

Only fifteen brands out of 101 mentioned that their product was certified as organic, natural and cruelty-free in their product description. One brand mentioned that its formulations were 'patent-pending'. The certifying agencies mentioned were USDA, COSMOS, NATURE skin-care, PETA, Leaping Bunny, MADE SAFE, ECOCERT, and Ayush. Signals relating to certification include:

*"Founded by supermodel Miranda Kerr, Kora Organics is certified-organic by COSMOS, which guarantees that no toxic pesticides, herbicides, or chemicals were used in the production or manufacturing process."*

*"Meanwhile, Wildling's packaging comes from Forest Stewardship Council-certified paper, and all of their products are certified cruelty-free by PETA and Leaping Bunny."*

*"Its organic, sustainably sourced natural ingredients are audited and certified by Ecocert, while its synthetic ingredients are developed using green technology."*



In order to ensure thoroughness in the study the researchers examined the website of the remaining brands for a certification label. This was done because some brands may not have stated that were certified in the description, however, a certification seal/label would ensure their authenticity as natural or organic. A re-examination of

websites yielded 58 brands that had been certified as organic or natural. *The sources of pictures used (as shown in Figures 3-6) have not been disclosed as brand names of organic and natural skincare products are not revealed in this study.*

Examples of their certification are shown below:



**Figure 3. Example of Organic Certification**

*Source: Not revealed*



**Figure 4. Example of Environmental Certification**

*Source: Not revealed*

The remaining forty-three brands claimed that they were natural and organic but did not have a certification label.

**4.1.7 Packaging Claim**

Twelve brands mentioned attributes related to packaging in their product descriptions. Examples of packaging cues include:

*“...the formulations of which are placed in simple, super photogenic packaging.”*

*“...evergreen skincare solutions and timelessly appealing packaging.”*

*“They say good things come in small packages.”*

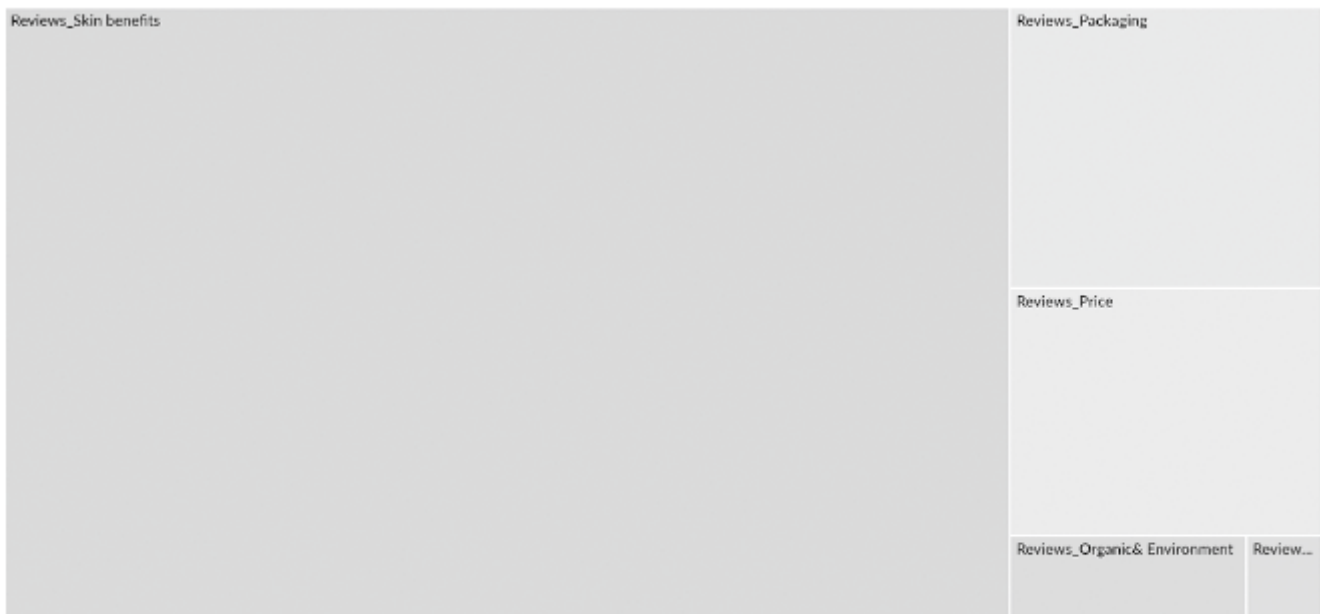
*“With easily recyclable packaging, a commitment to using only paraben-, mineral oil-, petroleum- and cruelty-free ingredients.”*

*“Meanwhile, Wildling’s packaging comes from Forest Stewardship Council-certified paper, and all of their products are certified cruelty-free by PETA and Leaping Bunny.”*

*“...the packaging has to be some of the coolest and prettiest we have seen.”*

**4.2 Signals perceived by customers in their reviews**

A hierarchical chart (Figure 3 and Table 4) was prepared by researchers to get an insight into signals perceived by customers as reflected in their product reviews. These reviews were listed on the website of the skin-care brands.



Source: NVIVO software

**Figure 3. Hierarchical chart of reviews**

**Table 4. Comparison chart of coding references of customer reviews**

<b>Codes</b>	<b>Number of coding references</b>	<b>Aggregate number of coding references</b>
<i>Codes\\Reviews_Skin benefits</i>	183	183
<i>Codes\\Reviews_Packaging</i>	26	26
<i>Codes\\Reviews_Price</i>	23	23
<i>Codes\\Reviews_Organic/Natural/Environment</i>	6	6
<i>Codes\\Reviews_Health</i>	2	2

As evident in the hierarchy chart (Figure 3) and comparison chart (Table 4), maximum statements in the customer reviews were related to skin benefits.

68.09% coverage i.e. 183 statements in the reviews of the customers were understandably related to the effects of the product on the skin. The researcher auto-coded the code related to skin benefits in order to identify the major skin concern. Auto coding yielded three codes 'skin', 'product' and 'oil'. There were 111 mentions of the term 'skin' expressing the result of the product. For example, radiant skin, smooth skin, fair skin, glowing skin, etc. Twenty-six statements related to 'sensitive skin' revealed it as the biggest concern among customers.

The second dominant aspect of customer reviews was the packaging. Statements that highlighted packaging concerns were:

*'I decided to try it out mainly because of the glass jars,'*

*'I also, love that it is packaged in an airless pump versus other expensive brands that use a doppler and are far more expensive.'*

*'I'd prefer a pump vs jar with a spatula but at least you'll be able to get every bit of it out.'*

The third most referred aspect of natural and organic products was price with twenty-three references. There were twelve positive reviews from customers which depicted satisfaction and in some cases absolute delight with respect to the price of the products. The remaining eleven statements revealed that customers were dissatisfied with the product and found it expensive. Statements related to the price of the product include:

*"Well worth the cost and lasts over a year with day and evening usage."*

*"This is the most affordable vitamin c at such a high percentage. It blows my mind love this stuff."*

*"I have expected much more from a prestigious and reputed company and also from a product marked with a "sale" tag of \$345.00"*

*"Not only is this product affordable and all-natural, but it magically managed to calm the redness on my face and clear my cystic/hormonal acne in less than a week."*

Statements related to natural, organic and environment were grouped as one code as there were only 6 references and

there was hardly any clear demarcation between the three codes. For example:

*"I have been searching for some masks with organic and harm-free ingredients for many years."*

*"I chose the product because of wild-harvested, vegan ingredients."*

*The best part is that it is natural and chemical-free, paraben-free.*

*"ESPA aim to provide skincare for all, vegan, vegetarian... all skin types and environmentally friendly too."*

There were only two statements recorded from a sample of 198 related to health concern.

## 5. Discussion

The primary objective of this study was to identify extrinsic cues in the product descriptions of natural and organic skin care products as stated on their websites. Pee et al. (2018) opine that signals have an impact on pre-purchase beliefs, purchase decisions as well as re-purchase intention. Signals are usually extrinsic and can be easily assessed by customers (Richardson et al., 1994). After-sale service quality, depth of product information provided, and ease of use of a website are all extrinsic cues. In this study, we have identified seven signals depicted in the product descriptions of natural and organic global skincare brands. These signals are i) Health consciousness ii) Environmental consciousness iii) Appearance consciousness iv) Natural claim v) Organic claim vi) Certification claim and vii) Packaging claim.

Kim and Chung (2011) postulated that environmental consciousness and health consciousness positively influence consumers' intention towards organic personal care products. Further, it was suggested that effective marketing strategies emphasizing ecological beauty or product safety would positively influence the attitude of consumers. However, the findings of this study, based on analysis of product descriptions as well as reviews of customers, revealed that *health and environmental consciousness were seemingly not a priority among consumers*. In a sample of 101 skin-care brands, there were only 30 references related to the environment and 38 to health. Maximum statements (195) addressed skin issues and were promissory of a radical transformation of skin, thereby appealing to appearance consciousness among consumers. This finding was further corroborated by

reviews from customers. 183 statements were related to the effect of the product on skin, and only six customers reviewed the product on organic, natural and environmental concerns followed by a dismal two comments related to health. *This indicates that the primary concern of natural and organic skincare brands is to appeal to the appearance consciousness of consumers. Customers primarily perceive signals related to skin benefits and are most affected by them. Thus, appearance consciousness or signals related to skin benefits were identified as dominant in the product descriptions as well as customer reviews.*

Another important insight of this study is that only 58 out of 101 brands were certified. Certification is a credible process whereby the certifying bodies set standards, inspect the maintenance of standards and approve the natural/organic product. The agency then confers a licence to the brand to display a certification label on the product. The label increases confidence among consumers regarding the quality of the product and differentiates the natural/ organic product from others (Lohr, 1998).

This study reveals that 43 out of 101 brands claimed that they were natural or organic however, they were not certified. This has serious implications; apparently, customers are relying on the words 'natural', 'organic', 'vegan', and 'paraben free' while purchasing products online. They are interested in purchasing these products however; *they are unaware or indifferent regarding the importance of certification. This could be a result of fragmented, inconsistent and poor communication by natural and organic skincare brands.* Another important aspect that is highlighted in this study is that some brands are using pictures to depict 'cruelty-free', and 'paraben-free'. This



**Figure 7. Example of 'cruelty-free' and 'vegan' labels**

raises an important question, *'Do words like vegan, paraben-free, cruelty-free, SLS-free, and environment-friendly offer sufficient proof that the product is natural or organic?'* 'Vegan' refers to the absence of any animal ingredient in a product, while 'cruelty-free' means that the product has not been tested on animals. However, a vegan product may be tested on animals and a cruelty-free product may contain animal ingredients. SLS-free indicates that the product does not contain a chemical foaming agent called Sodium Lauryl Sulphate.

Skincare products bearing the label as shown in Figure 7 are vegan and cruelty-free, thus environment friendly to an extent (as the manufacturing process is not considered). *However, can they claim to be natural or organic just on the basis of being vegan and cruelty-free? To the best of researchers' knowledge, certification by a recognized body is the only proof of a product being 'natural' or 'organic'.* Ecocert, the USDA, the ICEA, the Soil Association, the BDih, CosmeBio, and the Control Union are the leading organic certification bodies at the global level. Through this study, the researchers discerned that there is a lack of clarity regarding the exact nature of uncertified skin-care products

Customers acknowledged the packaging claim as a signal. Reviews related to the packaging were the second highest after skin benefits. Twelve brands included a statement related to packaging in their product description; nine brands mentioned their packaging as sustainable. Sustainable packaging is an endeavour to reduce the product's footprint by altering the packaging of the products, for example, by using environmentally friendly materials (Magnier et al., 2016). Signals related to packaging like, *"Our packaging comes from Forest Stewardship Council-certified paper, and all of their products are certified cruelty-free by PETA and Leaping Bunny"* positively influence the purchase intention of consumers. Packaging claims further substantiate the environmental claim of a skin care product. *Twenty-six references of packaging in customer reviews highlighted the 'ease of use', 'shape and size of the product' and attractiveness.*

An interesting finding was the sensitivity of the consumers regarding price. Even though the price was not considered as a signal for this study, concern for the same could not be ignored in customer reviews. A plausible reason for this could be that organic products are priced at premium rates owing to stringent quality control measures, right from growing chemical-free ingredients to the final product (Jolly, 1991; Tregear et al., 1994; Roddy et al., 1996). There were twenty-three reviews from customers related to price,

which indicated value for money, affordability and expectations related to quality with regard to price. The study revealed that nearly fifty percent of the reviews related to price were positive and the remaining were negative. Consumers who were delighted with the price of the product emphasised that the product was worth the money. On the other hand, those who were dissatisfied with the organic skin care products mainly stated that they did not see 'visible' results on their skin, which made them ponder over the price vis-à-vis the benefit of the product. Disgruntled consumers may not engage in repeat purchases, as their primary concern is 'skin benefits'. The study clearly points out that appearance consciousness supersedes health consciousness among users of organic skin care products. Women desired noticeable improvement in their skin to be able to justify the price of organic skin care products.

### 5.1 Managerial Implications

This study has several implications for marketers. To begin with, this study establishes that consumers of organic and natural skincare products are primarily concerned about skin benefits. A major portion of product descriptions of brands focuses on skin benefits. Buyers of organic skin care products are also very receptive to signals related to skin benefits. Even though brands use signals related to certification, health, and environment, users seem not to take any cognisance of them. Organic and natural claims are also not perceived by users of organic skin care products. Natural and organic skin care products differ from conventional products because they are healthier and safer for the environment. It is suggested that marketers highlight the sustainable nature of the product along with skin benefits.

Another important aspect of organic skin care products that were perceived by the consumers was the packaging of the product. There were only twelve references to packaging in product descriptions whereas twenty-six references in customer reviews. This is suggestive that organic skin care users are sensitive to signals related to packaging. The packaging seems to be an important 'P' of organic skin care products and can be effectively used by marketers. Brands can highlight ease of use, recyclable nature, and spill-proof containers in their product descriptions. Experimenting with colour, font, bottles, vials, paper-based materials and personalised messages could go a long way in making these products a hit among consumers.

Price as a signal is also of paramount importance. Since natural and organic products are expensive, it is befitting if

the reasons for the same are highlighted in the brands' advertising strategy. The product descriptions may state that since no active chemicals are used in the formulation, natural and organic skin care products may take time to show results. However, the skin benefit would not be temporary but long-lasting.

### 5.2 Limitations and scope for further research

This study is exploratory in nature. It has successfully identified extrinsic cues or signals of natural and organic skin care products available online. Product descriptions from websites of natural and organic skincare brands were analysed to identify signals. Customer reviews were sought to discern important concerns among customers. Further research may seek to quantify the results of the current study in terms of pricing and sales of each product category vis-a-vis conventional skin care products. In further studies, the quantification of the effect of extrinsic signals on consumer perception may also be explored. This is an area, which can yield insightful results.

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# The Reverse Mortgage Conundrum: Perspectives of Households in India

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The ageing population over the last few decades has compelled the evolution of financial products suited to ease the challenges faced by the elderly. A reverse mortgage is an ideal product that enables borrowers access to the tangential value of their property. Devoid of the requirement to pay monthly commitments, this financial product is aimed only at the older demographic. Referred by varying names in different countries, such mortgages have been popular in western countries like the US and UK, in comparison to their success on the Indian shores. This study aims to ascertain the reasons for the low awareness of reverse mortgage products in India by studying the demographic variables. This is achieved through a primary study of 360 respondents residing in India. Of the six demographic variables analysed: age, education level, home ownership, and monthly income are found to be significantly associated with the awareness level for Reverse Mortgages in India, while gender and living district do not exhibit any significant changes. The findings of the study are expected to facilitate policymakers to create greater awareness and dissipate fears about the product, giving a new lease of life to the Indian Reverse Mortgage market.

**Keywords:** *reverse mortgage, awareness, ageing, demographic, retirement*

## 1. Introduction

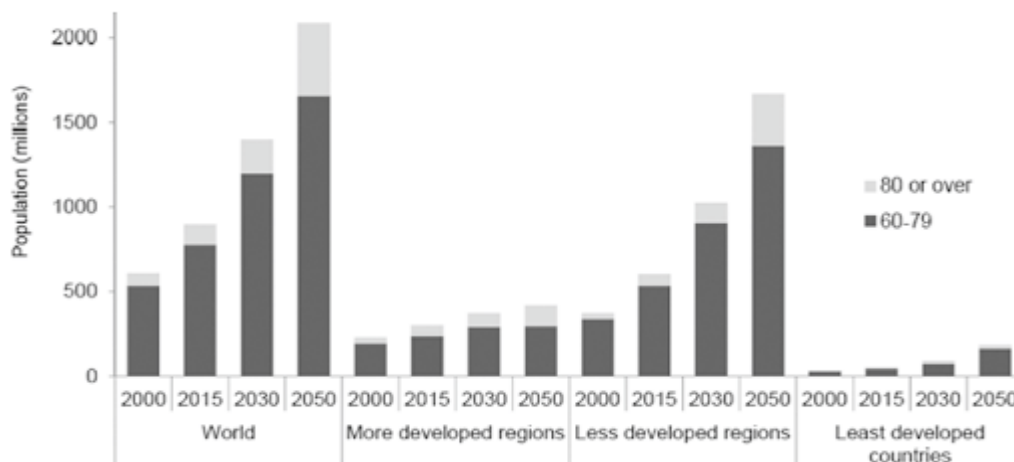
With a substantial increase in the older population world over, almost every country is experiencing a significant increase in its ageing population. According to the data from the World's Population Prospects, the older population is expected to grow by 56% until 2030. Another report by the United Nations 2015, estimates the older population to inch near 2.1 billion by 2050 (UN Report, 2015). The ageing population is increasing much more rapidly in lesser developed nations than in developed nations (Refer Fig 1).

The harsh truth of ageing was accepted by developed countries, especially Western Europe and the USA in the mid-1980s. Policymakers in these countries scouted for innovative financial products to assist the elderly in their long-term care. With increasing homeownership rates across the world, the possibility of supplementing elderly income through the utilization of real estate emerged as a viable option (Mayer & Simons, 1994 in Matic, 2010; Lacoba et al., 2021). Thus, the reverse mortgage was introduced as an innovative financial instrument, that facilitated the conversion of an illiquid asset (home) into a liquid one (Ramos, 2015). It facilitates the conversion of homeownership to a stream of regular income payouts, allowing the owner to stay in his/her house till he and his spouse die.

Following are some of the features of Reverse Mortgage:

- This loan is available only for the elderly > 60 years of age, and who are homeowners.
- The loan can be disbursed in lumpsum or multiple payments like annuity etc.
- The house owner has no obligation to repay the loan, till he/his spouse resides in this house.

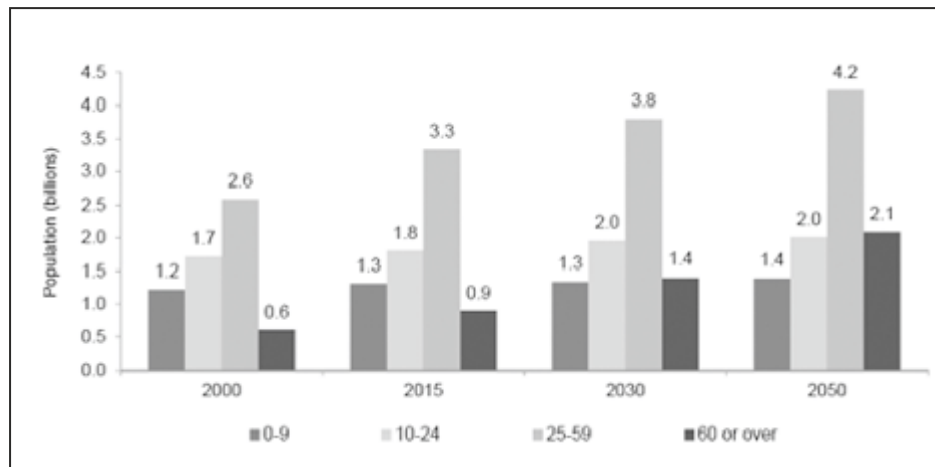
India is undergoing a similar trend, with the population ageing at a much faster rate than in other countries. While it took almost 50 years for the USA to double its older population, in India the same was crossed in 20 to 30 years. This substantial increase in the population of Indian elderly has been due to the combined effect of an increase in life expectancy and a reduction in the fertility rate. In a report published by the Times of India (a leading Indian English daily) dated 16<sup>th</sup> August 2018, statistics reveal that India is ageing much faster than anticipated. As per the latest government-released figures, the number of people above 60 years of age is expected to be around 340 million by 2050, against the earlier projected number of 316.8 million by the United Nations and 324 million pegged by HelpAge India. As per Figure 2, by 2030, it is expected that the number of elderly people will be higher than the number of children aged 0-9 years and by 2050, there would be more people above 60 years than adolescents and youth aged 10-24 years.



Source: United Nations: 2015, World population Prospects: The 2015 Revision

**Figure 1. Population aged 60- 79 years and 80 years or over by development group**





**Figure 2. Global population by broad age group**

After its success in other countries, reverse mortgage seems to be the right solution for the Indian elderly too. In the absence of state-funded pensions (Lorenzo, 2021) most of the urban affluent Indians primarily rely on the self-funded corpus to finance their retired lives. This coupled with a high homeownership rate of 86.6% in India, the majority of them end up being asset-rich but cash poor in old age. With an increasing proportion of the elderly population in India (projected to be 19% by 2050), Reverse Mortgage is the only financing option that allows the elderly to stay in their own house whilst providing supplemental income to finance their retired life.

The success of Reverse Mortgage on foreign shores provided an impetus to the Indian government and it was introduced in the Budget of 2007- 2008. Even after more than a decade post its implementation, reverse mortgage has failed to be successful in India. With an achievement of only Rs 1800 crore loans sanctioned against the market potential of more than Rs 20,000 Crore, there seems to be a serious lack of effort both on the part of sellers (banks) and the regulator- the National Housing Bank (NHB) to demystify the product and present it as a viable solution to the target beneficiaries.

There is only limited literature that discusses the current situation in India. Existing studies like Paul and Chakrapani (2007), Desai (2010), and Tripathi and Iyer (2009) are limited to understanding the reasons behind the lack of popularity of the product and are focused either on the benefits of the reverse mortgage or the continuing overseas procedures in this area. Other studies reveal the low awareness level of reverse mortgages in India; however, none have ascertained the reasons for reduced awareness in India.

This paper intends to fill this gap by attempting to explore the reasons behind the inhibited acceptance of Reverse Mortgage loans in India. The study is conducted by analysing the association of demographic variables like gender, age, income level, monthly income, education level, and living district on the awareness level of Reverse Mortgages in India. It is expected that this study can be beneficial for the policymakers to get a new perspective on the Indian Reverse Mortgage market. The findings of the study are expected to facilitate the policymakers to create greater awareness and dissipate fears about the product giving a new lease of life to the Indian Reverse Mortgage market.

## 2. Research Problem and Objectives of the Study

The study has the following objectives:

- To explore the reasons behind the inhibited acceptance of Reverse Mortgage loans in India
- To analyse the effect of demographic variables like gender, age, income level, monthly income, education level, and living district on the awareness level of Reverse Mortgage in India.

## 3. Literature Review

Reverse Mortgage was envisaged to benefit the third age. The theory of the life cycle hypothesis as proposed by Modigliani and Miller in 1954, explains the theoretical background of Reverse Mortgage. This hypothesis explains the elderly's desire to finance consumption by liquidating assets acquired in their younger days (Merrill et al., 1994).

The evolution of the concept of Reverse Mortgage from the life cycle hypothesis is credible owing to the fact that income received during the initial working years in life should be dispersed through all stages in life, including retirement.

The origin of Reverse Mortgage as a method of financing dates to the 1930s, introduced in Great Britain (Huan & Mahoney, 2002 in Matic, 2010). In the United States, Reverse Mortgage is in existence since the 1960s. By the 1970s it had spread to parts of Europe and in the 1980s it was seen in Australia, New Zealand, and Canada as well (Ward, 2004; Law Reform Commission of Saskatchewan, 2006 in Matic, 2010). In 1987, the Department of Housing and Urban Development, in the USA, officially introduced Reverse Mortgages by the name of Home Equity Conversion, which was later known as Home Equity Conversion Mortgage or HECM).

Worldwide, many studies have been conducted to identify the factors influencing the awareness level of reverse mortgage loans. Using a sample of approximately 2,500 loans, Case and Schnare (1994) evaluated HECM (Home Equity Conversion Mortgage) loans concerning the borrower's characteristics that affect their Reverse Mortgage product choice. The study considers factors like age, family composition, property value, and property location. Their study concluded that:

- 1) Younger borrowers more often select tenure payments
- 2) The choice of reverse mortgage product was a function of the person's income.
- 3) In comparison to single men, women or couples mostly choose the line of credit option.
- 4) Borrowers with lesser-valued properties, preferred the line of credit option.

A study by Mayer and Simons (1994) identified a lack of consumer awareness to be the principal reason for the reduced intake of Reverse Mortgage loans. A similar study by Richardson and Kilty (1995) concluded that age affects human behaviour towards retirement planning. In a study by Joe and Grapple (2001), people with higher incomes were found to be more inclined in seeking professional financial assistance for retirement planning than people in lower-income groups. Joo and Pauwels (2002) found that higher education equips individuals to better explore the available financial information and hence affects awareness levels.

A study by Chou et al. (2006) suggested that people with

higher educational backgrounds understand the concept of a complex financial product better. Reed (2009) in his study has acknowledged reduced awareness of Reverse Mortgages in Australia stressing its importance in educating current and prospective older households. Shan (2009) explored the US market and found that in recent years Reverse Mortgage borrowers differ significantly from earlier borrowers in respect of age, demographics, etc. At the time of loan origination, recent borrowers were found to be much younger indicating loans among the younger homeowners. Smith and Searle (2008) studied the effect of factors such as age, gender, education, and living district on the awareness levels for Reverse Mortgages in Spain. The study concluded that the knowledge of Reverse Mortgage varies with the level of education, ranging from high awareness levels exhibited by people with a university education, and low awareness levels by people with primary or below education. The study also found that the awareness of Reverse Mortgage is influenced by gender with males reporting higher awareness levels as compared to females. In their study, awareness levels exhibited the effect of regional disparities as well, with some regions showing higher awareness levels and vice versa. According to a study by Lusardi and Mitchel (2008), men are found to be better prepared for retirement planning than women, it also concluded that most women do not plan for their retirement years. A study by Mohammed and Sulaiman (2018) concluded that various economic, socio-demographic, behavioural and political/institutional factors imposed varying degrees of influence on the reverse mortgage market in Malaysia. Franco et al. (2021) advocated reverse mortgage introduction in Colombia as a means to help policymakers face the adverse impact of an ageing population and mounting pension demands.

Limited studies exploring the awareness of reverse mortgage loans have been done in the Indian context. Paul and Chakrapani (2007) conducted a comparative analysis of the various banks offering the loan. Desai (2010) measured the potential of Reverse Mortgage loans in India through a survey in Gujarat. Rajagopalan (2002) explored the prospects for Reverse Mortgage products in India. Kumar et al. (2008) suggested ways to enhance the marketability of reverse mortgages in India and Tripathi and Iyer (2009) analyzed the opportunities, threats, issues, and challenges of Reverse Mortgages in India. Shruti and Madhu (2020) conducted a study on the determinants of reverse mortgage purchase decisions in India and identified bequest motive

and negative perception as significant contributors to the reverse mortgage purchase decision. Few Indian studies have also explored the risk element in reverse mortgage loans. Kumar et al. (2008) have identified crossover risk and longevity risks as the most critical risks in Reverse Mortgage loans. Paul and Chakrapani (2007) studied the impact of the risk of moral hazard in reverse mortgage loans on the lender. Rajagopalan (2006) studied the various risks embedded in Reverse Mortgages describing them as a rising debt instrument. Shruti and Deepika (2020) explored the impact of reverse mortgages on a senior citizen's financial planning and concluded it is a net worth-enhancing option. A study conducted by Shruti and Madhu (2019) explored the relationship of the reverse mortgage market with macro-economic variables in India using multiple regression and found interest rates, and GDP to be significantly influencing the Indian reverse mortgage market.

Socio-demographic factors and retirement planning are dependent upon each other as demographic factors are found to have an impact on the knowledge and awareness of the product. Mansor et al. (2015) studied the relationship between demographic variables and retirement planning. Petkoska et al. (2009) explored whether demographic and psychological variables inhibited or promoted retirement planning. Since demographic variables and retirement planning are interrelated, it becomes pertinent to explore the impact of these variables on the awareness of reverse mortgages in India. Upon comparison of the existing literature on Reverse Mortgage in India and abroad, research gaps are visible both in the scope and reach of studies in India. In comparison with international studies, Indian studies lack the focus to evaluate Reverse Mortgage effectively. Survey work done to elicit the opinion of eligible senior citizens is also limited.

Taking cues from international studies, research needs to be conducted to identify the association of demographic variables with awareness of reverse mortgages in India. The present research study based on a survey of Indian citizens is a modest attempt to cover this gap. Based on the above studies, factors like age, gender, education, income level, living district, and homeownership were identified as factors associated with the awareness of Reverse Mortgage in India. The empirically testable research hypotheses identified are:

- *Age does not have any association with awareness of Reverse Mortgage loans*
- *Gender does not have any association with awareness of Reverse Mortgage loans.*
- *Education level does not have any association with awareness of Reverse Mortgage loans.*
- *Living District does not have any association with*

*awareness of Reverse Mortgage loans.*

- *Monthly Income does not have any association with awareness of Reverse Mortgage loans.*
- *Homeownership does not have any association with awareness of Reverse Mortgage Loans*

### **Dependent Variable**

Awareness level for Reverse Mortgage is identified as the dependent variable in this study.

### **Independent Variables**

Based on the existing literature, the following demographic variables are identified as independent variables in the study:

**a. Gender:** The respondents were categorized into male and female

**b. Age:** The respondents were categorized into five categories: age between 30 years to 40 years, age between 41 years to 55 years, age between 56 years to 60 years, age between 60 years to 75 years, and age above 75 years.

**c. Educational Qualifications:** The respondents were categorized into 5 categories: Primary, Secondary, Graduate, Postgraduate, and above Postgraduate.

**d. Living District:** The respondents were categorized into living in Noida, Ghaziabad, Delhi, Gurgaon, and outside Delhi

**e. Monthly Income:** The respondents were divided into 5 income categories: monthly income between Rs 50,000 to 1,00,000, monthly income between Rs 1,00,000 to 2,00,000, monthly income between Rs 2,00,000 to Rs 5,00,000, monthly income between 5,00,000 to 10,00,000 and monthly income above Rs 10,00,000

**f. Homeownership:** The respondents were categorized as to whether owning a home or not.

### **3. Research Methodology**

The empirical investigations have been carried out using primary data. The premise of the primary study is built on the survey method to explore the relationship between demographic variables and the awareness of Reverse Mortgage loans in India. The method of data collection was a purposive sampling approach, through a questionnaire containing 16 questions on the demographic information of the respondents. The target respondent was anyone in the age bracket > and equal to 30 years, owning a house and

**Table 1. Chi-Square calculation**

<b>Variable 2</b>	<b>Data Type 1</b>	<b>Data Type 2</b>	<b>Total</b>
<i>Category 1</i>	<i>A</i>	<i>B</i>	<i>A+B</i>
<i>Category 2</i>	<i>C</i>	<i>D</i>	<i>C+D</i>
<i>Total</i>	<i>A+C</i>	<i>B+D</i>	<i>A+B+C+D = N</i>

Source: <http://math.hws.edu/javamath/ryan/ChiSquare.html>

Based on Table 1, the Chi-Square statistic is calculated as:

$$\chi^2 = \frac{(ad-bc)^2 (a+b+c+d)}{(a+c)(b+d)(a+b)(c+d)}$$

The general hypothesis formulated for Chi-Square is as follows:

Ho: There is no significant difference among the various group counts.

Ha: There is a significant difference among the various group counts.

residing in India. The total number of target respondents is 360. The sample does not include very rich and very poor respondents, as the product is not meant for them. The sample was not random and covered a wide range of respondents in terms of their socio-economic attributes. The questionnaire was distributed to 360 respondents and 330 respondents filled out the questionnaire. After correcting the questionnaire for outliers, missing data, etc., the final total sample size was 310 respondents.

The validity of the questionnaire was carried out by seeking the guidance of experts and academicians in this field. A pilot study was conducted on 100 respondents, in Delhi, NCR region of India. The questionnaires were also sent to senior academicians and senior banking professionals, their views and valuable feedback were incorporated into the questionnaire.

A chi-square test using the SPSS software is applied to test the hypothesis. The chi-square test is applied to categorical data for which mean, median, and mode cannot be calculated. This test is primarily used to determine the existence of a significant relationship between two nominal (categorical) variables. The procedure involves comparing the frequency of one nominal variable with different values of the other nominal variable. Table 1 presents an example showing the chi-square statistic calculation.

#### **4.1 Preliminary Investigation**

Primary data collected through the questionnaire shows equal numbers of both male and female respondents. Approximately 78% of the total respondents belong to the age category of 30-40 years. Senior citizens constitute almost 9% of the total respondents. 54% of the total respondents are employed in the service sector, while approximately 18% constitute the business category. The maximum numbers of respondents are from Delhi and Noida, closely followed by 45% from the other cities. 58% of the total respondents are postgraduate. Approximately 30 % of the respondents fall into the monthly income category of Rs 200000- Rs 500000. Finally, 68% of the respondents are homeowners, making them eligible for Reverse Mortgage loans.

Previous studies have proved that knowledge/awareness about a product is positively related to product demand (Davidoff et al., 2015). Table 2 shows that 68% of respondents are aware of Reverse Mortgage, with the remaining 32% having no clue about it. Almost 2/3<sup>rd</sup> of the entire sample size exhibit awareness of Reverse Mortgage, bringing forth the point that, even though the awareness levels for Reverse Mortgage are high in India, its intake has not been very encouraging. Conversely, 1/3<sup>rd</sup> of the total number of respondents, or 32% of respondents are completely unaware of the product. This presents a huge opportunity for educating and creating awareness for Reverse Mortgage in the Indian markets.

**Table 2. Awareness level of Reverse Mortgage Loans**

Are you aware of Reverse Mortgage?	
Yes	67.9%
No	32.1%

Source: Primary Data

**Table 3. Testing significance between age and awareness for Reverse Mortgage**

Variable	Pearson Chi-Square Value	P-Value	Result	Cross Tab Results	
				Categories	Awareness for Reverse Mortgage Loans
Age	10.2	0.037*	Significant	30 - 40 yrs.	72.97%
				41 - 55 yrs.	9.01%
				56 - 60 yrs.	0
				61 - 75 yrs.	12.61%
				Above 75 yrs.	5.41%

\*significant at 0.05 level  
Source: Based on SPSS output

**5. Analysis**

To test these hypotheses, cross-tabulation with the Chi-Square test was used. Each hypothesis focuses on testing the significance of each of the respondent's demographic factors (gender, age, education level, employment status, living district, monthly income, and homeownership) on the awareness level for Reverse Mortgage loans.

**5.1 Age**

**H1:** Age does not have any association with awareness of Reverse Mortgage loans.

Numerous studies conducted abroad have found age affecting awareness of Reverse Mortgage. A study by Richardson and Kilty (1995) and Hong (2021) found that age affects human behaviour towards retirement planning. Case and Schnare (1994) in their study concluded that younger borrowers prefer tenure payments over other modes. Thus, the first hypothesis tests whether age affects the awareness level of Reverse Mortgage in India or not. Table 3 shows the Chi-Square value to test for the relationship between the two variables. The results of

Pearson's Chi-Square test returned a Chi-Square value of 10.2. Since this value produced a significant difference at a .05 level (p-value as 0.037), it is concluded that age is significantly associated with awareness of Reverse Mortgage in India.

To focus on significant relationships, values on crosstab between age and awareness level have been analysed. As per the table, the basic awareness about Reverse Mortgage is found to have a U shape across all age groups, with knowledge levels peaking at 30-40 years, touching a bottom in the 56-60 years age group, and finally going up in the 61-75 years age group. With the increasing financial literacy in India, people in the younger age bracket of 30-40 years are more aware of financial investment possibilities and are continuously exploring effective retirement financing solutions. As compared to the 41-55 years age bracket, the respondents in the 61-75 years age are more aware of the product, possibly because at this age, they are more concerned about pension and related financial matters, and they also explore possible options to fund retirement when the savings/pensions do not suffice to lead a comfortable life. The awareness of Reverse Mortgage is low in the age



**Table 4. Testing significance between gender and awareness for Reverse Mortgage**

Variable	Pearson Chi-square Value	p-value	Result	Cross Tab Results	
				Categories	Awareness for Reverse Mortgage Loans
Gender	2.608	0.106	Insignificant	Male	54.80%
				Female	45.20%

Source: Based on SPSS output

bracket of above 75 years understandably due to the reason that the respondents in this age category might be too old to understand the complexities of Reverse Mortgage.

**5.2 Gender**

**H2:** Gender does not have any association with awareness of Reverse Mortgage loans.

A study by Smith and Searle (2008) found that the awareness of Reverse Mortgage is influenced by gender with males reporting higher awareness levels as compared to females. A study by Lusardi and Mitchel (2008) found men to be better prepared for retirement planning than women. Therefore, the second hypothesis tests whether gender has a significant association with awareness level for Reverse Mortgage. Table 4 shows the Chi-Square value for the relationship between the two variables. Pearson's Chi-Square test gave a Chi-Square value of 2.608. Since this value did not produce a significant difference at the .05 level (p-value as 0.106), it is concluded that gender does not have a significant association with awareness of Reverse Mortgage in India.

To focus on significant relationships, values on crosstab between gender and awareness level have also been analysed. Even though insignificant, it is found that the awareness level amongst males is marginally higher than

amongst females. (Please note that the sample had an almost equal number of respondents from both genders). The males are possibly more informed and aware of the product as compared to the females. This finding probably reflects the traditional division of domestic roles in Indian society.

**5.3 Education Level**

**H3:** Education level does not have any association with awareness of Reverse Mortgage loans.

This hypothesis examines the significance of the association between education level and awareness of Reverse Mortgage in India. Joo and Pauwels (2002) found that higher education equips individuals to better explore the available financial information and hence affects awareness levels. Smith and Searle (2008) concluded that the knowledge of Reverse Mortgage varies with the level of education, ranging from high awareness levels exhibited by people with a university education, and low awareness levels by people with primary or below education.

Table 5 shows the Chi-Square test yielding a value of 8.772. Since this value produced a significant difference at .01 level (p-value as 0.067), it is concluded that education level is significantly associated with awareness of Reverse Mortgage in India.

**Table 5. Testing significance between education level and awareness for Reverse Mortgage**

Variable	Pearson Chi-square Value	p-value	Result	Cross Tab Results	
				Categories	Awareness for Reverse Mortgage Loans
Education Level	8.772	0.067**	Significant	Primary	13.80%
				Secondary	8.30%
				Graduate	11.00%
				Post Graduate	55.00%
				Above Post Graduate	11.90%

\*\*significant at 0.1 level Source: Based on SPSS output

**Table 6. Testing significance between the living district and awareness for Reverse Mortgage**

Variable	Pearson Chi-square Value	p-value	Result	Cross Tab Results	
				Categories	Awareness for Reverse Mortgage Loans
<b>Living District</b>	3.36	0.499	<i>Insignificant</i>	<i>Noida</i>	22.1%
				<i>Ghaziabad</i>	3.8%
				<i>Delhi</i>	26.0%
				<i>Gurgaon</i>	5.8%
				<i>Outside Delhi</i>	42.3%

Source: Based on SPSS output

To focus on significant relationships, crosstab values between education level and awareness level are analysed. The results indicate that respondents with higher education (Postgraduate 55%) show greater awareness of Reverse Mortgages possibly because the complexities of Reverse Mortgage are more understandable to them. Conversely, respondents with lower education (Primary 13.8% and Secondary 8.3%), exhibit reduced awareness of Reverse Mortgage loans. These results are in line with previous international studies that concluded that awareness levels increase with higher education.

#### 5.4 Living District

**H4:** Living District does not have any association with awareness of Reverse Mortgage loans.

The next hypothesis tests the association between the living district and the awareness of Reverse Mortgage in India. A study by Smith and Searle (2008) in Spain, found some regions showing higher awareness levels for reverse mortgage loans. Table 6 shows the Chi-square value for the relationship between the two variables. The Chi-Square test gave a value of 3.36. Since this value did not produce a significant difference at the .05 level (p-value as 0.499), it is concluded that the living district is not significantly associated with the awareness of Reverse Mortgage in India.

Even though insignificant, earlier studies have shown that regional disparities do affect Reverse Mortgage awareness levels. However, in the Indian context, such regional disparities are not very evident, and the results do not exhibit marked differences in the attitudes of the respondents.

#### 5.5 Monthly Income

**H5:** Monthly Income does not have any association with awareness of Reverse Mortgage loans.

This hypothesis tests the association between monthly income and awareness of Reverse Mortgage loans in India. A study by Joe and Grapple (2001) found people with higher incomes to be more inclined to seek professional financial assistance for retirement planning than those in lower-income groups. Davidoff et al. (2015) concluded that people in the lower-income group are not aware of Reverse Mortgages and their benefits. Table 7 shows the Chi-Square value for the relationship between the two variables. Since the Chi-Square value of 7.931, produced a significant difference at the .01 level (p-value of 0.094,) it is concluded that monthly income is significantly associated with the awareness of Reverse Mortgages in India.

To focus on significant relationships, values on crosstab between monthly income and awareness level are studied. The crosstab results indicate that the income group of Rs 2,00,000 - Rs 5,00,000 exhibits maximum awareness of Reverse Mortgage vis a vis other income categories. The least awareness level (15.2%) in the highest income category can be justified, as these respondents would have saved/ will save enough for their retirement, such that the need for Reverse Mortgage will not arise. However, reduced awareness level in the lower-income groups is a concern. These results point out that efforts should be concentrated on educating and creating awareness about Reverse Mortgages in the lower-income group.

**Table 7. Testing significance between monthly income and awareness for Reverse Mortgage**

Variable	Pearson Chi-square Value	p-value	Result	Cross Tab Results	
Monthly Income	7.931	0.094**	Significant	Categories	Awareness for Reverse Mortgage Loans
				Rs 50,000 - Rs 1,00,000	16.2%
				Rs 1,00,000 - Rs 2,00,000	20.2%
				Rs 2,00,000 - Rs 5,00,000	29.3%
				Rs 5,00,000 - Rs 10,00,000	19.2%
Above Rs 10,00,000	15.2%				

\*\* Significant at 0.1 level  
 Source: Based on SPSS output

**5.6 Homeownership**

**H6:** Homeownership does not have any association with awareness of Reverse Mortgage Loans.

The last hypothesis tests the association between homeownership and awareness level for Reverse Mortgage. Table 8 shows the Chi-Square value for this association. Since the Chi-Square value of 13.809 produced a significant difference at the .05 level (p-value as 0.000), it is concluded that homeownership is significantly associated with the awareness of Reverse Mortgage in India.

To focus on significant relationships, values on crosstab between homeownership and awareness level are also studied. The results indicate that 77.3% of percentages of homeowners are aware of Reverse Mortgage. The fact that homeownership is a prerequisite to qualify for a Reverse Mortgage loan makes these homeowners eligible for Reverse Mortgage. Thus, the enormous potential of Reverse Mortgage loans in India can be judged by the fact that 77% of homeowners among the respondents are aware of Reverse Mortgage. Table 9 summarizes all the statistical results using the SPSS software.

**Table 8. Testing significance between homeownership and awareness for Reverse Mortgage**

Variable	Pearson Chi-square Value	p-value	Result	Cross Tab Results	
Homeownership	13.809	0.000*	Significant	Categories	Awareness for Reverse Mortgage Loans
				Yes	77.3%
				No	22.7%

**Table 9. Testing the significance of respondent's demographic factors in awareness for Reverse Mortgage**

Demographic Factors	Pearson Chi square Values	Degrees of Freedom	P values	Result
Gender	2.608	1	0.106	Do not Reject
Age	10.2	4	0.037*	Reject
Education Level	8.772	4	0.067**	Reject
Living District	3.36	4	0.499	Do not Reject
Monthly Income	7.931	4	0.0948**	Reject
Homeownership	13.809	1	.000*	Reject

\*Significant at 0.05 confidence level, \*\* significant at 0.1 confidence level

Source: Based on SPSS output

## 6. Summary of Empirical Findings

In the analysis of the primary data, 77% of the respondents are found to be aware of Reverse Mortgages in India. Of all the variables, four namely: age, education level, income and homeownership were found to be significantly related to awareness levels of reverse mortgage loans.

Most of the findings of this study confirm existing studies in the area. This study concludes that awareness of Reverse Mortgages is much lower in the higher age bracket, above 75 years. Similar studies by Richardson and Kilty (1995), Hong (2021), Case and Schnare (1994), Shan (2009) and Smith and Searle (2008) also concluded that the preference for retirement planning varies with age, possibly due to the reason that this age category might be too old to understand the complexities of Reverse Mortgage. Robert et al. (2019) in their study on the prospect of Reverse Mortgages in Australia, concluded that reverse mortgages are largely unattractive, to people over the age of 65 years. Bo and Dengxin (2020) found senior citizens exhibiting low awareness of reverse mortgages with a meagre 9% of them willing to apply for it.

This study also concludes that increased awareness of reverse mortgages is related to a higher level of education. Existing studies have confirmed a similar relationship. A study by Searle (2008) found that knowledge of Reverse Mortgage differs with education level, with people of university education exhibiting high awareness, and people with primary or lesser education, having reduced awareness. A similar study by Chou et al. (2006) found people with higher educational backgrounds have a better understanding of complex financial products. Reed (2009) in his study in Australia, identified education of current and prospective

older households to be the prime reason for reduced awareness of Reverse Mortgages.

This study also found an indirect association between income and awareness levels, with people in the highest income category (15.2%) exhibiting the least awareness of reverse mortgages. Many studies have similar conclusions: a study by Davidoff et al. (2015) concluded that people in the lower-income group were not aware of Reverse Mortgages and their benefits. Joe and Grapple (2001) found people in higher income brackets to be more inclined to seek professional financial assistance for retirement planning than people in lower-income groups.

Homeowners in this study exhibited greater awareness of Reverse Mortgage loans. Since homeownership is a prerequisite to qualify for a Reverse Mortgage loan, this conclusion is justified. Similar existing studies also found homeownership resulted in higher awareness of reverse mortgage loans. A study in Hong Kong by Chou et al. (2006) found homeowners to consider applying for a reverse mortgage if such a plan was available.

## 7. Conclusion and Recommendations of the Study

The association of socio-demographic influences and retirement planning has an impact on the knowledge and awareness of the product. This study analysed the demographic factors in the Indian context to gauge their impact on the understanding and awareness of reverse mortgages in India. Of the six demographic variables analysed, four are found to be significantly related to the awareness level of Reverse Mortgages in India. The findings indicate that age, education level, homeownership, and monthly income significantly impact the awareness level,

thereby supporting these hypotheses. The other variables like gender and living district are not found to have any impact on the dependent variable. These results are in line with the existing studies on the subject.

This research has provided an opportunity to analyse the importance, need, and application of Reverse Mortgages in the Indian context. The results have considerable implications both for the lending institutions and the regulators.

### 8. Implications for the Regulator

Results from this study conclude that income, age, and education affect the awareness level of Reverse Mortgages. Based on these results, the following recommendations are suggested:

- Reduced awareness level in the lower-income groups is a concern. This puts forth the point that efforts should be concentrated on educating and creating awareness about Reverse Mortgages, particularly in the lower-income group.
- The study identifies education as having a significant relationship with awareness of Reverse Mortgage loans. It is recommended that the government focuses its effort on improving financial literacy in India. The need for retirement planning should be stressed with a special focus on the options available post-retirement.
- Education and efficient counselling sessions can make the Indian elderly realize the difference between the difficulties in opting for traditional loans, vis a vis the psychological, social and emotional comforts that Reverse Mortgage can provide.

### 9. Limitations and Scope for Further Research

The findings of any study are restricted by certain limitations, that also offer specific opportunities for improved research. One of the most significant limitations of this study is the lack of similar work conducted in the area of the Indian Reverse Mortgage market. As Reverse Mortgage is a relatively new concept, there is a lack of enough empirical work in the Indian context. Some more determinants such as control and interactive variables affecting the Reverse Mortgage purchase decision could have been considered for the study.

This study can be further extended to evaluate the impact of specific demographic variables (age, education level, income level) on the purchase decision for Reverse Mortgage loans. A study on the cash requirements for different income categories in senior citizens, city-wise can be conducted. This study can help the government envisage the possible variants of Reverse Mortgage loans, most suitable for various income categories, city-wise.

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# Household Coping Strategies under Covid 19 Economic Shocks: The Nigerian Experience

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## A b s t r a c t

The COVID-19 pandemic threw up drastic economic shocks that dislocated many households from their means of survival. This study assesses the type of economic shocks experienced by working-class household heads in Nigeria and the measures adopted to cope with the challenges. Two thousand household heads who experienced different economic shocks occasioned by the pandemic were selected for the study. Data were generated through a questionnaire that elicited information on the nature of the shocks experienced, the coping strategies adopted and whether these strategies were able to lift households from financial decimation. Data generated were analyzed using a chi-square statistical test to determine the association between the coping strategies and household financial improvement. The result shows that the adopted coping strategies improved household finances and were able to shore up the shocks of the pandemic. The study recommends among others frequent financial education workshops and seminars put in place by the government at various regions for the orientation of citizens in managing finances in times of financial emergencies such as COVID-19. The government should make low-interest credit facility regularly for household heads who wants it to assist them to diversify into other areas of economic production for family sustainability.

**Keywords:** COVID-19, Economic shock, Finances, Furlough, Household, Lay-off, Pay Cut, Coping strategies

## 1. Introduction

The Covid-19 pandemic as a global health emergency has come with several constraining factors. It has affected severely the global economy with the global infection rate as of 2nd March 2022 hitting an all-time high of 437,333,859 confirmed cases and fatalities rising to 5,960,972 (WHO, 2022). There seems to be no hope in sight of putting the spread in proper check. WHO warns that the infection rate will rise astronomically before December 2021 if countries do not take responsibility in avoiding further spread. Continuous rise in the spread of the infection will suggest some spiraling effect on the economic base of individuals and the state at large.

At the global level, the Covid-19 pandemic has caused a direct impact on national economies ranging from supply chain disruption leading to a reduction in productivity to the closure of factories. International air transportation business also suffered heavy loss in revenue due to the global lockdown and reduction in personal travels due to personal health precautionary measures. The International Air Transportation Association said revenue would drop to \$419bn, down 50 percent from 2019. It added further that airlines will lose \$230m on average daily in 2020 as the number of air travelers falls to 2.25 billion just half of the number of air travelers in 2019 (BBC, June 9, 2020).

The World Tourism sector is likely to lose at least \$1.2 trillion in revenue or 1.5 percent of the global gross domestic product (GDP) having been on standstill for months due to the Corona Virus outbreak (UNCTAD, 2020).

Across the world, medical tourism is affected drastically. The medical tourism market which is worth up to \$87.5 billion (€70 billion, £77 billion) annually (Berdine, 2019) is expected to shrink until 2021 due to patients' avoidance of unnecessary travel (Youngman, 2020). As noted by the UN World Tourism Organization, it is estimated that the travel industry will decline by 60 percent to 80 percent by the end of 2020 (UNWTO, 2020). This is a gargantuan drop in global revenue and could affect the world's economic stability unimarginably.

Countries have also lost revenue in traumatic dimensions with threats to relapse into recession. UK, Germany, France and Italy have been identified to be among the EU countries with the biggest tourism revenue losses arising from the Covid-19 pandemic. The United Kingdom is likely to lose £22 billion, Germany €38 billion, France €48 billion and Italy €36 billion to a lack of tourists. The collapse of this industry places nearly 3 million jobs at risk of extinction and

increases the global unemployment crisis (Schengennisainfo, 2020). The Economic Commission for Africa (ECA) estimates a loss of \$65 billion in revenue for oil-producing countries in Africa as oil revenue drops in the international market due to the coronavirus (UNECA, 2020). Nigeria's revenue target for instance fell by N125.52 billion in the first quarter of 2020 due to a sharp drop in demand as a result of the coronavirus. Inflation was already hitting a two-year high at 12.34 percent. Based on the assessment of the economy by the World Bank, it projected that the country would plunge into a recession (Ogunmade et al., 2020).

A weak national economy is likely to affect the income and economies of households. Under an existing precarious economic condition in Nigeria, a substantial number of households were further devastated by the COVID-19 economic shocks which affected family sustainability. In what direction were household finances in Nigeria affected by the coronavirus pandemic? How did they cope with the economic shocks thrown up by the pandemic? What options are there to stabilize household income? What are likely policy responses on the part of the government to absorb the economic shock created by the COVID-19 pandemic? This study attempts to address these and other related questions.

## 2. Objective of the Study

The study is driven by three objectives:

1. To identify economic shocks suffered by households in the COVID-19 pandemic.
2. To ascertain the coping strategies against COVID-19 shocks by households.
3. To determine whether the coping strategies significantly lifted affected households' finances to grapple with the effect of the shock.

## 3. Perspectives on Covid-19 Economic Retardation

Reviews and studies have been conducted on the effect of epidemics on the economic stability of countries and individuals. Lee and McKibbin (2003) studied the macroeconomic effect of SARS. They discovered a significant effect of SARS on the economies of countries through a mass reduction in consumption patterns of goods and services as well as an increase in the operational cost of businesses. The degree of exposure and susceptibility of a country to such diseases determine the shock on its economy. Achou et al. (2020) studied the early impact of the COVID-19 pandemic on households' finances in Quebec

and concluded that in the heat of the Coronavirus pandemic, 22 percent of the people lost jobs while 6.3 percent of the individuals reduced their working hours. This resulted in a substantial loss of income for many households. The average monthly loss in income amounted to \$810 for every household. Thirty percent of sampled households experienced a change in employment status as a result of the pandemic. In a similar study, Albacete et al. (2020) confirmed in the case of Austria that households with previous difficult social, economic and financial situations before the COVID-19 pandemic suffered the largest income losses. In other words, low-income households or households with unemployed reference persons were worse hit by the pandemic. Cantor and Landry (2020) also discovered that households, who, prior to the COVID-19 pandemic were financially vulnerable had worsened financial situations especially low-income families of households of colour during the pandemic. As unemployment, pay cuts, furlough, and reduction in hours of work increase, financial shocks manifest in debilitating dimensions. Countries have experienced these shocks during the pandemic heat. In the United States for instance unemployment peaked at 14.7 percent from as low as 3.5 percent in February 2020 (US Bureau of Labour Statistics, 2020). A study by Parker Minkin and Bennett (2020) reveals that about 42 percent of US households have experienced a layoff, pay cut or both during the pandemic. Those who experienced job losses as a result of COVID-19 were mostly women workers, immigrant workers, workers with limited education and young adult workers (Coacher, 2020). Most families were not financially buoyant before the pandemic and were worst hit within the first few periods of the pandemic. Cantor and Sims (2020) study found that 40 percent of households lacked enough savings in monetary terms to maintain their households' expenses for three months. Parker et al. (2020) also confirmed that about 77 percent of low-income, 52 percent of middle income and 25 percent of upper income did not have enough liquid savings to address at least 3 months of their living expenses during the pandemic. In order to shore up the hardship brought about by the pandemic, one-third of American households had to access their savings and retirement accounts to address household needs brought on by income loss (Parker et al., 2020; Cantor & Sims, 2020).

Engaging in financial planning to address some of the transitory shocks would be very imminent. Integrated financial planning is an important exercise in the phase of a financial crisis (Fox & Bartholomae, 2020). Financial planning as posited by Fortin et al. (2020:47) is "helping

clients navigate change and conditions of uncertainty, a deep client-planner relationship built on trust and the facilitation of behavioural change".

Few studies on COVID-19 also abound about Nigeria and address varied dimensions of the impact and understanding of the virus among some populations. Odusanya (2022) assessed Nigeria's health system in the COVID-19 era and identified the impact of the pandemic on the health system to include disruption of the health services, low motivation of the health workforce, poor funding and unresponsive leadership. To prepare against future pandemics, the paper recommended the strengthening of the health system through the motivation and capacity building of health personnel and adequate funding of the health sector.

Jacobs and Okeke (2022) further took a critical evaluation of Nigeria's response to the first wave of COVID-19 and concluded that the country implemented adequate containment and mitigation measures to deal with the effect of the first wave of COVID-19. This national effort was however, faced with some challenges such as the absence of geo-mapping and electronic contact tracing capacity, premature easing of lockdown and social distancing measures as well as the absence of reasonable socio-economic support for families and businesses. The paper called on the government to address these challenges so as to optimize Nigeria's response to subsequent waves of COVID-19.

From the perspectives of social workers, Okoye and Nwatu (2022) examined COVID-19 in Nigeria. The review aimed to inform a more proactive social work response to future pandemics and mitigation of socio-economic hardship and inflationary leap in a post-COVID-19 era. They concluded that the government response to COVID-19 should pay direct attention to the concerns of the voiceless, the poor, persons with disabilities as well as women and the homeless.

The reality of managing COVID-19 in the Nigerian state was examined by Nnamani et al. (2022). They argue that effective response by the government to public health emergencies will largely depend on the capacities and capabilities of the state focusing extensively on facilities, existing structures, available manpower, policy coordination and sustainable finances. They argue that the government's containment effort was limited by a lack of trust, over-centralization of policy responses and declining revenue. The paper renewed the call for political restructuring and economic diversification as panaceas to strengthen state capacity to deal with emergency situations.



Despite the enormous work on the COVID-19 pandemic in Nigeria, no known work seems to address family economic livelihood during the pandemic. There is a lack of research on how households coped with the economic shocks thrown up by the pandemic in Nigeria. Empirical evidence and consensus in this regard seem lacking about Nigeria. It is to this extent that this study comes to cover the gap in the literature.

Economic shocks refer here to the loss of a source of paid income in the heat of the pandemic.

How are families coping with economic shocks thrown up by the COVID-19 pandemic in Nigeria? The answer to this question forms the core of this study.

#### 4. Method

##### 4.1 Population

The population of study involves low and middle-income household heads who draw income from paid employment not exceeding \$100 (N50,000) per month. This category of household heads should have experienced an economic shock during the pandemic.

##### 4.2 Sampling technique and size

The purposive and accidental sampling techniques were used to select respondents. The choice of these techniques was to ensure that selected household heads are those whose household members are not in any paid employment except the household heads who suffered an economic shock during the pandemic. Two thousand household heads were randomly selected for the study. Given the homogenous nature of the population (a greater percentage of the population share a common experience), a sample size of 2000 respondents will provide valuable information to address the goal of the research and is likely to generalize results therefrom reliable. The average number of persons per household in the sampled household is four.

Approximately 8000 household members suffered the effect of the economic shocks as a result of their heads either losing their jobs, having their pay sliced drastically or being suspended from work for a long while without pay.

##### 4.3 Data collection

The data for the study were collected through a self-developed questionnaire titled Household COVID-19 Economic Shocks (HC-19ES) and was content validated by the Department of Public Administration research team of the University of Calabar, Nigeria. Questions regarding the economic shocks experienced by household heads and what coping strategies were adopted by them against the shock were asked. Among others, the respondents were asked to respond to the following questions: which of the economic shocks did you experience during the pandemic? What coping strategy did you adopt to cushion the effect of the economic shocks? Did the adopted coping strategy lift your household from the financial shock? Is there anything the government should do to ameliorate the effect of the economic shocks? The sex, location and the years the respondents experienced the economic shocks were requested.

##### 4.4 Data analysis

Results were expressed in tables, charts and percentages. Chi-square statistical analysis was used to ascertain the association between the coping strategies and the extrication of households from the financial shock

#### 5. Results

Household economic shocks were examined under the following variables;

- Pay cut
- Lay off (disengagement from work)
- Furlough

Respondents indicated the shocks suffered by households as well as their locations as shown in Table 1.

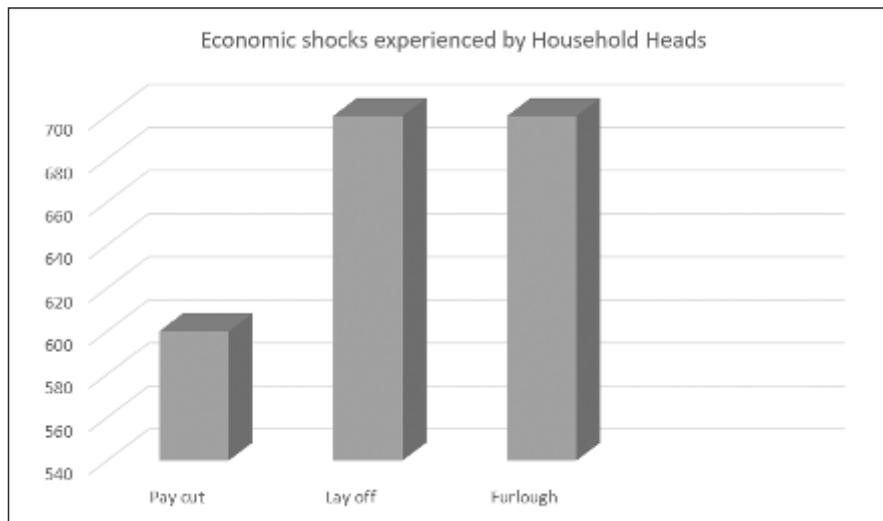
**Table 1. Economic shocks and locational distribution of Households**

<i>Economic shocks</i>	<i>Location and Frequency of Households</i>			<i>Total percentage</i>	
	<i>Rural</i>	<i>Semi urban</i>	<i>Urban</i>		
<i>Pay cut</i>	170	190	240	600	30
<i>Lay off</i>	185	290	225	700	35
<i>Furlough</i>	250	230	220	700	35
<i>Total</i>	605(30.25%)	710(35.50%)	685(34.25%)	2000	100

Source: Fieldwork, 2021

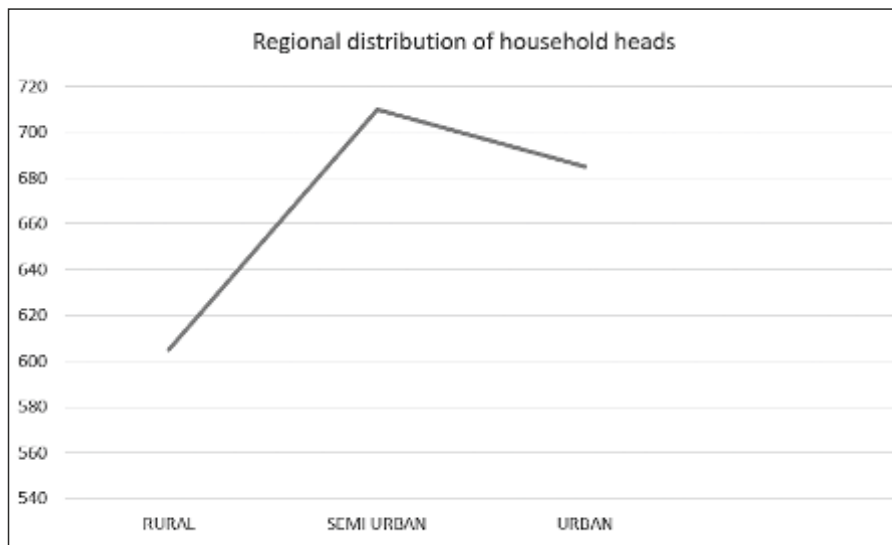
Table 1 shows that 600 household heads representing 30 percent of the respondents experienced pay cuts from their places of economic engagement. 170 of these respondents reside in the rural area of the country, 190 live in semi-urban areas and 240 stay in the urban locales. 700 respondents representing 35 percent suffered layoff (disengaged from work). These heads of households were laid off from work without disengagement benefits. 185 of this category of shock reside in the rural areas of the state and 290 stay in the

semi-urban areas and 225 live in the urban centres. Another 700 (35 percent) household heads experienced furlough (a period of work an employee is directed to stay away from work without pay). 250 respondents within this category live in rural areas, 230 reside in semi-urban areas and 220 stay in urban locations. The economic shock categorization and regional distribution of respondents are further expressed in Figures 1 and 2 respectively.



Source: Fieldwork, 2021

**Figure 1. Economic shocks experienced by household heads**



Source: Fieldwork, 2021

**Figure 2. Regional distribution of household heads**

The hardships thrown up by the economic shocks under the pandemic generated survival strategies to keep households from financial decimation. The coping strategies adopted by households are presented in Table 2.

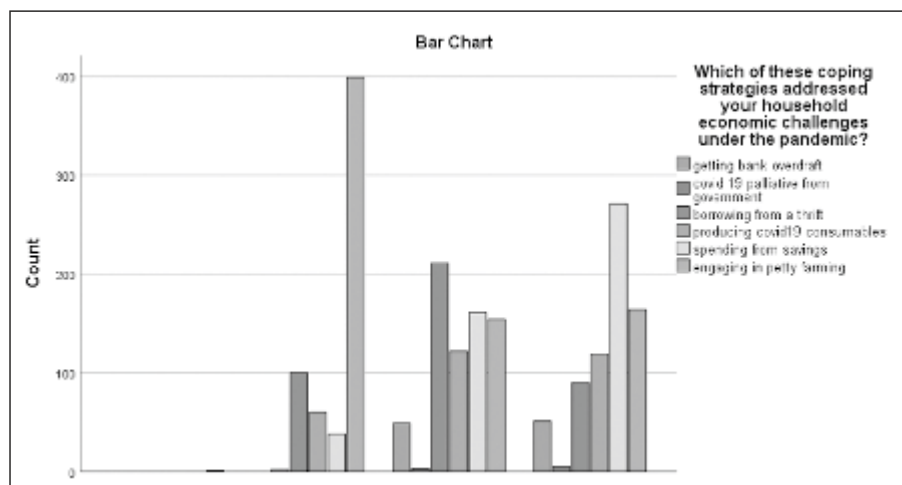
Household heads who suffered these varied shocks adopted different strategies to cope with the sudden financial limitations. Table 2 shows that 100 household heads (5 percent) adopted the strategy of getting bank overdrafts. 10 household heads (0.5 percent) held forth with COVID-19 palliatives from the government and 401 household heads

(20.1 percent) coped with borrowing from thrifts. About 15.1 percent (301 household heads) were producing COVID-19 consumables such as facemasks, face shields and alcohol-based hand sanitisers to generate money for household upkeep. 470 household heads (23.5 percent) were spending from their savings while 718 household heads (35.9 percent) were engaged in petty farming activities for revenue generation. This analysis is further expressed in Figure 3.

**Table 2. Households coping strategies against COVID-19 economic shock**

Households Economic Shocks	Households coping strategies against COVID-19 economic shock							Chi-square	p-value
	Getting bank overdraft	COVID-19 palliative from govt	Borrowing from a thrift	Prod. Covid19 consumables	Spending from savings	Engaging in petty farming	Total		
<b>PAY CUT</b>	1	2	100	60	38	399	600		
<b>LAY OFF</b>	49	3	211	122	161	154	700	486.586	.000
<b>FURLOUGH</b>	51	5	90	119	271	164	700		
<b>TOTAL</b>	100(5%)	10(0.5%)	401(20.1%)	301(15.1%)	470(23.5%)	718(35.9%)	2000(100%)		

Source: Fieldwork, 2021



Source: Fieldwork, 2021

**Figure 3. Coping strategies adopted by household heads**

Gender dimension of the shock is shown in Table 3.

**Table 3. Gender distribution of economic shock**

Economic shocks	Gender		Total
	Male	Female	
<i>Pay cut</i>	400	200	600
<i>Lay off</i>	450	250	700
<i>Furlough</i>	200	500	700
<b>Total</b>	<b>1,050 (52.5%)</b>	<b>950 (47.5%)</b>	<b>2,000</b>

Source: Fieldwork, 2021

**Table 4. Chi-square analysis of the association between coping strategies and household economic stability**

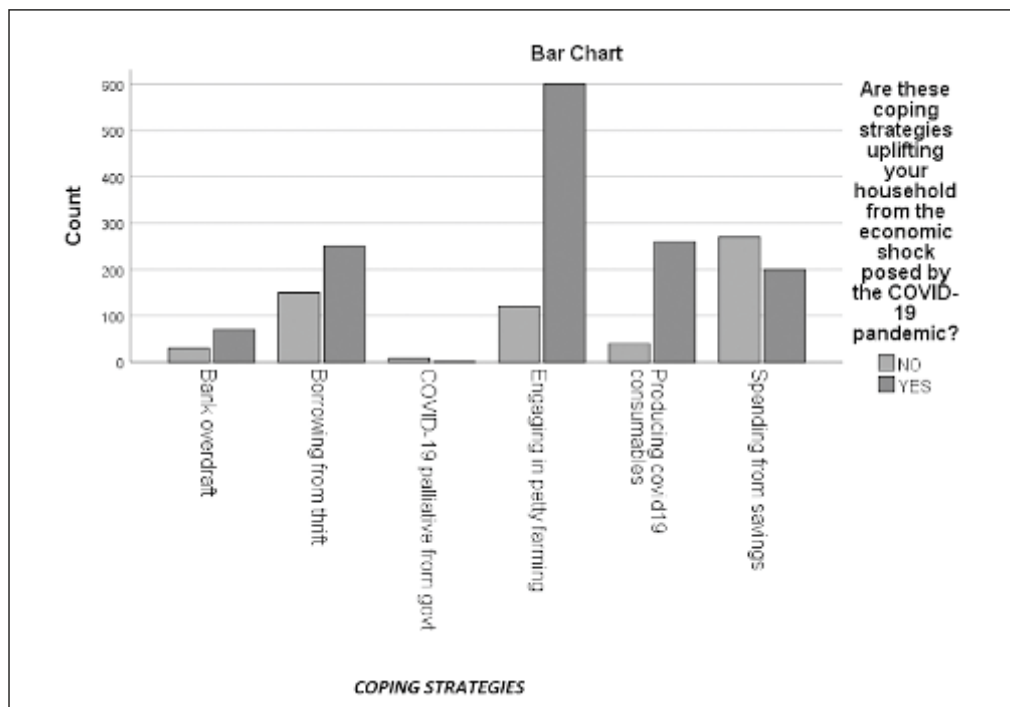
Variable	Whether coping strategies are lifting households from financial shock			C 2	p-value
	Yes Frequency (%)	No Frequency (%)	Total Frequency (%)		
<i>Bank overdraft</i>	70(3.5)	30(1.5)	100(5.0)	286.287	<0.000
<i>Borrowing from thrift</i>	250(12.5)	150(7.5)	400(20.0)		
<i>COVID-19 palliatives from govt</i>	2(0.1)	8(0.4)	10(0.5)		
<i>Engaging in petty farming</i>	600(30.0)	120(6.0)	720(36.0)		
<i>Producing COVID-19 consumables</i>	260(13.0)	40(2.0)	300(15.0)		
<i>Spending from savings</i>					
<i>TOTAL</i>	200(10)	270(13.5)	470(23.5)		
	1382(69.1)	618(30.9)	2000(100)		

Table 3 shows that 1,050 (52.5 percent) household heads surveyed were males while 950 (47.5 percent) were females. The males seem to be most affected by the economic shock brought about by the pandemic. Female household heads affected were mostly widows and divorcees.

To ascertain whether these coping strategies significantly lifted households from the economic challenges posed by the pandemic, responses in this regard were subjected to chi-square statistical analysis. The result of the analysis is presented in Table 4.

Table 4 shows that a significantly higher proportion of household heads 1,382(69.1 percent) admitted that the coping strategies adopted by them were able to lift the family

from financial shock. In other words, a greater proportion of those who got involved in petty farming, producing COVID-19 consumables, borrowing from thrifts and getting bank overdrafts were able to improve their finances to cushion the effect of the economic shock. A little above a quarter of the households surveyed 618 (30.9 percent) did not experience significant improvement in household finances as a result of adopting these coping strategies. The difference is statistically significant at a 0.05 level of significance ( $p < 0.000$ ). In other words, the coping strategies adopted by family heads as a result of the economic shocks thrown up by the pandemic were able to uplift households from financial shocks. This analysis is further expressed in Figure 4.



Source: Fieldwork, 2021

**Figure 4. Responses on whether the coping strategies are lifting households from financial shock**

**6. Discussion**

The vast majority of households suffered economic shocks during the Covid-19 pandemic. The objective of the study was to ascertain the diverse economic shocks suffered by households, determine the coping strategies adopted to address these shocks and determine whether these coping strategies were able to uplift households' economic well-being. Our data showed that the strategies adopted by household heads to cushion the economic shocks of the COVID-19 pandemic were; relying on COVID-19 palliatives from the government, spending from savings, involvement in petty farming, producing COVID-19 consumables, borrowing from thrifts and getting overdrafts from banks.

Government palliatives are food items and cash distributed by the government to households to help cushion the effect of the lockdown and associated restrictions on economic activities. Food items were and are occasionally distributed on various occasions by government agencies and parliamentarians. Very few numbers of the households surveyed (10 households) reported coping with palliatives from the government. The small ratio of households who depended on government food palliatives suggests the

inadequacy of the relief efforts to lift households from the economic shocks. This view aligns with Ibukun and Adebayo's (2021) finding that government food palliative support and distribution has been grossly inadequate and negligible in the heat of the COVID-19 pandemic. There were no organized arrangements to ensure that every needy household had a share of the distribution. As observed by Abulude and Abulude (2020) lucky households got a paltry share of food items on the day the government chooses to distribute them. Procured food items by the government were hoarded in various warehouses ostensibly to be used as campaign gift items by political office seekers. This insensitivity triggered a mass movement of hungry citizens who broke into these warehouses and looted the food items. Onah et al. (2021) attributed this to the politico-administrative elite mismanagement of COVID-19 issues in Nigeria, and most importantly the lopsided distribution of cash palliative by the government. Ezeah (2020) observed a strong politicization of COVID-19 palliatives by the government, just as the distribution of the palliatives was characterized by corruption and diversion in Enugu state (All Africa, 2020). The same applied in almost all states of the federation of Nigeria.



On the production of COVID-19 consumables for family financial sustenance, our study confirms that the COVID-19 pandemic created an internal avenue to make money by households. Some households got into producing consumables that could control the spread of the virus (facemasks, hand sanitisers, face shields) and were able to improve their economic well-being. It can be summarized that despite the economic damage from the COVID-19 pandemic some people could make an economic fortune through creativity. This aligns with BBC News (2021) citing Credit Suisse research that the COVID-19 pandemic increased the number of millionaires from 5.2 million to 56.1 million globally. The study submitted that more than one percent of adults worldwide in 2020 became millionaires for the first time.

Engaging in petty farming to ameliorate households' economic shock was a significant coping strategy. A greater percentage of the households surveyed (35.9%) went into small-scale farming to improve the household economy. The prevalent petty farming indulged were pisciculture, poultry, continuous cropping and piggery. The significant involvement of households in this area of coping strategy is likely a result of rapid production as well as high consumption demand placed by consumers on this area of family needs in Nigeria.

The cost of starting petty farming is not also significantly high. A small household can begin a poultry of 50 birds and a fishery of 500 fingerlings as a form of economic diversification. This result is however, as expected and further confirms the thesis of earlier studies (Proctor, 2014; Ellis, 1998; Bunch et al., 2020) on household economic diversification. Households in precarious situations venture into several economic engagements to generate income to address household needs.

The result of the strategies of borrowing from a thrift shows that most households especially those residing in rural and urban locales were comfortable with these coping strategies. This result was expected because local thrifts (what is locally referred to as OSUSU) are a prevailing means of pooling financial resources together to be accessed by members in need. It has become, in the Nigerian context the quickest means of accessing capital to address household needs. Only a small fraction of urban households adapted to this coping strategy. The result was anticipated because of class considerations associated with joining local thrifts. It is often viewed that people of lower class form local thrift groups to cushion the effect of poverty. It is a common practice among people of low income. This economic

practice is common in rural and semi-urban communities in Nigeria. Urban dwellers with low-income status could also find themselves in local thrift groups. This, however, could explain the limited selection of this coping strategy by most urban households.

Spending from savings was a coping strategy common among some households. It was however prevalent among urban households compared to rural and semi-urban households. This difference could be explained from the point of view that urban dwellers tend to save part of their income regularly and more than rural dwellers. Households are likely to spend from their savings if they have saved some money. This result was expected because households cannot starve to death when they have some money in the bank. The result supports previous studies (Agarwal, 2021; Martin et al., 2020) on household spending from savings during the pandemic.

About 5 percent of the households surveyed were coping by getting overdrafts from banks. None of the rural households selected this coping strategy. The explanation for this is drawn from the fact that banks in Nigeria can only grant bank overdrafts to people running a dependable salary structure from economically viable organizations such as governments, multinational corporations and large-scale business conglomerates. Such workers must run a salary account with the banks. Most rural households may not work with such large firms whose salary management is consistent, therefore cannot enjoy such facilities. For urban and semi-urban households this practice is almost a recurrent one. Beneficiaries draw money above their pay cheque monthly and the excess is deducted by the bank with interest when their salary drops the next month. Salaries are paid monthly in Nigeria.

There was evidence of a statistically significant effect of these coping strategies on lifting the economy of households (Table 4) ( $p < .000$ ). This indicates that the adopted coping strategies contributed positively to improving the household economy during the heat of the pandemic. In specific terms engaging in petty farming was the most significant coping strategy adopted by the sampled households. About 718 households sought relief through this strategy to overcome the COVID-19 economic shocks compared to COVID-19 palliative distributed by the government with only 10 households relying on it.

However, a little above the household heads surveyed did not experience financial improvement as a result of adopting any of these coping strategies. Several factors could account

for this. The capital invested could be too small to stimulate robust turnover for those involved in petty farming and the production of COVID-19 consumables. For those who coped through savings, the amount of savings will determine how long the family's needs can be sustained through it. Household heads with meagre savings are likely to run out of support if they rely on savings solely. In the case of borrowing from thrifts, the amount invested in a thrift will determine the amount of money to draw. If one's investment in thrift is meagre the amount to access will also be small and this is likely not to take the family too far. In the case of bank overdraft, the money bank is likely not to commit itself to any customer whose salary or inflow of income is not regular. For those who were laid off or placed on furlough banks are not likely to grant them frequent overdrafts because of financial insecurity.

This study may be confronted with some potential limitations. First was the dearth of previous studies on the topic. It posed the challenge of building a direct theoretical foundation around the research questions. This limitation arose because COVID-19 is a recent phenomenon. This, however, provided an important opportunity to identify literature gaps and build a new research typology with similar literature existing around the issue area. Second, the study did not cover the entire population of people affected by the pandemic. It only covered household heads who lost their paid employment and how they coped with the economic shock. The result therefore cannot be generalized to cover the economic shock of every person in Nigeria that was confronted with COVID-19 experiences. Future studies should cover the coping strategies of all categories of persons who faced economic challenges in the heat of the pandemic

## 7. Conclusion

Responding to the crises of COVID-19 has been the concern of countries affected by the pandemic. The Nigerian response measures have been described as aggressive and successful (Dan-Nwafor et al., 2020; Abubakar et al., 2021) even with the carelessness of most Nigerians driven by the myth that Nigerians are immune to COVID-19 and the claim that the virus is a fiction (Aiyewumi & Okeke, 2020). However, the extent to which the intervention measures addressed the economic needs of families devastated by the pandemic has been scanty in literature.

The COVID-19 pandemic brought about economic shocks that drove households to evolve several coping strategies to improve family finances. The purpose of this study, therefore, was to identify the economic shocks suffered by

household heads in the heat of the COVID-19 pandemic in Nigeria and to ascertain the coping strategies adopted by families to cushion the effects of this shock as well as establish whether this strategy significantly improved household finances to deal with the shocks.

Based on the data collected and analyzed, households in Nigeria suffered myriads of economic shocks ranging from layoffs to furlough and other associated economic limitations. In dealing with these economic shocks, households evolved a number of strategies to stabilize their finances such as engaging in petty farming, borrowing from thrifts, producing Covid19 consumables, and spending from savings among others.

The study observed that the economic shocks suffered by households had debilitating effects on household finances. It further observed that coping strategies were evolved by households to cushion the effects of the shocks. Household heads who lost their sources of income or had a drastic reduction in their income as a result of the pandemic had to get engaged in additional means of raising revenue to improve family livelihood. We, therefore, conclude that as households' income plummets occasioned by the COVID-19 economic shocks, they evolved an economic balancing strategy to keep family consumption within a stable threshold. We conclude further that the coping strategies adopted significantly uplifted household finances to grapple with the effect of the economic shocks. Diversifying sources of family income is important in lifting households from economic trauma. Households under economic limitations should therefore get involved in diverse sources of income as a means of stabilizing their economic conditions.

## 8. Recommendations

Arising from these findings, the study makes the following recommendations:

- ♦ Financial education should be organized at regular intervals for lower and middle-income households in Nigeria. The government can sponsor this sensitization through registered community-based organizations (CBOs). This approach is very important because, in crises such as the COVID-19 pandemic, knowledge of this nature could help households to take informed decisions on addressing their financial well-being. A well-informed and financially educated household is likely to make better decisions concerning family consumption patterns, especially on how to raise additional income to support family needs.

- ♦ Grappling with how to survive during health-challenging situations can be very traumatic and challenging especially for low-income households. Even though individual households strived to protect themselves from the economic scourge by doing something additional to improve household income, the government has to intervene to assist households to cushion the effect of the economic shocks thrown up by such pandemics. In light of this, the study recommends further that the Nigerian government should institute policy intervention measures to support household resilience during the COVID-19 economic trauma. Policy interventions such as economic stimulus measures and green spending are advocated. Under the economic stimulus measures, a monetary policy such as a reduction in interest paid on overdrafts should be put in place. This is because some households have been coping through this strategy of bank overdraft. Government should also create target credit facilities for households engaging in petty farming business as a means of survival. There should be a reduction in interest for those accessing such credit facilities. Again, the government should exempt those households involved in petty businesses from paying taxes. Businesses such as commercial motorcyclists, itinerant-cooked food sellers, etc. draw turnovers that are too meagre to sustain the family.
- ♦ Government should as a matter of urgency reduce the electricity tariffs paid by households. The rate is extremely high with little or no power supplies. This is an area of household expenditure that consumes household finances astronomically in Nigeria. Some household economies are worsened by a lack of access to electricity. Government can assist households, especially those from rural locales to overcome this challenge by getting involved in green spending through investment in clean energy. Government should therefore install solar home systems for households not connected to the national grid. This will enable low-income households to run their businesses that require power to operate.

When households are supported by these interventions by the government, they are likely to shore up the economic shock without posing a burden on the government.

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# The Relationship of Emotional Intelligence with Personality: A Systematic Review

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Personality and Emotions are essential attributes that differentiate one individual from another. A thorough understanding of both constructs can be beneficial for uncovering the linkages in human behaviour. This review sought to determine whether emotional intelligence (EI) was only a measure of personality traits or a distinct concept. In this article, a systematic review is presented of the relationship between personality traits and emotional intelligence, through a review of 80 research papers spanning from the year 2000 to 2021. Papers have been critically examined to identify the type of study, sample and models that have been employed over the years. Interest in this topic has gradually increased over the years and continues till today. The findings suggest that there is a relational and predictive relationship between emotional intelligence and personality traits; however, the results can vary depending on the combination of measures used. Additionally, personality traits are more closely associated with trait EI than ability EI. Despite the strong correlation between the two constructs, EI has been shown to be a reliable predictor of other variables beyond personality traits. Relation between EI and personality traits can vary among young and older individuals but the data available to support this claim is insufficient. The findings and research gaps that were identified through this review have relevance for many different research domains.

**Keywords:** Ability EI, Emotional Intelligence, GFP, Personality Traits, Trait EI

## 1. Introduction

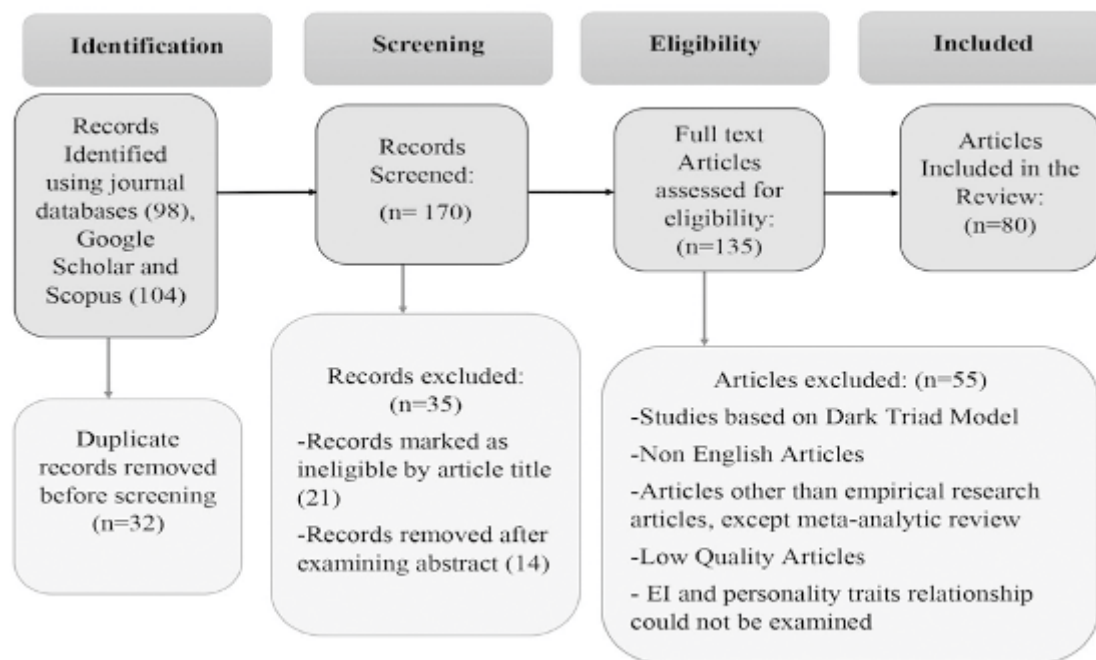
Human behaviour is a complex phenomenon that results from the interaction of numerous factors. Emotion being one of the factors may be seriously destructive to people's wellness if ignored or managed improperly, especially when done frequently (Martins et al., 2010). Individuals might differ in terms of how they perceive, assess, and control their emotions which is termed emotional intelligence (EI). Emotional intelligence (EI) has been classified as ability and trait components, where ability EI refers to the ability of an individual to perceive and express emotions, assimilate emotions in thought, comprehend and reason with emotions, and manage emotions in the self and others (Mayer & Salovey, 1997). While, trait Emotional intelligence (EI) is a set of behavioural patterns and self-perceptions regarding an individual's ability to recognise, form, and utilize emotional information (Petrides & Furnham, 2001). Researchers have become quite interested in the concept of EI since it was first introduced by Mayer and Salovey (1995) in academic literature. Emotional intelligence has been extensively studied and is regarded as a key component of better personal and work life. EI has been effectively used to measure a variety of significant outcomes that could not be predicted using conventional measurements of intelligence. EI is associated with a number of outcomes, including health, commitment, and job satisfaction (Miao et al., 2017). EI has been applied successfully in many different fields, including organizational, educational, and clinical psychology (Petrides et al., 2016; Siegling et al., 2015). Amid these studies, some point towards a certain degree of overlap between EI and personality traits and some even argue that EI simply measures personality traits. The conceptualization of EI in different ways has led to confusion over its nature and the accurate way to measure it.

The purpose of this study was to ascertain the current status of research on personality traits and emotional intelligence (EI) and assess its applicability in the present. This study explores the research on the relationships between personality traits and emotional intelligence. To acquire a sense of how EI and personality traits have been studied and what findings have been attained, an in-depth review is undertaken. Studies are investigated to determine if the findings are significant and how they relate to other studies of similar nature. The data from studies are thoroughly analysed to look for patterns and identify research gaps. Some valuable findings were attained that throw light on the relationship of ability and trait measures of EI with various personality classifications. This review is significant as none of the prior studies have particularly presented a comprehensive review of the relationship between personality and EI. The reviews mostly pertain to specific

classifications of personality traits and EI. Reviewing numerous studies may help to support some conclusive results as well as provide insightful information and suggest areas for future research. The findings from this article may be helpful for researchers, academicians and trainers.

## 2. Review Methodology

The concept of personality and emotional intelligence come under the purview of individual differences. Accordingly, this study reviewed the research on personality and EI by using different databases such as Springer, Taylor and Francis, Emerald, Elsevier and Wiley for data collection. To assure coverage of publications in additional databases, search engines Google Scholar and Scopus were also used. This article covers studies conducted over a 21-year period, spanning from 2000 to 2021. The chosen time period was taken into account as most studies on EI and personality traits began in the year 2000, with 2021 being the most recent year of research. Keywords such as "personality", "trait", "emotional intelligence" and "emotions" were used to search relevant research articles related to the study. Only empirical papers were considered for this study, except for one article which is based on meta-analysis; dissertations, conference papers, textbooks and thesis were not included in the study. Papers that used some type of investigation to look at how personality traits and EI relate to one another were taken into consideration. The search yielded 202 papers, however only 80 were found to be pertinent for the intended study after the title, abstract, and in some cases, the complete paper was examined. Some research studies were excluded based on their lack of relevance to the topic in view since they were more concerned with exploring the individual impacts of personality traits and EI on various other variables and did not confirm anything regarding the relationship between personality traits and EI. All non-English articles were also excluded from the study. The study covered different classifications of personality traits (16 PF, MBTI, B5, EPQ, HEXACO, GLP, TCI, HSPQ, ISS, personality functioning, GFP, Stability and plasticity), with the exception of the dark triad. The dark triad was excluded since it is believed that these traits possess malevolent characteristics and are described as particularly offensive, but non-pathological personality traits. Only high-quality research articles with sound methodology were included in the study. The highest number of papers i.e., 35 papers belonged to Elsevier, and the number of articles from other sources was as follows- Taylor & Francis (8), Sage (8), Springer (5), Emerald (5), Wiley (3), Blackwell (2), American Psychological Association (1), Frontiers in Psychology (1), Cambridge University Press (1), others (11). The flow chart presented in Figure 1 presents a detailed selection procedure for the articles used in this study.



**Figure 1. Flow diagram for Systematic Review; Based on PRISMA selection flow diagram (Moher et al., 2009)**

### 3. Literature on Personality Traits and Emotional Intelligence

Studies have shown that relational and predictive associations exist between EI and personality traits (Delhom et al., 2018; Kant, 2014; Kwajaffa et al., 2020). Correlation between the two constructs has remained consistent across different models and participants though in varying intensities (Lopes et al., 2003; Raman et al., 2016; Schulte et al., 2004). Dimensions measuring personality and emotional intelligence have shown multicollinearity (Austin et al., 2008; Chamorro-Premuzic et al., 2007; Newsome et al., 2000). Despite the fact that there is a considerable correlation between personality traits and emotional intelligence, some researchers have found EI and personality traits to be unrelated (Balyan, 2021). The two concepts have been found to be distinct having discriminant validity (Arteche et al., 2008; Johnson et al., 2009; Vakola et al., 2004). Research by Lopes et al. (2003) and Lyusin (2006) supports convergent, discriminant and incremental validity of ability EI in relation to measures of Big Five personality traits. A study by Caruso et al. (2002) supports the discriminant validity of ability EI against 16 PF (16 Personality Factors by Cattell). Trait EI possesses discriminant and incremental validity against EPQ and TPQue (Petrides et al., 2007), and discriminant validity

against the Big 5 (Pérez-González & Sanchez-Ruiz, 2014). A study by Alegre et al. (2019) found that convergent validity exists between trait EI measured through CDE-A35 and Big 5 personality but there is no discriminant validity. Some studies have also found limited support for the incremental validity of trait EI beyond personality (Day et al., 2005; Edgar et al., 2012; James et al., 2012; Tok & Morali, 2009).

#### 3.1 Personality Classifications and EI

Emotional Intelligence and the Big 5 personality traits are positively correlated, with the exception of neuroticism, which has a negative link with EI (Afolabi, 2013; Atta et al., 2013; Aydogmus, 2016; Hjalmarsson & Dåderman, 2022; Johnson et al., 2009; Kant, 2014; Yusoooff et al., 2014). Research also suggests that Big 5 traits can be helpful in the prediction of trait EI (Alegre et al., 2019). Some studies suggest that Emotional Intelligence is largely a measure of neuroticism (Ghiabi & Besharat, 2011; Newsome et al., 2000; Petrides et al., 2010). In addition to the Big 5, several personality classifications have demonstrated a link with EI. MBTI profiles have been found to have significant positive relationships with EI (Higgs, 2001). The psychoticism trait of EPQ can aid in predicting EI among individuals, where a lower psychoticism trait relates to higher EI (Kwajaffa et al., 2020).

Stability and plasticity are two higher-order personality factors (Digman, 1997). Stability (Alpha) includes conscientiousness, agreeableness, and emotional stability and represents the tendency of an individual to act in a socially desirable manner. Plasticity (Beta) includes extraversion and openness and represents the tendency of an individual to seek new and fun experiences. Stability and plasticity have been linked to higher EI among individuals (Hui-Hua & Schutte, 2015). According to recent research, the general factor of personality (GFP) represents the higher-order personality factor that can be extracted from lower-order personality factors of various personality inventories. The GFP measures the shared variance in personality traits, which indicates that individuals who have one socially desirable trait are also more likely to have another (Rushton et al., 2008). For a high score of GFP, the Big Five personality traits (extraversion, agreeableness, openness, conscientiousness, and emotional stability) or stability and plasticity personality components would indicate a high score. A score in any of the Big 5 traits would partly define variance specific to that personality trait and partly the variance that's a resultant of GFP (Van der Linden, 2011). Although the exact nature of GFP is still ambiguous (Van der Linden et al., 2016), it has been claimed to have close links with trait EI (Van der Linden et al., 2012; Pérez-González & Sanchez-Ruiz, 2014; Alegre et al., 2019). Based on a meta-analysis of numerous studies, research by Van der Linden et al. (2016) explored the relationships between GFP (extracted from the Big Five dimensions) and various measures of emotional intelligence. It was found that a significant overlap exists between trait EI and GFP, whereas ability EI and GFP are moderately associated. Lack of a reliable measure of ability EI and methodological restrictions were cited for the lower correlation between ability EI and GFP (Van der Linden et al., 2016). High GFP individuals with high ability EI scores possess greater social knowledge and the capacity to manage their behaviour to achieve social goals (Van der Linden et al., 2016). GFP extracted from TPQue and EPQ has also shown overlap with trait EI (Van der Linden et al., 2012). A study by Van der Linden et al. (2018) found a strong genetic correlation between EI and GFP. Due to the association between EI and GFP, EI is now being referred to as a biologically and socially desirable, and socially adaptive trait (McIntyre, 2010; Van der Linden et al., 2016). EI tends to dominate GFP in both males and females which indicates the importance of certain EI dimensions that can help determine differences in social and evolutionary-based advantages between genders (McIntyre, 2010). The inclusion of the Big 5 traits in the GFP may be the cause behind B5's ability to predict trait EI

(Pérez-González & Sanchez-Ruiz, 2014). A study by Veselka et al. (2009) extracted GFP from a combination of 4 factors of TEIQue and six factors of the HEXACO model obtained a strong GFP accounting for 33% of the variance after component analysis. Other than the honesty-humility dimension from the HEXACO model, all the other variables showed moderate to large loadings, suggesting that GFP could be extended, attributing to the correlations between variables in broader models of personality apart from Big Five personality model (Veselka et al., 2009).

Other classifications of personality, approach and avoidance traits have also been associated with EI (Athota & O'Connor, 2014). Novelty-seeking and harm avoidance belong to the Temperament and Character Inventory (TCI). Novelty seeking is characterized by the inclination to seek out exciting and potentially rewarding situations, whereas harm avoidance is represented by the tendency of an individual to avoid punishment, pain and non-reward (Cloninger et al., 1993). Individuals with high trait harm avoidance score low on managing their own and others' emotions (Athota & O'Connor, 2014). The relationship between Gender-Linked Personality (GLP) and EI has been researched. GLP includes two components: agency (intrapersonal orientation) which is associated with trait EI, and communion (interpersonal orientation) which is related to ability EI. It highlights the fact that the majority of trait EI factors are intrapersonal in nature. GLP can explain incremental variance in trait EI but not in ability EI beyond the Big 5 personality model (Siegling et al., 2012). Personality functioning in clinical psychology relates to the core capacities of personality linked with self and interpersonal functioning and identifying the severity of any impairment in such areas (Bender et al., 2011). Personality functioning and trait EI are highly overlapping constructs at a general level, and the concept of general personality functioning might exist across clinical and non-clinical models (Jauk & Ehrenthal, 2020).

Some studies have found the association of trait EI limited to only certain traits from specific personality models (Abe et al., 2018; Alghamdi et al., 2017; Kappagoda, 2013; Kwajaffa et al., 2020; Leary et al., 2009; Siegling et al., 2014). Researchers have also questioned the uniqueness of EI as a construct and also its potential for enhancing understanding of human performance (Schulte et al., 2004). Based on factor analytic research of trait EI with the B5 and Giant 3 personality taxonomies, studies demonstrate that trait EI is related to a number of personality traits but can be segregated as a coherent factor (Pérez-González & Sanchez-Ruiz, 2014; Petrides et al., 2007).



### 3.2 Relation of Personality and EI with other Variables

Personality traits and emotional intelligence can both influence and predict specific variables (Austin et al., 2005; Dhiman & Raheja, 2018; Lindeman et al., 2017; Smorti et al., 2018). EI can predict meaningful life outcomes above and beyond B5 personality traits (Shulman & Hemenover, 2006). Personality traits and EI have demonstrated correlations with several performance measures such as expert performance, however, personality traits contributed a higher variance than EI (Wilson-Wünsch et al., 2016). In comparison to personality traits, EI has shown a considerable amount of variance has been shown in explaining job performance (Downey et al., 2011) and scholastic success (Di Fabio & Palazzeschi, 2009, 2015). Academic achievement has been mostly associated with personality traits than EI (Bastian et al., 2005; Newsome et al., 2000; Tok & Morali, 2009). Transformational Leadership is significantly influenced by EI but the effect becomes insignificant after controlling personality traits and cognitive ability variables (Cavazotte et al., 2012). Incremental variance can be explained by ability EI in leadership effectiveness beyond personality traits (Rosete & Ciarrochi, 2005). EI has indicated a mediating role between personality traits and job satisfaction (Aydogmus, 2016), and also between personality traits and decision-making styles (Othman et al., 2020). EI can predict well-being, and job satisfaction beyond three of the B5 personality traits (Singh & Woods, 2008). Through the mediating effect of EI, high plasticity and stability can lead to task performance (Hui-Hua & Schutte, 2015). The association between personality and employee creativity can be moderated by EI (Jafri, 2020). EI together with three personality traits (extraversion, conscientiousness and openness) can contribute towards making employees creative (Jafri, 2020). Personality traits can boost the impact of the EI of an audit manager leading towards improved efficiency of internal controls (Abdo et al., 2021).

EI has shown additional variance in psychological health outcomes, well-being (Di Fabio & Kenny, 2019) and personal effectiveness over the Big 5 (Day et al., 2005). While a study by James (2012) did not find incremental validity of EI over personality traits towards well-being. Trait EI is a stronger predictor of happiness than personality traits as it explains a significant proportion of shared variance between personality traits and happiness. The mediation effect of EI has also been observed, where trait EI partly mediated the paths from emotional stability and conscientiousness to happiness and fully mediated between agreeableness and happiness (Chamorro-Premuzic et al.,

2007). Hafen et al. (2011) found mediation to be significant for females but not for males contrary to the findings of Chamorro-Premuzic et al. (2007). B5 traits and health have been also found to be mediated by trait EI (Johnson et al., 2009).

The mediation role of Trait EI has been found between personality traits (harm avoidance) and values, where a high score in avoidance trait and low EI signifies higher hedonism (Athota & O'Connor, 2014). The relationship between pro-social behaviour with EI is more significant than personality traits (Afolabi, 2013). EI possesses incremental validity over personality traits and can mediate the relationship between personality traits and both compassion and self-compassion (Di Fabio & Saklofske, 2020). EI can predict unique variance in life satisfaction (Gannon & Ranzijn, 2005), while a study found that life satisfaction and stress are related to both personality and emotional regulation factors (Siegling et al., 2012). Depression and anxiety can be predicted by trait EI over Big 5 personality traits (Russo et al., 2012). Individuals high in the Conscientiousness trait and trait EI can tolerate more stress without a decrease in their performance (Tok et al., 2013). Personality and trait EI, both are associated with complaints of sleep disturbances, whereas high trait EI is associated with more restorative sleep and less severe insomnia symptoms; converse results were observed for high neuroticism (Emert et al., 2017). Emotional and behavioural problems in children and adolescents have been linked to Big 5 personality traits rather than trait EI (Kawamoto et al., 2020). Personality traits can influence EI, affectivity, emotional labour, emotional exhaustion, and counterproductive work behaviour of individuals (Raman et al., 2016). Compared to personality traits, there is a stronger correlation between burnout and emotional intelligence (EI), with less burnout being linked to higher EI (Lindeman et al., 2017). EI can add a significant amount of additional variance towards career decision difficulties as compared to personality traits (Di Fabio et al., 2012; Di Fabio & Palazzeschi, 2009). EI can predict indecision over personality traits, with high EI suggesting low indecision (Di Fabio et al., 2013). Relative to personality traits, trait EI can predict unsafe driving behaviour (Smorti et al., 2018). EI can explain additional variance in resiliency over four personality trait models- BFQ, HEXACO, and EPQ (Di Fabio & Saklofske, 2018). EI and emotional coping have been observed to be closely related but the impact becomes non-significant after the inclusion of extraversion and neuroticism. Although neuroticism has a negative correlation with task-coping, it becomes insignificant when EI is taken into account (Kim & Agrusa, 2011). Task,



emotion and avoidance-oriented coping mechanisms have shown strong relationships with emotional intelligence, however, only specific personality factors can explain additional variance (Prentice et al., 2020).

EI can partly mediate the impact of personality traits on surface acting strategy (Austin et al., 2008). Personality traits and EI can both predict attitude towards change (Vakola et al., 2004). EI has more influence on risk tolerance than the personality traits of investors (Dhiman & Raheja, 2018). EI influences the link between personality traits and salary (De Haro et al., 2018). Trait EI has also been associated with the use of music where no incremental validity was found over B5 personality traits (Chamorro-Premuzic et al., 2010). A study by Năstasă and Ionescu (2015) found that the adolescent preference for certain music styles is associated with their emotional intelligence and certain personality traits from 16 PF. Extraversion, Openness, and Agreeableness with EI (empathy) are associated with emotional expression in a second language (Ożańska-Ponikwia, 2015). The relationship between specific personality traits and exercise behaviour can be mediated by EI (Saklofske et al., 2007). EI and social network size are more strongly correlated than B5 personality traits (Austin et al., 2005).

### 3.3 Positioning of EI and Personality

EI is a compound construct that is positioned at lower levels of 2 personality taxonomies (Eysenckian and Big Five) (Petrides et al., 2007). Similarly, a study by Johnson et al., (2009) found that trait EI is a personality trait that is located at lower levels of personality hierarchies. An overlap of over

50% exists between trait EI and higher-order personality traits even with the use of shortened assessments (Petrides et al., 2010). Trait EI can be referred to as a broad personality trait that lies in higher levels of a multilevel personality hierarchy (Pérez-González & Sanchez-Ruiz, 2014). A study also claims that trait EI is another way to measure B5 traits and is not integrated into higher levels of personality hierarchy (Alegre et al., 2019). The correlation between GFP and trait EI is stronger than any of the B5 traits which implies that EI overlaps with GFP, and is a broad personality trait integrated into multi-level personality hierarchies (Pérez-González & Sanchez-Ruiz, 2014). It is evident from a study by (Hui-Hua & Schutte, 2015) that personality traits have a hierarchical structure, in which meta traits present support towards the development of various differentiated traits like EI.

## 4. Results and Analysis

The publications obtained from various sources were subsequently examined using several classification criteria, including study type, country, sample and measures used. Study type was investigated to understand the distribution of studies conducted throughout the years. To identify significant patterns in the data- the country, samples, and measures employed were examined. This analysis will aid in the development of the research area, identify key trends and offer insights for future research directions.

### 4.1 Distribution based on the nature of studies

Studies can be categorised as direct or indirect depending on their nature. Direct studies include those that have examined

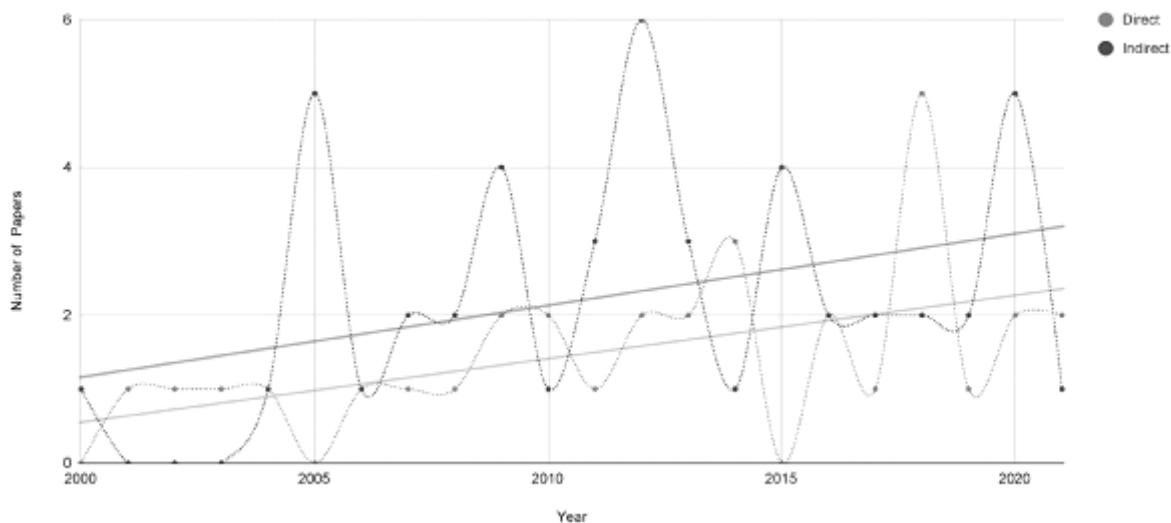


Figure 2. Distribution of Papers by Classification Criteria and Year

the direct relationship between emotional intelligence and personality. While indirect studies relate to those which have derived the usefulness of EI in relation to personality by its ability to predict various outcomes or contribute some unique variance. Among indirect studies, 12 studies were based on mediation and 2 on moderation analysis. Both kinds of studies have received attention from researchers. While it is important to understand the direct relationship between personality and EI, It is also necessary to study the relationship under the light of various variables to carve the usefulness of EI. Figure 2 presents direct and indirect studies over the years spanning from 2000 to 2021. The trend lines on the above graph show that both studies have gradually increased over time, with indirect studies being higher than direct ones. The interest in the research area has slowly increased over the years and continues to do so.

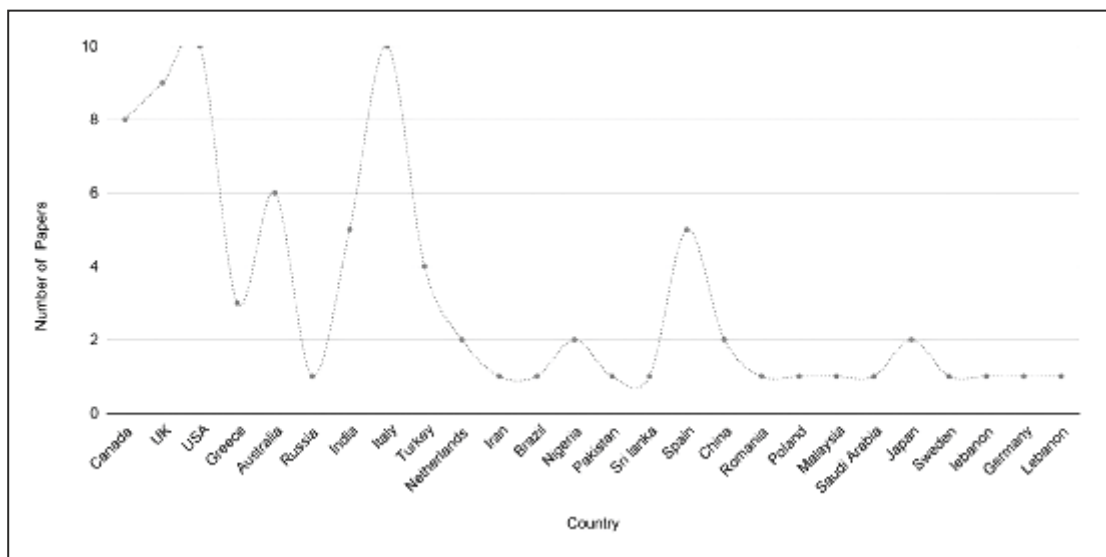
**4.2 Distribution based on country**

The distribution of studies by country of research is presented in Figure 3. The examination of studies based on their geographical focus revealed that the USA (10), Italy (10), UK (9), Canada (8) and Australia (6) were the countries with the highest number of articles. Most studies are mainly from these countries. While 13 countries represented single research articles, the lowest of the sample. Studies conducted in different countries have observed nearly consistent findings between EI and personality. Based on a country analysis, significant differences that would indicate

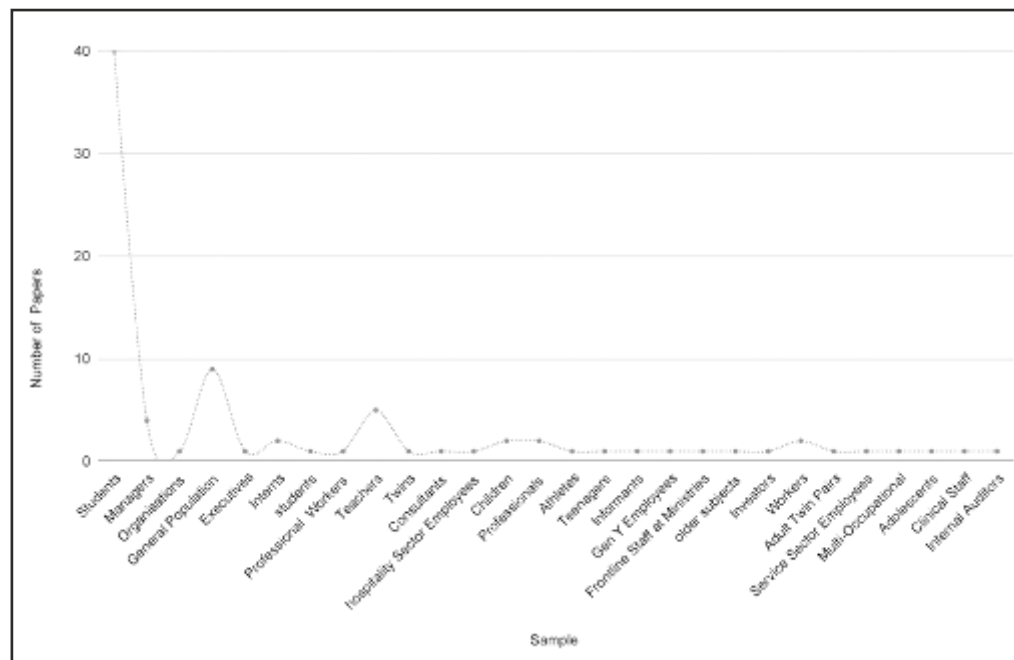
regional variance were not found.

**4.3 Distribution of Studies based on sample**

The distribution of sample respondents used in the studies is presented in Figure 4. The studies have been found to have mainly focused on student respondents giving the least attention to other important populations. Other respondents to have comparatively higher focus include employees, workers, teachers and the general population. Studies have found significant associations between personality and EI in a variety of sample populations. Trait extraversion of Generation Y employees has been positively linked with their EI (Aydogmus, 2016; Day et al., 2005). Personality traits can aid in the prediction of EI among older people. The strength of prediction is significant in all B5 personality traits except for neuroticism, as this trait is said to vary throughout the ageing process (Delhom et al., 2018). EI has a weak association with personality traits among children and adolescents (Kawamoto et al., 2020). Compared to trait EI, GFP is strongly associated with emotional and behavioural problems among children and adolescents, implying a difference in the relation between the two constructs between young and adults (Kawamoto et al., 2020). According to a study on adolescents' preference for certain music styles (Năstasă & Ionescu, 2015), a relationship was found between certain personality traits and emotional intelligence. Personality traits and EI might influence students differently than professionals in the financial industry (Rosales-Pérez et al., 2021).



**Figure 3. Distribution of Papers by Country**



**Figure 4. Distribution of Papers by Sample**

#### 4.4 Distribution based on personality measures used

The distribution of personality measures used in the studies is displayed in Figure 5. The measurement method for the majority of the papers was based on the Big 5 model (Costa & McCrae, 1992) and related models such as EPQ, and HEXACO. Stability and plasticity along with GFP were based on the extraction of the B5 factor model. Very few studies have covered the following measures of personality in relation to EI: 16 Personality Factors by Cattell (4), Myers Briggs Type Indicator-MBTI (2), The Temperament and Character Inventory-TCI (1), Impulsive sensation seeking-ISS (1), High school personality questionnaire-HSPQ (1), Personality assessment questionnaire-PAQ; used for gender-linked personality (1), Rosenberg self-esteem scale-RSES, and Schutz Multi-dimensional self-esteem scale-MSES (1); used for personality functioning in addition to B5. NEO-FFI (NEO five-factor inventory) was the most popular measure for assessing personality, which is the reduced version of the NEO Personality Inventory-Revised-NEO-PI-R (Costa & McCrae, 1992). The 240-item NEO-PI-R is a widely used instrument with good psychometric

properties that measure B5 personality traits. Other models that appeared frequently in the studies were: IPIP-International Personality Item Pool, BFQ-the Big Five Questionnaire, BFI- the Big Five Inventory and EPQ-Eysenck Personality Questionnaire (R & RS).

IPIP is a 50-item instrument developed by Goldberg (2001) that measures Big 5 personality traits. A shortened 20-item version of IPIP was developed by Hui-Hua and Schutte (2015) which uses 4 items for each of the personality traits. BFQ is a 132-item instrument (Caprara et al., 1993) and BFI is a 44-item instrument which is both used to assess B5 personality traits (John et al., 1991). EPQ was developed by Eysenck and Eysenck (1975) and comprises 90 items to measure 3 dimensions of personality: extraversion, neuroticism and psychoticism. Other popular personality measures include 16 Personality factors by Cattell (1957), Myers-Briggs Type Indicator, The Traits Personality Questionnaire (Tsaousis & Kerpelis, 1999), FFM Minimarkers (Saucier, 1994) and The Ten Item Personality Inventory (Gosling et al., 2003).

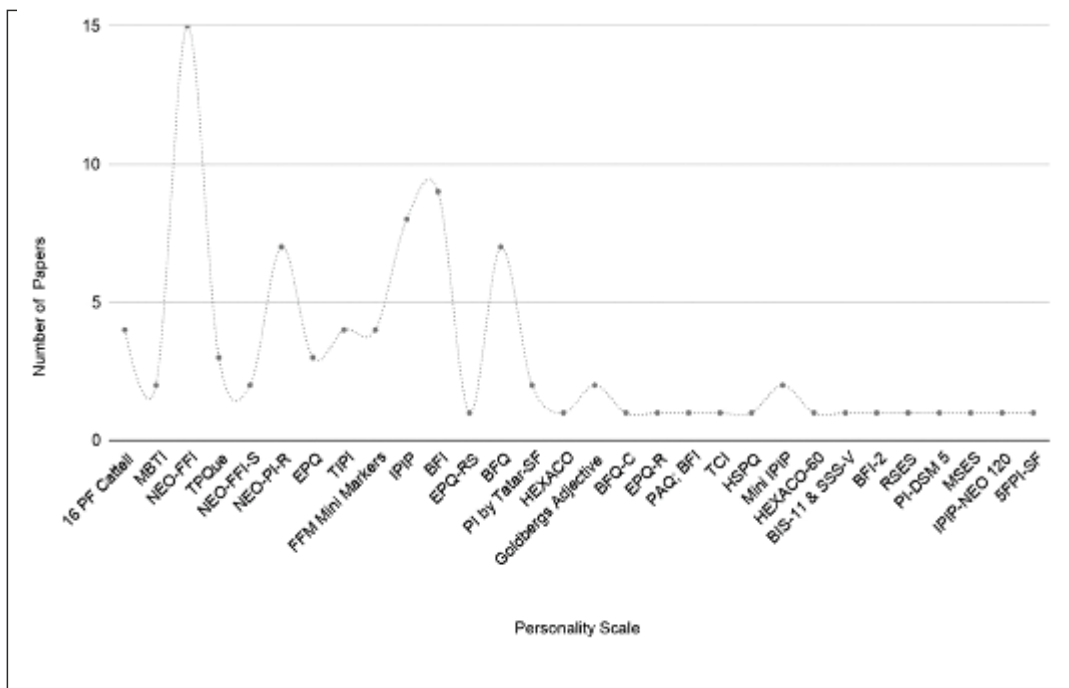


Figure 5. Distribution of Papers by Personality Scale

**4.5 Distribution based on Emotional Intelligence measures used**

The distribution of the emotional intelligence measures utilized in the studies is shown in Figure 6. The majority of studies used the 153-item TEIQue, or Trait Emotional Intelligence Questionnaire, as a measure of trait EI (Petrides, 2009). Emotional Intelligence Questionnaire Short Form- TEIQue-SF (Petrides & Furnham, 2006) is composed of 30 items drawn from a total of 153 items. These items are used to access 4 dimensions: Well-being, Self-Control, Emotionality, and Sociability. The other influential models used in the studies were Bar-on EI inventory, WLEIS, SSEIT, MSCEIT and TMMS.

The 133-item Bar-On Emotional Intelligence Inventory (Bar-On, 1997) is used as a self-report instrument to measure EI. The items are based on 5 principal dimensions: Intrapersonal, Interpersonal, Adaptability, Stress Management and General Mood. Wong and Law Emotional Intelligence Scale (WLEIS) by Wong and Law (2002) is a 16-item self-report scale consisting of four dimensions:

Self-Emotion Appraisal (SEA), Others' Emotion Appraisal (OEA), Use of Emotion (UOE), and Regulation of Emotion (ROE). Self-report Emotional intelligence test (SSEIT) was developed by Schutte et al. (1998) and includes 33 questions based on the emotional intelligence model of Salovey and Mayer. These questions assess 3 factors of EI: regulation, utilization and assessment of emotions. The MSCEIT-Mayer-Salovey-Caruso Emotional Intelligence Test (Mayer et al., 2002) consists of 141 items, a measure of ability EI based on 4 domain scores: perception, facilitation, understanding and management of emotions. It measures respondents' ability to perform tasks and resolve emotional problems and is appropriate for usage among individuals 17 and older. MSCEIT is one of the most popular models used to measure ability EI but is known to have certain conceptual limitations (Van der Linden et al., 2016). The Trait Meta Mood Scale - TMMS is a self-report measure that is based on Salovey's four-branch ability model. It has high validity as compared to other EI measures (O'Boyle et al., 2011; Van Rooy & Viswesvaran, 2004).

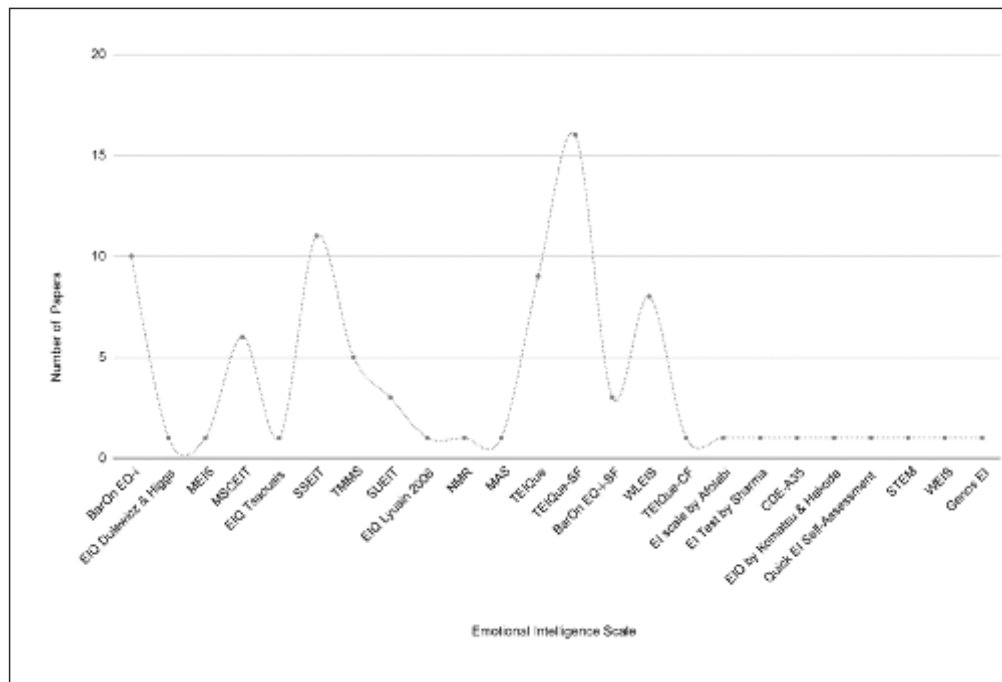


Figure 6. Distribution of Papers by EI Scale

#### 4.6 Relation between Measures of Personality and EI

Numerous models of emotional intelligence (EI) have been linked to personality traits; mixed models of EI generally involve constructs that are almost identical to those of personality models (Bar-On, 2005; Goleman, 1995). Mayer and Salovey's (1997) model of EI has also shown statistically significant correlations with various measures of personality. Relationships between specific personality traits and EI variables have been identified when utilizing MSCEIT (2002) and the NEO-PI-R measures (Brackett & Mayer, 2003). The incremental validity of EI over personality traits may vary based on the type of measures used i.e., trait or ability EI (Caruso et al., 2002). There is a medium to high correlation between EQ-i scales and personality measures (Austin et al., 2005; Saklofske et al., 2007, 2012). There has been evidence of multicollinearity between EQ-i Bar-On and Cattell's 16 personality factors (Newsome et al., 2000), MSCEIT and B5 model (Lopes et al., 2003), MBTI and EI scales (Higgs, 2001). Various models used for the measurement of EI seem to be based on a general personality approach (Mayer et al., 2000). Self-report measures of Trait EI have reported a closer link to personality than ability measures (Bastian et al., 2005). Trait

EI can incrementally predict certain variables over Giant 3 and Big 5 personality dimensions (Petrides et al., 2007). The incremental validity of EI over personality can depend on the combination of measures used to assess the two constructs (Austin et al., 2005; Siegling et al., 2014). Comparing emotional intelligence to personality traits using various models, emotional intelligence explains a greater variance in some variables (Di Fabio & Saklofske, 2018). More variance can be explained by trait EI using Petrides and Furnham model than the Bar-on model in scholastic success beyond attributable to personality and fluid intelligence (Di Fabio & Palazzeschi, 2015). The TEIQue SF measure of EI has incremental validity over and above B6 personality traits in the prediction of work performance (Hjalmarsson & Däderman, 2022). MEIS does not evaluate constructs measured by standard personality tests, such as 16PF (Caruso et al., 2002). Multifactor Emotional Intelligence Scale (Mayer et al., 1999), a measure of ability EI is reliable and independent of personality traits-16 PF (Caruso et al., 2002). There is no significant association between the MSCEIT and 16 PF (Rosete & Ciarrochi, 2005). A study by Van der Linden et al. (2016) observed a much stronger overlap between TEIQue, a measure of EI and GFP as compared to WLEIS.



## 5. Towards The Research Agenda

There has been a lot of confusion regarding the nature of the relationship between personality traits and EI. Numerous studies have been conducted to understand the intricate relationship between the two. The studies indicate that relational and predictive associations exist between personality traits and EI. B5 traits are correlated with EI and can aid in the prediction of EI among individuals. Numerous studies have discovered strong correlations between neuroticism and emotional intelligence, which can be explained by their similarity in dealing with emotions. The studies also show links of EI with other classifications of personality traits such as HEXACO, stability and plasticity, GFP and gender-linked personality. Personality has been measured mostly by the standard measure of personality- the Big Five model as compared to other classifications. EI has been measured through different measures, with TEIQue being the most prominent among them as it's a self-report test but can be biased. MSCEIT is the most effective measure of ability EI but is comparatively least used due to certification constraints. Findings demonstrate that trait EI is more closely related to personality traits than ability EI. In a study by Van der Linden et al. (2016), the overlap between GFP and TEIQue was shown to be substantially more than that with WLEIS. High EI can be considered a socially effective factor and a desirable trait among individuals. While individuals with high GFP can be characterized as being highly emotionally intelligent across situations (Van der Linden et al., 2016). Although there is a strong correlation between personality traits and EI, they are different constructs. Discriminant validity of trait EI has been supported along with convergent and incremental validity (Caruso et al., 2002; Lopes et al., 2003; Lyusin, 2006; Pérez-González & Sanchez-Ruiz, 2014; Petrides et al., 2007). Emotional intelligence has been used to predict a number of outcomes such as performance, psychological health, satisfaction, coping and values.

A combination of personality traits together with EI can improve the prediction of certain variables (De Haro et al., 2018; Tok et al., 2013). Investigating the role of EI as a mediator and moderator has become essential for further exploration of the construct. It is necessary to develop EI measures in order to capture the distinctive characteristics of EI and use them to explain outcomes beyond personality traits. It is essential to compare EI with other classifications of personality traits in detail to uncover the extent of applicability of the findings. GFP and personality

functioning have close links with trait EI which has kindled new research on the relationship between personality traits and EI (Jauk & Ehrental, 2020; Pérez-González & Sanchez-Ruiz, 2014; Van der Linden et al., 2016). EI is thought to be a narrower concept when compared to personality traits. Due to varying perspectives, it is still unclear where EI falls within the personality hierarchy. Although a common notion is that specific lower traits like EI combine to form more generalized higher-order traits. Some studies have reported that EI is synonymous with personality traits and does not predict anything more, but these studies are limited. The results of these studies may have been impacted by methodological flaws, such as the instruments' inability to measure the constructs reliably or their reliance on various conceptualizations of EI. According to the studies examined, the majority of study publications focused on students and workers, whereas very few studies covered older adults and children (Delhom et al., 2018; Kawamoto et al., 2020; Russo et al., 2012). The relationship between EI and personality traits may differ between age groups, however, due to the small number of studies conducted among older and younger respondents, the claim could not be validated. Future studies should investigate how this association relates to ageing. For the purpose of examining how EI and personality relate to one another, improved scales must be integrated into future studies.

Despite the fact that there is a significant amount of literature on personality and EI, the present study was limited by a number of variables, including the inclusion of only 80 research articles. There is a possibility that while compiling the sample literature, certain studies were overlooked or missed, and the authors might not have been aware of other sources. The personality traits mostly included in the study were based on Big 5 traits and related classifications such as EPQ and HEXACO, leaving the exact relationship of other classifications with EI questionable. Future review studies may take into account specific personality classifications and study their impact individually on trait and ability EI. A small sample size used in this study was a constraint; larger samples could be employed for future studies to conduct more thorough reviews. This review has considered all relevant research to the highest extent possible; however, looking through other databases can yield additional results. Additionally, the study investigates the big picture associated with the subject rather than concentrating on a specific area.

## 6. Conclusion

Since emotional intelligence is a distinct and useful construct, additional research is required to establish effective measures and help differentiate it from personality. Some of the unanswered questions regarding its specific nature and where it belongs in the personality hierarchy also need further investigation. Another aspect that must be researched is the relationship's variation with ageing. More research using classifications other than the Big Five Personality Traits and studies in clinical and non-clinical sectors can enhance our knowledge of the construct. The usage of EI together with personality traits in varied disciplines can yield beneficial research findings.

Individual differences play a significant role in how we interact with others and respond to different situations. The research presented in this article has implications for many academic fields that study human psychology, including investors, customers, students, patients and athletes. The present situation has placed an enormous level of strain on a person's ability to manage emotions and remain productive. Investigating variables like personality, emotions, and emotional intelligence can aid in identifying which demographics are most at risk and require support to handle stress.

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# Exploring the Role of Modern Human Resource Practices in SMEs Productivity: Structural Model Analysis

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Small and Medium-sized Enterprises (SMEs) are the major contributors to India's economic growth. However, today, they are facing many issues in their operations, like high employee turnover, lack of funds, unawareness about government-supported schemes, etc. This exploratory study has selected Electrical Goods manufacturing sector SMEs of Delhi-NCR for gathering the information and over which four HR practices, i.e., Talent Management, Performance Management, Employee Empowerment, and e-Recruitment, that represent the modern form of HR practices have been studied. Twenty-six items have represented these four selected Modern HR practices or constructs, respectively. SMEs' productivity is the only dependent factor, represented by seven outcome-based practices. A multivariate analysis tool, i.e., PLS-SEM methodology, has proved to help infer which HR practice is most important in increasing SMEs' productivity and which effort contributes least to increasing it. After data analysis, it is identified that among all modern HR practices, employee empowerment is more impacting on increasing the SME's productivity. This study will assist SMEs in managing the problems, which they are going through nowadays and help highlight the significance of implementing these HR practices at their workplace by correlating outcomes with a satisfactory level of productivity.

**Keywords:** *Modern HR Practices, Talent Management, Performance Management, Employee Empowerment, e-Recruitment, Productivity*

## 1. Introduction

Small and Medium-sized Enterprises are the backbone of Indian GDP's economic growth (Sharma et al., 2014). But apart from their contribution, these firms face many work-related difficulties today, such as high staff turnover and lack of skilled labor. Moreover, COVID-19 has affected many SMEs' operations all around the globe in different ways. These unforeseen troubles put pressure on the Human Resource Management team, so they must always be ready for all these sudden problems ahead. A researcher suggested that developing and adopting strategic models such as digitized human resource management systems can be proven helpful in these small-sized organizations to counter some issues related to human capital (Sheppard, 2020).

Many small and medium-sized firms do not consider it necessary to maintain the HR department as a separate entity in their workplace (Abosedo, 2016). Apart from this, most small-sized firms do not give much importance to implementing HR practices, unlike large-size firms (Kok & Uhlaner, 2001). The formal HR system is mostly functional in large-sized firms compared to small-sized firms (Harney, 2006). This is because these types of firms believe that implementing HR practices will require assistance from an HR professional, which will increase the expenses of our company (Klaas et al., 2000). But apart from all these facts, it is also seen that HR practices have had a very positive effect on the growth of small and medium-sized industries (Katou & Budhwar, 2010; Young, 2009).

In this research, those SMEs have been selected for the study where the modern HR system is already being practiced. The reason behind selecting these firms and modern HR practices is to empirically explore the effect of these practices on the firm's different gained output measures, i.e., SMEs productivity at the end. A bundle of HR practices, including Talent Management, Performance Management, Employee Empowerment, and e-Recruitment, has been termed Modern HR practice in this study. A bundle of modern HR practices can help them in improving the working condition of SMEs, but due to a lack of awareness, the owners/managers of these firms avoid implementing the HR practices at their workplace (Boon et al., 2019).

So, the objective of this study is to assess the impact of Talent Management, Performance Management, Employee Empowerment, and e-Recruitment practice on SMEs' productivity collectively as well as on an individual basis. With the help of this study, the researcher is also able to

identify which SME productivity form is most and least increased after implementing these modern HR practices.

## 2. Literature Review and Conceptual Framework

In this research study, the theoretical background has been discussed in different parts, such as an overview of HR practices, Productivity in Small and Medium-sized Enterprises, and modern HR practices followed by selected HR practices used in this study (i.e., Talent Management, Performance Management, Employee empowerment, e-Recruitment) and SMEs productivity. By following these sections, the researcher has critically analyzed the details of modern HR practices and their benefits in firms to find out research gaps from previous studies.

### 2.1 Human Resource Practices (HR Practices)

Human Resource Practices are the practices that are used for effective usage of manpower and resources available in the organization for gaining the maximum profit (Aswathappa, 2005).

Barney (1991) emphasized that HR practices are responsible for sustainable organizational performance by considering resource-based theory. The author stated their importance, and these practices should be embedded as the central strategy of the organization. Despite much criticism, researchers have accepted that a Resource-Based View (RBV) is a major contributor to Strategic HRM. Due to this, a competitive advantage can also be achieved by analyzing the internal organizational environment (Priem & Butler, 2001).

In a review paper, the researcher suggested and concluded after considering many research papers that a strong relationship exists between the firm's performance and implementing the HRM practices. It is not necessary that these practices compulsorily lead to high performance in the company. However, their implementation can improve the company's overall outcomes if these HR practices have been applied by keeping employee interests in mind, such as job security, employee health, etc. (Bakator et al., 2019).

### 2.2 Productivity in Small and Medium-sized Enterprises

The productivity of small firms is represented and measured in different ways, which are explained by the supported literature explained below:

Zheng et al. (2006) explored that outcomes received after implementing HR practices in small-scale firms can be easily measured by considering the factors such as

productivity level, employee turnover rate, innovation, workplace conflicts, absentee rate, quality of product, etc. Kauranen's (1993) study has also endorsed that small-size firms can easily measure their achieved performance level because it is measured by considering some factors such as workplace environment, employee behavior, etc., without ruminating other frills. However, a research study stated that productivity measurement is more convenient and easy in large firms than small firms (Taticchi, 2008). But this is not the concern of this research study because this study covers only small and medium-sized firms for information gathering.

In this study, seven output-based items have represented SMEs' productivity. These items have been identified based on the information gathered from a discussion with 40 management professionals who are working in different SMEs, which is also supported by Demo et al. (2012) study. These items are Labor Productivity, Lean Manufacturing, Employee Turnover, Organizational Citizenship Behavior (OCBs), Optimize Production Capacity, Sales Increase, and Management By Objective (MBO). So, these are the 7 items selected by the researcher based on their importance for representing SME's productivity for this study, and details of these variables are stated below:

A human capital theory states that the application of HR practices helps develop the laborer's skills and competencies, increasing their productivity level (Koch & McGrath, 1996). Lean manufacturing means the process of minimizing wastage at the workplace, which leads to good quality, labor productivity, and cost reduction in the company (Mulholland, 2018). So, this is also a very important output variable used in this study. Similarly, another variable used to represent the dependent factor of this study is employee turnover, in which employees leave the organization for any reason, such as dismissal, resignation, new job, or punishment, and these vacant positions are filled on priority by the companies for smooth working (Martinelli, 2017). Implementing a few HR practices, such as training & development, structured performance management, and recruitment-selection practices, can lead to reduced employee turnover in the company (Silva & Shinyashiki, 2014). OCB here means the feeling generated by the employees towards their company, as a result of which they voluntarily accept work-related responsibilities beyond their daily assigned scheduled work (Horton, 2019). Production optimization means the process of manufacturing or the product is improved to get better results by reducing the cost. HR practice implementation also indirectly can help increase a company's performance

in terms of sales increase. After getting suitable training and knowledge, the sales force can generate more leads for the company. MBOs mean defining the company goals by mutual agreement between management and employees to increase the organization's performance (Hayes, 2019).

However, Covid-19 has affected most of the small and medium-sized firms to a great extent. But by adopting good HR practices, these companies' owners or HR can empower their manpower and improve their output to some level (Bajpai & Gandhi, 2020). Based on all these requirements, this study assumes that a selected few modern HR practices used in this research can impact the SME's productivity, and these practices are- talent management, performance management, employee empowerment, and e-recruitment.

### *2.3 Modern HR Practices*

Many research papers have been published over the last few decades, highlighting the influence of HR practices on SME performance. But the term Modern HR Practices has not yet been explained by researchers very clearly in any of their research papers; still, a few studies in which something similar to this term has been described are discussed below.

Kalaiselvi (2018) used the term innovative HR practices synonymously with the modern HR practice term and stated that innovative or modern HR practices undoubtedly played an important role in the survival of Indian firms in the challenging environment.

Dundon and Wilkinson (2009) stated about the modern words with context to the HR area that numerous synonyms have been used in different kinds of literature to replace modern HR practice terms such as innovative HR practices, best HR practices, etc., based on research problem appropriateness.

Similarly, the study has used the term "Modern HR practice" for all the selected HR practices that have been used in this research. However, it has also been kept in mind while selecting these practices that all practices have been developed during the period of modern HR developments, i.e., from the 1950s to the present day. Details about selected modern HR practices, along with their variables, are stated below:

#### *2.3.1 Talent Management*

It is referred to as a part of the HRM process, which focuses on the development of employees' talent and improving firm effectiveness. Cheese et al. (2007) stated that SMEs who applied talent management as not just a part of HR Practices



but as the best HR practice at their workplace help retain their talented employees for a longer period. The representing items of Talent Management are Knowledge Management, Talent Retention, Human Capital Asset, Succession Planning, and Work and Team Management.

In a firm where Knowledge Management practice is already implemented, employees' knowledge is treated as an asset in SMEs. It is an integrated complex social process with culture, people, finance, technology, and organizational structures in its main core (Egbu et al., 2005). SMEs need to focus more on adopting the best retention strategies, such as providing flexibility in the workspace, a good work environment, family support policies, and reward systems for good performance (Aminu & Alex, 2013). Proper human capital management is also helpful in running the long run of small-size firms (Cooper et al., 1994; Taylor & Mark, 1999; Witteloostuijn & Pennings, 1998). Succession planning helps formulate a learning culture for employees at all levels and assists in the overall company's development process (Strategic Direction, 2004). The employment system practices such as teamwork and good communication help achieve effective organizational performance, which drives effective productivity (Martie et al., 2011). A study stated that maintaining a good talent management practice helps to gain employee retention and improve their productive skills and their performance in the long run (Panday & Kaur, 2022)

Hence, the researcher framed its first hypothesis based on the above details stated below:

**H1:** There is a significant positive impact of Talent Management practice on SME's Productivity.

### 2.3.2 Performance Management

Performance Management is a practice related to assessing, analyzing, and improving the performance of employees working within an organization to increase their efficiency, productivity, and competitiveness (Na-nan, 2016). Performance Appraisal, Reward Management, Learning Organization, and Employee Dashboard practices represent this factor.

The performance appraisal system plays a vital role in retaining the employee's talent. A researcher explored that periodic meeting with individual team members results in effective productivity (Flokzu, 2015). Reward management, such as an increase in salary, bonus, and different modes of compensation helpful in maintaining

high morale among the employees and motivates them towards achieving the company's goals and increasing organizational productivity (Shine et al., 2015). SMEs operate more as a knowledge-based economy entity, acting as learning entities by developing their human resources and practices effectively (Dan et al., 2010). SMEs are using Dashboard software to enhance employee performance, gain a competitive edge, and attain market profits by reducing firm expenses, costs, and time (Wood, 2018).

Hence, the researcher has framed the second hypothesis based on the above details stated below:

**H2:** There is a significant positive impact of Performance Management practice on SME's Productivity.

### 2.3.3 Employee Empowerment

The companies boost their employees' performance and capacity by providing them with all the necessary support. Jung et al. (2009) stated that empowerment practice positively impacts continuous organizational improvement and employee involvement, which ultimately tends to increase overall organizational performance and productive outcomes.

Career Path, Open Door Policy, Emotional Intelligence, Workforce Diversity, and Decentralized Decision making represent this practice. Employees with a capable career path option are satisfied at the individual level, leading to high employee empowerment and productive performance (Hanaysha & Rozita, 2016). Implementing open door policy practice in the workplace could give positive outcomes such as effective communication and performance of employees, which could also help decrease the number of grievances within groups/teams (Aaron, 1993). Similarly, developing and implementing emotional intelligence skills (i.e., motivation, self-interest, satisfaction, interpersonal skills, etc.) can strive to approach productivity effectively (Ingram & Peake, 2017). A researcher recognized workforce diversity as a strategic capability that can add value to the organization's performance and profitability (Darwin & Selvaraj, 2015). Decentralization substantially impacts a firm's productivity by improving its decision-making structure because alterations in decision rights are more pronounced over a firm's productive outcome (Takahito & Kuzuyuki, 2006).

Hence, the researcher has framed a third hypothesis based on the above details stated below:

**H3:** There is a significant positive impact of Employee Empowerment practice on SMEs' Productivity.

#### 2.3.4 e-Recruitment

e-Recruitment or online recruitment practice is processed by using the following medium such as LinkedIn, Indeed, Naukri.com, the company's website, mobile notifications, etc., which companies commonly use to hire candidates (Ramdhani & Zarlis, 2019). Company Website, Social Media, Internet Recruiter, Applicant Tracking System, and Mobile Recruitment represent this practice.

Corporate websites play a crucial role in recruiting potential candidates by providing accurate information about the company to job seekers (Allen et al., 2013). Social media has played a vital role for SMEs as a communication method, which has helped increase the business's value. SMEs are investing in new-era digitalization practices to gain sustainability and profitability (Huang & Stockdale, 2011).

Internet recruiters have given SMEs a cost-effective mode of interacting with and recognizing potential candidates (Svermova & Marsikova, 2018). After combining with ATS, various elements of the organization's administration process result differently in the performance of the recruitment process (Laumer et al., 2014). Mobile recruitment is a cost-effective and time-efficient approach adopted by SMEs where companies can easily contact job seekers via mobile conversation or messaging information directly (Kanagavalli et al., 2019).

Hence, the researcher has framed the fourth hypothesis based on the above details stated below:

**H4:** There is a significant positive impact of e-Recruitment practice on SMEs' Productivity.

### 3. Research Gap

After a thorough literature review, it is found that HR practices impact SMEs' performance. However, a bundle of selected modern HR practices used in this study effect has not yet been identified in any previous studies. But after a thorough search, few studies have been identified that have helped the researchers greatly enhance their knowledge on this topic and identify the research gap. Some of the important studies that are contributing to identifying the research gap are discussed below:

A researcher used the term "Modern HR practice" by focusing on some studies and identified that replacing the traditional methods with the latest or new methods of HRM recruitment, training, and wage payment gives a significant contribution towards the SME's performance (Brand & Bax, 2002).

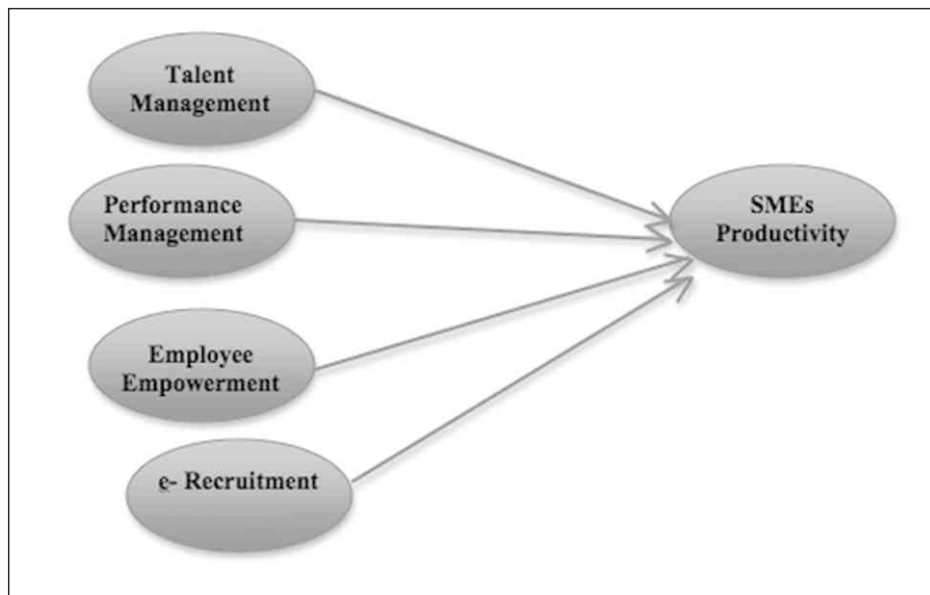
Croucher et al. (2013) stated that in earlier times, the SMEs used to estimate their outcome in figures only. However, later it was proven inappropriate because they ignored other factors that were also contributing. So, the requirement emerged to consider other factors for measuring the firm outcomes, which ultimately enhanced this narrow scope of measurement for development.

Subramony (2009) stated that combined selective HR practices (motivation, empowerment, skill development) applications significantly positively impact the SMEs' performance, which can be measured by using factors such as employee retention and firm productivity. In fact, the bundles of HR practice result better in comparison to a single HR practice application.

Research on SMEs stated that a greater number of HR practices implemented at the workplace give fruitful outcomes in terms of a firm's success and performance. The researcher, based on previous studies, also stated that the set of best HR practices application returns positive outcomes that are globally accepted (Sheehan, 2014).

### 4. Conceptual Framework

In reference to the above discussion, the researcher proposes a research framework to empirically investigate the proposed hypotheses. This framework, given in Fig. 1 below, comprises four selected modern HR practices, i.e., Talent Management, Performance Management, Employee Empowerment, and e-Recruitment, and their impact has been checked on SMEs' Productivity. These five factors collectively taken by the researcher for this study have been represented by 26 items respectively. SMEs' productivity is the only dependent variable that is expressed in different forms of representative output items. Demo et al. (2012) study has been taken as a base literature for this study in identifying most factors and their items. The impact of these selected factors has been checked on SMEs' Productivity by applying the 2<sup>nd</sup> generation multivariate analysis tool, i.e., PLS-SEM, to know about the uncertain things and their relationship with each other.



Source: The Author

**Figure 1. Conceptual Model**

## 5. Research Methodology

This study is based on an exploratory research design where framed hypotheses are tested later. Primary data was collected using telephonic and personal interviews with the respondents. A Likert 5-point scale questionnaire is framed and circulated by the mode of Google Forms, which is distributed among respondents by direct emailing, WhatsApp group, or sharing a link on different professional sites, social media, etc. Secondary data has been collected from reputed journals, books, online web blogs, reports, and organization records.

**Sampling units:** The middle and top-level managerial position professionals working with Small and Medium-sized Enterprises of Delhi-NCR that have enough knowledge about this research problem, such as managers, owners, and functional department managers, are the participants/respondents of this research study. Based on this assumption, eight categories (Owner, Director, GM

Operation, Production Manager, HR Manager, Sales Manager, Accounts Manager, and others) of respondents have been prepared for data collection. Most companies have different position names for their professionals, such as Plant Manager, Divisional Manager, Regional Manager, Marketing Manager, Supply Chain Manager, Project Manager, Quality Control Head, etc. This "others" category open-ended selection allows these respondents to freely mention their designation while filling out their questionnaire.

**Sample size:** Following Barclay's (1995) PLS thumb rule assumption, 190 is the minimum sample size for this study, and 204 are the total met responses. Although 482 questionnaires were distributed among the SME professionals, 204 collected responses were found relevant after applying the data cleaning technique to give satisfactory results; similarly, it gives a 42.32 percent response rate.

**Table 1. Constructs and Items Generated from the Literature**

S.no.	Study Construct	Question	Item
1	Talent Management (TM)	1. Knowledge Management (TM1)	My organization shares and appreciates the knowledge of key talented employees.
		2. Talent Retention (TM2)	My company provides a positive work environment to retain talented employees.
		3. Human Capital Asset (TM3)	My company develops Human Capital Assets that are helpful in attaining long-term survival.
		4. Succession Planning (TM4)	My company uses succession planning practice for talent management.
		5. Work & Team Management (TM5)	My company promotes teamwork to make best use of talented employees
2	Performance Management (PM)	1. Performance Appraisal (PM1)	My company uses a standard performance appraisal method for appraising the employees.
		2. Reward Management (PM2)	My company provides motivational (Financial and non-financial) rewards to high-performing employees
		3. Learning Organization (PM3)	My company uses performance evaluation feedback practice to enhance the employee's learning and performance capacity.
		4. Employee Dashboard (PM4)	My company uses "Employee Performance Dashboard" to monitor and measure the past, present and future performance of employees.
3	Employee Empowerment (EE)	1. Career Path (EE1)	My company uses Career planning practices for employee empowerment
		2. Open Door Policy (EE2)	My company encourages its employees to discuss work-related problems freely with their seniors.
		3. Emotional Intelligence (EE3)	In my company, managers understand the feelings of their subordinates and cooperate with them to develop a trust-based relationship
		4. Workforce Diversity (EE4)	My company well manages the pool of employee workforce diversity.
		5. Decentralized Decision Making (EE5)	My company promotes employee autonomy
4	e-Recruitment (REC)	1. Company Website (REC1)	My company shortlists the candidates from the application collected on our website.
		2. Social Media (REC2)	My company uses Social Media platforms (like Facebook) for posting the vacant jobs and reaching the candidates.
		3. Internet Recruiter (REC3)	My company uses paid (like Naukri.com) and unpaid (like Quikr.com) online job portals for recruiting candidates.
		4. Applicant Tracking System (REC4)	My company uses the Applicant Tracking System for the search of potential candidates.
		5. Mobile Recruiter (REC5)	My company uses SMS or notification services for filling vacant job openings and reaching the candidates
5	SMEs Productivity (PRO)	1. Labor productivity (PRO1)	Increased Labor Productivity
		2. Lean Manufacturing (PRO2)	Moving towards a lean manufacturing process
		3. Reduced Employee Turnover (PRO3)	Reduced employee turnover
		4. Organization Citizenship Behavior (PRO4)	Improved employee Organizational Citizenship Behavior
		5. Optimize Production (PRO5)	Improvement in Production capacity
		6. Sales Increase (PRO6)	Increase in Sales
		7. Management By Objective (PRO7)	Management by Objective achieved to a great extent.

Source: The Author

The statistical tool used- Partial Least Squares Structural Equation Modeling (PLS-SEM):

Smart Partial Least Square Method (PLS) is the 2<sup>nd</sup> generation multivariate statistical tool applied to measure the Structural Equation Modeling by analyzing the data. This non-parametric method has used exploratory factor analysis for testing hypothetical assumptions about the already discovered theory or newly developed theory. This study is based on reflective model nature, which means the arrows are facing outside the latent variables. This part of the study is based on the recommendations of Hair et al. (2018) for running the Smart PLS mentioned below:

1. The conceptual framework of this study is based on a reflective model, and for this model “outer loading” term is used globally.
2. The sample size is based on a rule of thumb, i.e., bigger construct items multiplied by 10 is the sample size for the study.
3. All the items are connected with their constructs respectively.

These are some above-stated major rules of the Smart PLS reflective model.

PLS-SEM covariance-based method is helpful in the detection of variables that are least supportive/representative, which are then removed from the study for good results. It is measured in two parts:

- I. Measurement model- Outer loadings, Convergent Validity– Average Variance, Composite Reliability, Discriminant Validity by Fornell Larcker Criteria and Heterotrait-Monotrait Ratio, Variance Inflation Factor (VIF) to check multicollinearity.
- II. Bootstrapping is applied for structural model evaluation and checking the level of significance of assumed hypotheses.

## 6. Data Analysis

First, the data cleaning was done to replace the missing value by entering the average value. After that, descriptive statistics were applied to find out the features of the data. The following tests were conducted as mentioned below:

### 6.1 Reliability analysis

Internal consistency was achieved using minimum acceptable criteria given by Hulin et al. (2001) assumption

and found that all the factors had Cronbach alpha value greater than 0.6. The composite reliability of each construct is also above 0.8, indicating very good internal consistency. In fact, this maximum efficiency and stability have been achieved after excluding the e-Recruitment factor.

### 6.2 Correlation

Some factors are tightly related, but all look to be positively connected with each other. Good internal efficiency and stability have been observed among all the factors. However, the correlation value between performance management and SMEs productivity factor is slightly lower, i.e., 0.335, which means they hold a 33 percent relationship. All the values are overall suitable for running the correlation/covariance-based Structural Equation Modeling method.

### 6.3 Common Method Bias (CMB)

The calculated percentage of variance is 25.58 percent, which is much less than the 50 percent standard value; that means common method bias is not an issue for this research study by following the Harman single factor test assumption (Tehseen et al., 2017).

### 6.4 Validity

It has been checked by two methods, i.e., content validity and construct validity, for this study. Content validity is verified by taking the expert advice of 8 academicians and 6 company experts to validate this study questionnaire. Construct validity has been checked by using two methods stated below:

*6.4.1 Convergent validity:* All the AVE values are more than their threshold value, i.e., 0.5, except the SMEs productivity factor, but this is helpful in supporting and stabilizing the model, so it cannot be excluded.

*6.4.2 Discriminant Validity:* This validity has been checked using Heterotrait-Monotrait Ratio (HTMT) and Fornell Larcker Criteria.

- ♦ *Heterotrait-Monotrait Ratio (HTMT)* : Following the Gold et al. (2001) assumption, the calculated HTMT values, as mentioned in Table 2, are below the 0.90 threshold value. So, the result shows good discriminant among reflective constructs.



♦ *Fornell Larcker Criteria:* Based on Table 3 below, the square root AVE value of each latent factor that is shown diagonally is higher than the correlation value of other latent factors. So, it also justifies the discriminant validity concept.

**6.5 Model Fit**

All the results mentioned-below in Table 4 show a good improvement, but despite the improvement in NFI, its value is going slightly on the lower side. In this study, more

preference has been given to other values (SRMR, Chi-square) that show good results for model fit by following Bentler's (1990) study.

**6.6 PLS Structural Equation Modeling**

Initially, the measurement model part has been divided into two parts to show the comparison between the measurement models based on actual research data (Table 5) and the improved measurement model based on supporting the objectives of this study.

**Table 2. Heterotrait-Monotrait Ratio (HTMT)**

Constructs	Employee Empowerment (EE)	Performance Management (PM)	Productivity Output (PRO)	Talent Management (TM)
Employee Empowerment (EE)	0.834			
Performance Management (PM)	0.867	0.447		
Productivity Output (PRO)	0.895	0.757	0.675	
Talent Management (TM)				

**Table 3. Fornell Larcker Criteria**

Constructs	Employee Empowerment (EE)	Performance Management (PM)	Productivity Output (PRO)	Talent Management (TM)
Employee Empowerment (EE)	0.766			
Performance Management (PM)	0.582	0.74		
Productivity Output (PRO)	0.61	0.335	0.616	
Talent Management (TM)	0.592	0.538	0.483	0.779

**Table 4. Model Fit Comparison between Actual and Optimized Model**

	Actual research data	Optimize model
SRMR*	0.095	0.089
Chi-Square	876	413.5
NFI**	0.55	0.615

\* Standardized Root Mean Square Residual, \*\* Normed Fit Index

**Table 5. Measurement Model in Actual Research Data**

Constructs	Items	Outer Loadings	S.D.	Kurtosis	$\beta$ value	t value	Alpha	C.R.	A.V.E
Talent Management	TM1	0.729	0.685	3.297	0.148	2.001	0.74	0.825	0.488
	TM2	0.744	0.669	-0.219					
	TM3	0.769	0.639	6.357					
	TM4	0.633	0.774	1.161					
	TM5	0.601	0.799	1.706					
Performance Management	PM1	0.782	0.623	1.049	-0.110	1.316	0.73	0.828	0.547
	PM2	0.717	0.697	1.244					
	PM3	0.730	0.683	0.323					
	PM4	0.728	0.686	0.599					
Employee Empowerment	EE1	0.718	0.696	0.683	0.583	7.602	0.68	0.797	0.444
	EE2	0.534	0.845	0.671					
	EE3	0.625	0.781	2.791					
	EE4	0.803	0.596	1.169					
	EE5	0.621	0.784	1.456					
e-Recruitment	REC1	0.730	0.684	0.011	0.104	1.345	0.72	0.797	0.472
	REC2	0.553	0.833	-0.133					
	REC3	0.684	0.729	-0.352					
	REC4	0.681	0.732	-0.023					
	REC5	0.767	0.641	-0.345					
SMEs Productivity	PRO1	0.486	0.923	2.932	0.72	0.805	0.379		
	PRO2	0.700	0.714	2.077					
	PRO3	0.641	0.768	0.336					
	PRO4	0.669	0.743	1.359					
	PRO5	0.719	0.696	-0.342					
	PRO6	0.632	0.775	4.418					
	PRO7	0.490	0.872	0.653					

To make the model more stable, it must be optimized, as shown in the further part of the analysis. This improvement in the model is also helpful for gaining value addition to this research study because the level of importance of each factor and their items, can be identified, which has been taken as a priority level for better results. This improved model can be proven helpful in identifying the attributes that may be best for the optimized model by following Hair et al. (2018).

### 6.7 Optimized Measurement Model

Based on further analysis and data stabilizing, it is found that this model is going to be a perfect conceptualizing fit model based on the details mentioned below in Table 6. After applying the thoughts or the objectives of this study to research data, the model gets improved technically.

**Table 6. Optimized Measurement Model**

Constructs	Items	Loadings	S.D.	Kurtosis	$\beta$ value	t value	Alpha	C.R.	A.V.E
Talent Management	TM1	0.758	0.653	1.999	0.215	1.957	0.68	0.823	0.607
	TM2	0.763	0.647	0.378					
	TM3	0.816	0.578	4.529					
Performance Management	PM1	0.781	0.624	1.049	-0.092	1.34	0.726	0.828	0.547
	PM2	0.717	0.697	1.242					
	PM3	0.731	0.683	0.322					
	PM4	0.728	0.685	0.600					
Employee Empowerment	EE1	0.779	0.627	0.232	0.537	7.394	0.643	0.809	0.587
	EE3	0.665	0.747	1.973					
	EE4	0.844	0.536	0.595					
SMEs Productivity	PRO1	0.480	0.925	2.935	0.718	0.805	0.379		
	PRO2	0.716	0.698	2.046					
	PRO3	0.644	0.765	0.291					
	PRO4	0.663	0.749	1.382					
	PRO5	0.705	0.709	-0.332					
	PRO6	0.631	0.775	4.436					
	PRO7	0.496	0.869	0.654					

**Table 7. Structural Relation Path Values**

Structural Paths	$\beta$ Value	t Statistics	P value
Talent Management → SMEs Productivity	0.215	1.957	0.025**
Performance Management → SMEs Productivity	-0.092	1.34	0.090*
Employee Empowerment → SMEs Productivity	0.537	7.394	0***
e-Recruitment → SMEs Productivity		1.388	0.083*

Significance at \*\*\*  $p > 0.01$ , \*\*  $p > 0.05$ , \*  $p > 0.1$

This model looks to be very stable and determines the factors that are essential in productivity management. Following the assumption of Brown's (2006) study, all skewness and kurtosis values fall between +3 to -3 and +10 to -10, which is good for running SEM. CR value is also above the AVE value of all the constructs. The AVE value of SMEs productivity is slightly lower, i.e., 0.5 threshold value. However, it is a stability-providing factor, and its exclusion significantly hampers other factors' stability by downsizing the study's AVE values, NFI, Chi-square, and SRMR values. So, the researcher kept this factor for

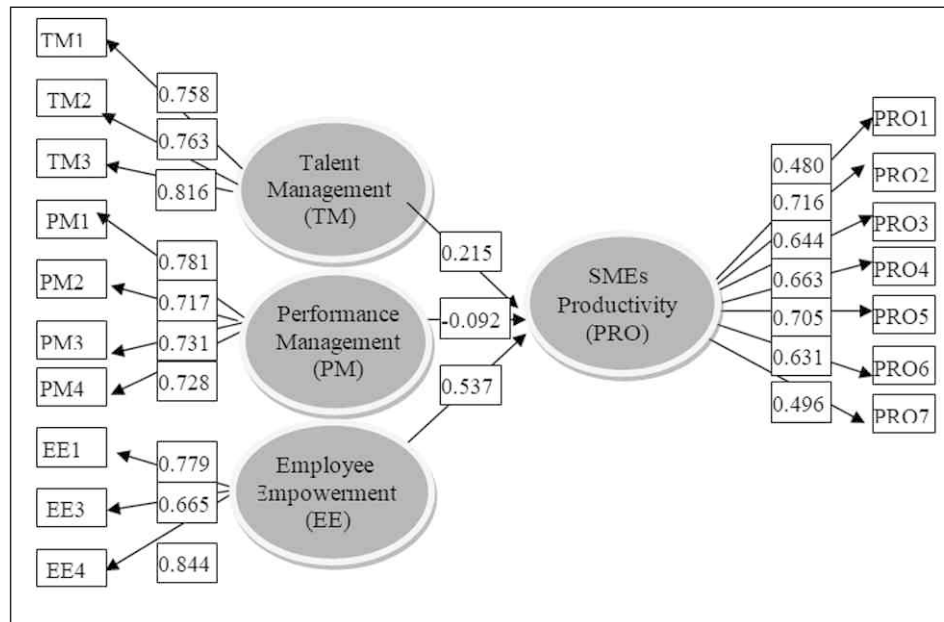
stabilizing the optimized model. The improved or optimized model supports the thoughts and objectives set behind conducting this study and also proved helpful in refining the overall values in the final measurement model.

### 6.8 Structural Relation Path Values

Table 7 shows the hypotheses which individually tested the impact of attributes on SMEs' productivity and found significant results, as the p values of the structural model are significant at their confidence level.

**Table 8. Hypothesis Significance**

	Hypotheses	Sig./non. Sig.
H1	There is a significant positive impact of Talent Management practice and SMEs' Productivity.	Sig.
H2	There is a significant positive impact of Performance Management practice and SMEs' Productivity	Sig.
H3	There is a significant positive impact of Employee Empowerment Management practice and SMEs' Productivity	Sig.
H4	There is a significant positive impact of e-Recruitment practice and SMEs' Productivity	Sig.



**Figure 2. Final Structural Equation Model**

**6.9 Structural Equation Model Optimize Model**

Out of four independent variables, one variable was excluded later on from the model (Fig. 2) because that was not contributing to the suggested equation model. All the modern HR practices (exogenous variables) used in an optimized model represent the SMEs' productivity (endogenous variable) to 40 percent overall in the form of R<sup>2</sup> value, which is calculated by application of bootstrapping step. The R<sup>2</sup> value near 0.50 is considered moderate (Hair et al., 2018). However, some studies have considered the 0.33 value to be moderate. Hence, the finding of this study is validated by the 40 percent R squared value. In the final structural equation model, all three independent factors explain the dependent variable (SMEs Productivity) by 40 percent, and the rest remains for the future scope of the study.

**7. Findings and Discussion**

Some key findings of the study are discussed below.

**7.1 Findings based on SMEs' Productivity (dependent factor)**

After the data analysis, it has been found that the selected four modern HR practices/factors (talent management, performance management, employee empowerment, and e-Recruitment) increases the SMEs' productivity maximum in terms of lean manufacturing (i.e., 0.71 loading value) and very less in terms of labor productivity (i.e., 0.48 loading value).

### **7.2 Findings based on Modern HR practices (Independent factors)**

Twenty-six HR practices have been selected based on expert advice and previous literature, further grouped into four categories. These four categories or factors have been taken by the researcher in the form of Modern HR practices, whose application impact has been evaluated based on their values achieved after applying the structural equation modeling.

It has been identified that out of all 26 items, succession planning, work and team management, open door policy, and decentralized decision-making based on their low contribution have been removed from the optimized model. Only 19 items out of a total of 26 items were left in the optimized model. Of the four factors, e-Recruitment has not significantly contributed to increasing SME productivity along with other modern HR practices. However, all four modern HR practices, i.e., talent management, performance management, employee empowerment, and e-recruitment, have been positively contributing to SME productivity on an individual basis by improving the model fit values (NFI, Chi, SRMR).

### **7.3 Discussions**

This research paper clarifies various doubts among the SMEs regarding the HR practices application and forms of output achieved. The term Modern in the context of HR practices was rarely used in previous research, but many studies stated that few bundles of the latest form of HR practices could enhance the productivity of SMEs (Brand & Bax, 2002). In fact, the outcome achieved by their application can not only be measured in numerical value but can also be measured in qualitative terms (Croucher et al., 2013), which is well supported in this research. Demo et al. (2012) study has provided insightful knowledge to this research because this study has shown that some selected HR practices can increase the company's productivity in quantitative and qualitative terms. The application of Modern forms of HR practices stated that Labor productivity grows very steadily with the application. This may be done due to the possibility of not considering the mediating or intervening factors that could be responsible for increasing it (Datta et al., 2005). It is also represented that the selected four modern HR practices can increase SME productivity by 40 percent in the electrical goods industry of NCR.

SMEs can easily understand the findings of this research because this study highlighted the forms of HR practices

that should be implemented in the workplace and the benefits they can achieve easily in clear and reasonable terms.

## **8. Implications**

### **8.1 Theoretical Implications**

This research study has contributed a lot to the development of small and medium-sized scale industries. As the researcher has also discussed through the conceptual model, if SMEs apply these four (Talent Management, Performance Management, Employee Empowerment, e-Recruitment) selected modern HR practices at their workplace, then it will have a positive impact on overall results, especially in achieving lean manufacturing of SMEs productivity representing the item. The results achieved by the implementation of all these modern HR practices will serve as a guide and knowledge enhancer to the owners of all those SMEs where these practices are less or not applied at the workplace. In fact, out of all these selected four modern HR practices, employee empowerment is gaining maximum weightage in contributing towards increasing the SME's productivity and sustainable growth. So this study enriched the limited knowledge available about modern HR concepts and their benefits in the context of SMEs and is also helpful in enriching the literature pool, which is very limited available with respect to these selected concepts.

### **8.2 Practical Implications**

The outcomes of this study will surely help the policymaker, government bodies, owners, and employees of SMEs. The implementation of this study's results will be proven helpful in the development of employees and employers in gaining maximum profit by perfect utilization of available resources. Another insight benefit of this study is that it will strengthen the relationship between employee and employer, which is also helpful in employee retention, attaining work-life balance, fewer conflicts, and employee satisfaction. Moreover, highly satisfied and empowered employee give better results and cares about the organization, like their family. This research study has also created an opportunity for the other researchers to deep-dive into the deleted factors and suggest to them a way of using these items in some other model as a better alternative.

## **9. Conclusion**

Based on their application evaluation, it has been concluded that among all four modern HR practices (Talent Management, Performance Management, Employee Empowerment, and e-Recruitment), employee



empowerment followed by Talent Management practices majorly influence the productivity of electrical goods SMEs located in Delhi NCR. After these two practices, Performance Management has emerged as the third number impacting modern HR practices. But the application of e-Recruitment in small-size firms is still very limited for hiring new candidates. The application of all these practices increases lean manufacturing, followed by optimized production outcomes and an overall increase of forty percent in the total SMEs productivity ratio. So, this study can be useful for SMEs to understand the benefit of implementing modern HR practices. From the study, the researcher can conclude that there are several benefits of implementing HR practices for the betterment of SMEs. For instance, the lack of awareness about the Financial Management, HR Management, and government support policies are some common problems they face. These Modern HR practices will educate and improve the efficiency of SMEs to some extent.

#### 10. Limitations and Future Scope of Research

This research has been conducted over Delhi NCR only by selecting limited modern HR practices, due to which the global applicability of the results obtained from this research is slightly less. It means that the results of this study might not give similar results in SMEs located in other geographical regions. Another constraint is the limited sample size and use of the judgmental sampling method selected by the researcher for data collection. Chances of getting more fruitful and different results can be achieved by increasing the sample size and using of probability sampling method in place of non-probability methods. In fact, this research study does not consider the other intervening or mediating factors which can affect the results achieved. So, this research can be extended by adopting some other forms of modern HR practices in different geographical areas.

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# Demography of Investors and Behavioral Biases – An Empirical Study

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## A b s t r a c t

This paper examines the relationship between investors' demographic variables and behavioral biases. This study includes demographic factors like age, gender, marital status, income level, level of education, occupation, and investment experience of individual investors. The study uses t-test and ANOVA to examine the survey data of 184 retail investors in Delhi-NCR. The research findings show the existence of behavioral biases like anchoring, mental accounting, overconfidence, herding, and loss aversion. The findings support the existence of biases among individuals and show that their behavior is not always rational. This study is to find an association of variables, not to find out the causality. The results of this research should not be taken as implying causation. The findings could have consequences for financial educators who want to promote personal financial awareness. Understanding the decision-making processes of their clients can help financial advisors become more effective. Despite detailed literature on behavioral finance, only a small amount of academic research has been done to analyze the relationship between biases and demographic factors in the context of retail investors in Delhi-NCR. By attempting to fill this gap in the literature, this study contributes to it.

**Keywords:** *Demographic Factors, Behavioral Biases, Overconfidence, Herding, Anchoring, Loss Aversion*



## 1. Introduction

Traditional finance and economics are based on the assumption of rationality and market efficiency (Fama, 1965). It assumes that investors and markets behave rationally (Baker & Filbeck, 2013). But recent developments in finance challenge this assumption. The evolution of behavioral finance is based on the fact that investors generally do not behave rationally. They deviate from optimal investment decisions due to the existence of various biases. Behavioral finance examines the relationship between economics, finance, and psychology to exhibit investors' behavior in different financial market settings (Shiller, 2003). Empirical research in the field of financial markets has shown that the irrational thinking of investors has an impact on their investment behavior. This irrationality of behavior results in under and overvaluation of shares. The market price is affected by the psychology of investors, and it may not be fairly estimated on the basis of the fundamental analysis (Shefrin, 2000). Kahneman and Tversky (1979) have propounded prospect theory to analyze the decision process of investors in case of risky situations. The cognitive biases of investors play an important role in investment decisions in case of market bubbles (Shiller, 2000). In the past few years, several studies have been done to analyze the impact of psychological biases in deciding investment patterns. Bias is a propensity or prejudice to make decisions that are already influenced by some underlying belief. Biases result in errors, and psychologists have studied various errors people are prone to make in the process of decision-making (Shefrin, 2007). Investors are prone to make irrational decisions rather than wealth-maximizing decisions due to the effect of psychological biases (Forbes, 2009). Studies have shown that investors tend to sell winning stocks and hold the losing ones (Barber & Odean, 2000).

This paper is an extension of previous studies to find out the impact of behavioral biases on individual investors' decisions.

**The rationality of the study-** This study is based on the association between variables, i.e., demographic factors and biases of investors; it does not test for causality. The study may be helpful for investors and financial advisors in making rational investment decisions. Financial advisors can use the results to suggest financial advice keeping in mind their demographic aspects. Financial advisors and educators may become effective by understanding the client's decision-making processes.

**Discussion of Result-** This paper focuses on two objectives related to individual investors. The first objective is to study the availability of various behavioral biases of investors, and the second is to study the relationship between demographic factors of investors and behavioral biases. Existing studies majorly focus on financial literacy and behavioral biases of investors. However, in this study, an attempt has been made to understand an association between demographic factors and behavioral biases of investors. The study is based on the investment pattern of Delhi-NCR investors. Financial literacy is a challenge for investors in this area as they have limited financial skills and generally rely on various beliefs and preferences to make decisions. This study will contribute to the literature in the field of behavioral finance.

The remaining paper has the following sequence. The next section includes an extensive literature review and theory based on the behavioral biases of investors and their decision-making patterns, followed by research methodology and hypothesis development. The next sections present an empirical analysis of the data and a discussion of the results. The last section of the study presents the conclusion.

## 2. Literature Review

### 2.1 Behavioral Biases of Individual Investors

Individual investors do not always make rational choices. Their behavior always involves a deliberate analysis which seems like a rational investment decision. Psychological factors of investors drive them to make different choices in uncertainty, which may result in the irrationality of decisions (Kahneman & Tversky, 1979). The results demonstrated that availability prejudice and representativeness bias substantially and favorably impact investors' investment decisions. In addition, a significant moderating effect of long-term orientation is observed on the effect of representativeness bias on investment decisions. This indicates that the long-term orientation of investors mitigates the effect of representativeness bias on investment decision-making. However, no substantial moderating effect for availability bias was identified (Khan et al., 2021).

Investors tend to make decisions based on heuristics, past experiences, institutions, etc., which results in biased decisions. Investors apply heuristics without realizing the fact that these are unclear or complex (when the amount of information is very large). These heuristics are frequently used by decision-makers to make quick conclusions. They

are defined by Shah and Oppenheimer (2008) as "rules of thumb or mental shortcuts aimed to reduce the effort required to complete a job, primarily by taking into account less information." Heuristics are useful but can sometimes lead to major and systematic errors (Tversky & Kahneman, 1974). They refer to them as "prediction or estimation errors," which they call bias. Biases, commonly presumed to be cognitive, are described in the literature as reasoning errors or, more particularly, errors in information processing. Madaan and Singh (2019) stated the effect of behavioral biases on the process of making retail investment decisions. The study looks at "overconfidence," "anchoring," "disposition effect," and "herding" as significant behavioral biases. The two behavioral biases, "overconfidence" and "herding," are seen to significantly impact an individual's investment decisions. It was also discovered that those that participate in the financial markets are not rational in their decision-making process and have limited options.

**This study focuses on five behavioral biases as mentioned below:**

**Overconfidence:** Overconfident investors not only overweight private information but also underweight public information (Daniel, 1998). Past studies support that individual investors are overconfident in their knowledge, skills, and analytical capabilities. They trade aggressively due to overconfidence and suffer losses (Odean, 1999; Grinblatt, 2009). Self-attribution bias also leads to overconfidence because of a positive association between self-attribution bias and overconfidence bias (Mishra & Matilda, 2015). Another study by Prasad (2015) explored that optimism also results in the overconfident behavior of stock market investors. Prasad et al. (2017) evaluated the presence of the disposition effect and overconfidence bias in the Indian equities market using the NSE Nifty 50 index and discovered the presence of both biases. They discovered that the overconfidence bias is more prevalent than the other two biases. Mushinada and Veluri (2018a) conducted an empirical test of the overconfidence hypothesis at the Bombay Stock Exchange (BSE). They provided empirical evidence in the form of three main findings supporting the theory. Initially, overconfident investors react excessively to private information and inadequately to public information. The second observation is that self-attribution bias, which is conditioned by accurate forecasts, enhances investors' overconfidence and trading volume. Thirdly, overconfident investors' excessive trading activity contributes to the observed extreme volatility. Mushinada and Veluri (2018b) empirically examined self-attribution bias, overconfidence

bias, and dynamic market volatility at BSE over a range of market capitalizations. Contrary to the notion of earlier studies that these biases are more widespread in small stocks, our study reveals that similar biases occur in equities with varied market capitalizations.

**Anchoring:** This bias manifests itself when individuals must estimate an unknown value or size. Here, individuals begin their estimation by estimating an initial value or "anchor."

This reference point is then updated and refined to provide the final estimate (Prosad, 2014). According to Kudryavtsev and Cohen (2011), anchoring bias is more pronounced in women. Men tend to think independently, whereas women are more cooperative and receptive to the suggestions of others, which may be explained by psychological literature. Investors use the last data points as a reference while making investment decisions; these data points play the role of mental anchors and result in biased decisions (Harvey, 2007). Anchoring bias leads to the tendency to consider illogical price levels as a base in decisions making process. Kahneman and Tversky (1974) demonstrate the existence of bias, i.e., anchoring, in which individuals construct values by beginning with a base value and adjusting it to arrive at a final value.

**Herding:** In financial markets, herding is typically defined as the behavior of an investor who imitates the observed actions of others or market movements rather than following her own opinions and information (Hon-Snir et al., 2012). It arises when people imitate others while ignoring pertinent private information (Scharfstein & Stein, 1990, p.466). According to Burke et al. (2012), more sociable individuals will be more responsive to social influence; consequently, they will be more likely to herd, and personality traits such as empathy, socialization, and extraversion will correlate positively with the propensity to herd. Investors generally follow the actions of other investors without analyzing the rationality of those actions. As human beings, they think that the decisions of the larger group are better and can be followed to make wise investment decisions (Werner, 1999). Herding is prevalent in institutional and individual investors and can be exaggerated based on market structures and states of the market, like volatility, the volume of transactions, and cross-border transactions. The study indicated that retail investors' investment decisions are highly influenced by loss aversion, herd behavior, and FOMO. The assessment of the influence of herd behavior and loss aversion on investment decisions in the presence and absence of FOMO revealed that FOMO partially

mediates these relationships. The mediation was complimentary since the existence of FOMO amplified the impact of loss aversion and herd behavior on the investing decisions of retail investors (Gupta & Shrivastava, 2021).

**Loss Aversion:** Kahneman and Tversky explored another bias, i.e., loss aversion on which prospect theory is based. This theory suggests that investors value gains and losses differently. Investors always try to avoid risk and prefer to make decisions based on expected gains. Investors have a tendency to feel regret for making errors in investment decisions, “loss aversion” is generally a case of “regret aversion” (Shiller, 1998). Past experiences of investors affect the extent of loss aversion. If an investor has made profits in the past, then he will feel confident to make future investment decisions. However, if he has suffered losses in the past, then he will think twice before making any future investment decision (Thaler & Johnson, 1990).

**Mental Accounting:** In 1980, Thaler proposed the notion of the mental accounting bias, which states the partition of current and future assets into discrete, non-transferable parts. According to the theory, individuals ascribe various amounts of utility to each asset group, which influences their consumption decisions and other behaviors. Mental accounting is the habit of individuals categorizing commodities into separate mental compartments. Individuals are primarily concerned with the importance of each individual decision and are unconcerned with the ramifications of their choices. They make a mental account for each investment and give a code to it. The utility offered by this investment option is the criterion that individuals consider in mental accounting (Thaler, 1985).

**Research Gap:** There are many types of research in behavioral finance to unravel the impact of behavioral biases on investment decisions. Even after doing an extensive literature review in this field, only a few academic researchers have been found to study the relationship between demographic factors of investors and behavioral biases. This study is based on demographic factors and five major behavioral biases of investors, and it will try to contribute to the literature to fill this gap.

### 3. Research Methodology

#### 3.1 Demography and Behavioral Biases

An investor's personal factors, including gender, age, occupation, annual income, and trading experience, have an effect on their behavioral biases. Gender, age, and annual income had a negative effect on behavioral biases, while occupation and trading experience had a beneficial effect.

Male investors have demonstrated self-attribution bias and overconfidence. Regarding age and trading experience, these behavioral biases affect young investors and those with less trading experience, respectively. Investors in service with a small salary are susceptible to behavioral biases. It has been found that investors with financial education or certification are somewhat overconfident (Mishra & Metilda, 2015; Mushinada & Veluri, 2018 and 2019). Financial risk-takers are more overconfident than those who avoid taking risks. Men versus women, singles versus those married, and those with a lower salary and less work experience take much greater risks (Abd Sukor et al., 2021). As a result of unique personal experiences, people's conduct changes. Several studies have been conducted in recent years to explore individual investors' perceptions about their careers, education, and marital status. Individual investing choices can differ based on demographic features and lifestyle (Chin, 2012). Behavioral studies literature has focused on the roles of education, career, and gender. Odean and Barber (2001) studied and discovered that with regard to financial decisions, women have lower self-confidence than men. According to the literature, females invest less in risky assets than men. At 1% and 5% levels of significance, the study shows that overconfidence, herd behavior, representativeness, and emotional behavior have a bearing on retail investors' decisions. Furthermore, the socio-demographic factors largely alter the link between cognitive biases and retail investor's decisions (Naveeda et al., 2019; Hunjra & Qureshi, 2012; Bashir et al., 2013; Shabbir & Qadri, 2014; Khan & Aziz, 2016; Siddiqui & Parveen, 2017).

#### **Below mentioned studies exhibit the association of demographic factors of retail investors to their behavioral biases:**

**Gender:** According to some studies, female investors are less overconfident than male investors. The following researchers have suggested the same (Kumar & Goyal, 2016; Barber & Odean, 2001; Bhandari & Deaves, 2006). According to Eagly and Carli (1981), males are less prone to herd bias than females as they get influenced easily.

**Age:** Past studies investigate whether income, age, gender, occupation, and level of experience are associated with overconfidence bias, optimism bias, disposition effect bias, and herd bias. They discovered that age group, profession level, and experience level had a higher link to biases than other demographic variables (Prosad, 2015). Overconfidence and familiarity are two factors related to investors' age (Tekçe, 2016).

**Marital Status:** Unmarried investors had significantly greater levels of over-optimism, overconfidence, and loss aversion than married investors (Ates et al., 2016).

**Education:** Highly educated investors tend to have a smaller disposition impact (Goo et al., 2010). The studies of Bhandari and Deaves in 2016 and 2012 stated that overconfidence rises with increased education. The same findings were shared by Ates et al. (2016). The study also claimed that low-educated retail investors are more prone to the bias of representations.

**Occupation:** Investors' career is more closely linked to overconfidence bias, optimism bias, and the existence of the disposition effect as compared to herding bias (Prosad et al., 2015).

**Annual Income:** Investors with a higher annual income were less susceptible to biases than those with a lower annual income. In contrast, investors with a higher yearly income were likelier to demonstrate overconfidence bias than those with a lower annual income. Analysis of correlations revealed that investors with a high annual income were likelier to exhibit a greater degree of overconfidence bias and a lesser degree of representativeness, loss aversion, availability, and mental accounting biases (Christie, 2019). As suggested by Zhu and Dhar (2006), "Low-income group investors have more disposition effect than high-income investors." They studied the difference in disposition effects among retail investors. Kumar and Goyal (2016) also found a substantial variation in biases like overconfidence among individual investors of various income levels. Higher-income investors are less likely to be overconfident than low-income investors. A past study of a survey of investors in the Delhi region discovered that those with a high annual income were high in their competencies and accordingly traded more frequently, as low-income investors were less overconfident than those with a higher annual income (Chandra, 2009).

**Experience:** Level of confidence and experience have a positive correlation. Retail investors with more experience are prone to overconfidence bias (Glaser et al., 2004). Overconfidence, self-attribution, and anchoring biases are all linked to highly experienced retail investors (Ates et al., 2016).

### 3.2 Questionnaire Design

Demographic characteristics and behavioral biases of individual investors are addressed in the survey. As a validity check, academics and industry specialists reviewed the survey instrument. The survey is divided into two components. The demographics of the respondents are described in Section A. Section B uses a five-point scale and describes respondent behaviors when making investment decisions.

Individual investors from Delhi NCR are the study's target group. The data was collected from 184 individual investors of Delhi-NCR.

### 3.3 Hypothesis Development

**H<sub>1</sub>:** There is a significant difference in behavioral biases of male and female investors.

**H<sub>2</sub>:** There is a significant difference in behavioral biases of married and unmarried investors.

**H<sub>3</sub>:** There is a significant difference in behavioral biases of investors with reference to the mode of trading.

**H<sub>4</sub>:** There is a significant difference in behavioral biases of investors with reference to age.

**H<sub>5</sub>:** There is a significant difference in behavioral biases of investors with reference to the level of education.

**H<sub>6</sub>:** There is a significant difference in behavioral biases of investors with reference to the level of employment.

**H<sub>7</sub>:** There is a significant difference in behavioral biases of investors with reference to the level of income.

**H<sub>8</sub>:** There is a significant difference in behavioral biases of investors with reference to investment experience.

**H<sub>9</sub>:** There is a significant difference in behavioral biases of investors with reference to trading frequency.

## 4. Empirical Analysis and Discussion

**Reliability Statistics:** This statistic checks upon the internal consistency of the data.

Cronbach's alpha coefficient method is used to test the reliability of the responses collected.

**Table 1. Scale Reliability Statistics**

	Mean	Standard Deviation	Cronbach's Alpha
Scale	2.4	0.773	0.836

Source: Author's Calculations

According to Sekaran (2000), if a value of  $\alpha > 0.7$ , then it is normally acceptable for the use of a scale. Table 1 shows a mean value of 2.4, a standard deviation of 0.773, and  $\alpha = 0.836$ , which is higher than 0.7 and represents high internal consistency among the responses.

**Ranking of Behavioral Biases:** In order to analyze the existence of biases in 184 respondents of the survey, the average of responses for statements loaded on the factors is calculated.

Table 2 represents the ranking of various behavioral biases as per their existence among retail investors. Investors exhibit different behavioral biases while making investment

decisions. Herding has the highest mean of 2.517, followed by overconfidence with a mean of 2.333, and mental accounting with 2.247 as the mean value.

To study the variation based on demographic factors and their relation to behavioral biases, an independent t-test, and analysis of variance (ANOVA) are used as statistical tools using SPSS. To analyze the association based on gender and marital status independent t-test is applied. Whereas to study the association on the basis of age group, education, employment, income, experience, mode of trading, and frequency of investments, ANOVA is used.

**H<sub>1</sub>:** There is a significant difference in behavioral biases of male and female investors.

**Table 2. Order of Biases as per Responses**

Behavioral Bias	Mean	Rank
Herding	2.571	1
Overconfidence	2.333	2
Mental Accounting	2.247	3
Anchoring	2.227	4
Loss Aversion	2.194	5

Source: Author's Calculation

**Table 3. Summary of Independent T-Test Results across Gender of Investors**

	Gender	N	Mean	Std. Deviation	Std. Error Mean
<b>Overconfidence</b>	Male	99	2.275	.2440	.0245
	Female	85	2.399	.2025	.0220
<b>Anchoring</b>	Male	99	2.162	.5894	.0592
	Female	85	2.303	.4987	.0541
<b>Herding</b>	Male	99	2.488	.8072	.0811
	Female	85	2.667	.5516	.0598
<b>Loss Aversion</b>	Male	99	2.182	.6872	.0691
	Female	85	2.208	.5491	.0596
<b>Mental Accounting</b>	Male	99	2.187	.6372	.0640
	Female	85	2.318	.5918	.0642



Table 3 presents the result of the independent t-test, and it shows that p-value is less than 5% when we try to find out the association between gender and overconfidence; it shows that there is a significant difference between the level of overconfidence in males and females. Males are more prone to overconfidence bias than females. But there is no significant difference across gender with reference to anchoring, herding, loss aversion, and mental accounting bias as it has a P-value greater than 5%.

$H_2$ : There is a significant difference in behavioral biases of married and unmarried investors.

Table 4 presents the result of the independent t-test, and it shows that p-value is less than 5% when we try to find out the association between the marital status of investors and overconfidence; it shows that there is a significant difference between the level of overconfidence in married and unmarried investors. Married investors are more prone to overconfidence bias than unmarried investors. But there is no significant difference across marital status with reference to anchoring, herding, loss aversion, and mental accounting bias as it has a p-value greater than 5%.

$H_3$ : There is a significant difference in behavioral biases of investors with reference to the mode of trading.

**Table 4. Summary of Independent T-Test Results across Marital Status of Investors**

	Marital Status	N	Mean	Std. Deviation	Std. Error Mean
<b>Overconfidence</b>	Married	35	2.192	.2430	.0411
	Unmarried	149	2.366	.2194	.0180
<b>Anchoring</b>	Married	35	2.107	.3752	.0634
	Unmarried	149	2.255	.5838	.0478
<b>Herding</b>	Married	35	2.333	.6157	.1041
	Unmarried	149	2.626	.7144	.0585
<b>Loss Aversion</b>	Married	35	2.048	.5838	.0987
	Unmarried	149	2.228	.6321	.0518
<b>Mental Accounting</b>	Married	35	1.986	.5071	.0857
	Unmarried	149	2.309	.6276	.0514

Source: Author's Calculation

**Table 5. Summary of Independent T-Test Results across Mode of Trading used by Investors**

	Mode of trading	N	Mean	Std. Deviation	Std. Error Mean
<b>Overconfidence</b>	Offline	21	2.327	.2740	.0598
	Online	163	2.333	.2288	.0179
<b>Anchoring</b>	Offline	21	2.524	.5178	.1130
	Online	163	2.189	.5465	.0428
<b>Herding</b>	Offline	21	2.794	.7851	.1713
	Online	163	2.542	.6910	.0541
<b>Loss Aversion</b>	Offline	21	2.381	.6690	.1460
	Online	163	2.170	.6179	.0484
<b>Mental Accounting</b>	Offline	21	2.310	.5585	.1219
	Online	163	2.239	.6269	.0491

Source: Author's Calculations

Table 5 presents the result of the independent t-test. It shows that p-value is less than 5% in the case of online trading mode across the overconfidence behavior of investors. But there is no significant difference across modes of trading with reference to anchoring, herding, loss aversion, and mental accounting bias as it has a p-value greater than 5%.

**H<sub>1</sub>:** There is a significant difference in behavioral biases of investors with reference to age.

Table 6 exhibits the results of ANOVA showing an association between age groups and behavioral biases. The p-value is less than 5 % in case of mental accounting biases; therefore null hypothesis is rejected. It means there is a significant difference in the herding behavior of investors across various age groups. The null hypothesis is accepted in the case of overconfidence (p=0.152), anchoring (p=0.321), loss aversion (p=0.157), and herding (p=0.161)

biases as the p-value are greater than 5%. Thus, age group has no association with overconfidence, anchoring, loss aversion, and mental accounting biases.

**H<sub>2</sub>:** There is a significant difference in behavioral biases of investors with reference to the level of education.

Table 7 exhibits the results of ANOVA showing an association between education groups and behavioral biases. The p-value is less than 5 % in the case of herding biases; therefore null hypothesis is rejected. It means there is a significant difference in the herding behavior of investors across various education groups. The null hypothesis is accepted in the case of overconfidence (p=0.661), anchoring (p=0.846), loss aversion (p=0.471), and mental accounting (p=0.887) biases as the p-value are greater than 5%. Thus we can say that level of education has no association with overconfidence, anchoring, loss aversion, and mental accounting biases.

**Table 6. One-Way ANOVA and Empirical Results across Age Groups**

Biases	F –Value	P-Value	Decision Rule	Significant Association
<b>Overconfidence</b>	1.906	0.152	H <sub>0</sub> Accepted	No
<b>Anchoring</b>	1.143	0.321	H <sub>0</sub> Accepted	No
<b>Herding</b>	1.846	0.161	H <sub>0</sub> Accepted	No
<b>Loss Aversion</b>	1.873	0.157	H <sub>0</sub> Accepted	No
<b>Mental Accounting</b>	3.161	0.045	H <sub>0</sub> Rejected	Yes

Source: Author's Calculations

**Table 7. One-Way ANOVA and Empirical Results across Education Groups**

Biases	F –Value	P-Value	Decision Rule	Significant Association
<b>Overconfidence</b>	0.832	0.661	H <sub>0</sub> Accepted	No
<b>Anchoring</b>	0.576	0.846	H <sub>0</sub> Accepted	No
<b>Herding</b>	3.765	0.000	H <sub>0</sub> Rejected	Yes
<b>Loss Aversion</b>	0.965	0.471	H <sub>0</sub> Accepted	No
<b>Mental Accounting</b>	0.432	0.887	H <sub>0</sub> Accepted	No

Source: Author's Calculations

**Table 8. Tukey HSD Results: Herding and Level of Education**

(I) Education	(J) Education	Sig.
Up to School level	Diploma	.988
	Graduate	.334
	Postgraduate	.403
	Professional	<b>.031</b>
Diploma	Up to School level	.988
	Graduate	.758
	Postgraduate	.826
	Professional	.165
Graduate	Up to School level	.334
	Diploma	.758
	Postgraduate	.978
	Professional	<b>.010</b>
Postgraduate	Up to School level	.403
	Diploma	.826
	Graduate	.978
	Professional	<b>.001</b>
Professional	Up to School level	<b>.031</b>
	Diploma	.165
	Graduate	<b>.010</b>
	Postgraduate	<b>.001</b>

**Table 9. One-Way ANOVA and Empirical Results across Employment**

Biases	F –Value	P-Value	Decision Rule	Significant Association
<b>Overconfidence</b>	9.253	0.000	H <sub>0</sub> Rejected	Yes
<b>Anchoring</b>	1.350	0.260	H <sub>0</sub> Accepted	No
<b>Herding</b>	1.495	0.218	H <sub>0</sub> Accepted	No
<b>Loss Aversion</b>	1.156	0.328	H <sub>0</sub> Accepted	No
<b>Mental Accounting</b>	0.301	0.824	H <sub>0</sub> Accepted	No

Source: Author's Calculations

**H<sub>0</sub>:** There is a significant difference in behavioral biases of investors with reference to the level of employment.

Table 9 exhibits the results of ANOVA showing an association between employment groups and behavioral biases. The p-value is less than 5 % in case of overconfidence bias; therefore, null hypothesis is rejected. It means there is a significant difference in the

overconfidence behavior of investors across various levels of employment. The null hypothesis is accepted in the case of herding (p=0.218), anchoring (p=0.260), loss aversion (p=0.328), and mental accounting (p=0.824) biases, as the p-values are greater than 5%. Thus we can say that level of employment has no association with herding, anchoring, loss aversion, and mental accounting biases.

**Table 10. Tukey HSD Results: Overconfidence and Level of Employment**

(I) Employment	(J) Employment	Sig.
Business	Salaried	.909
	Professional	.165
	Currently not employed	<b>.009</b>
Salaried	Business	.909
	Professional	.193
	Currently not employed	<b>.000</b>
Professional	Business	.165
	Salaried	.193
	Currently not employed	.982
Currently not employed	Business	<b>.009</b>
	Salaried	<b>.000</b>
	Professional	.982

**Table 11. One-Way ANOVA and Empirical Results across Annual Income**

Biases	F –Value	P-Value	Decision Rule	Significant Association
<b>Overconfidence</b>	22.458	0.000	H <sub>0</sub> Rejected	Yes
<b>Anchoring</b>	6.149	0.014	H <sub>0</sub> Rejected	Yes
<b>Herdning</b>	0.514	0.474	H <sub>0</sub> Accepted	No
<b>Loss Aversion</b>	4.221	0.041	H <sub>0</sub> Rejected	Yes
<b>Mental Accounting</b>	1.234	0.268	H <sub>0</sub> Accepted	No

**Table 12. One-Way ANOVA and Empirical Results across Investment Experience**

Biases	F –Value	P-Value	Decision Rule	Significant Association
<b>Overconfidence</b>	0.975	0.379	H <sub>0</sub> Accepted	No
<b>Anchoring</b>	5.665	0.004	H <sub>0</sub> Rejected	Yes
<b>Herdning</b>	1.948	0.146	H <sub>0</sub> Accepted	No
<b>Loss Aversion</b>	0.458	0.633	H <sub>0</sub> Accepted	No
<b>Mental Accounting</b>	0.034	0.967	H <sub>0</sub> Accepted	No

Source: Author's Calculations

**H<sub>1</sub>:** There is a significant difference in behavioral biases of investors with reference to the level of income.

Table 11 exhibits the results of ANOVA showing an association between the income levels of investors and behavioral biases. The p-value is less than 5 % in the case of overconfidence bias (p=0.000), loss aversion (p=0.041), and anchoring bias (p=0.014); therefore, null hypothesis is rejected. It means there is a significant difference in the

overconfidence, loss aversion, and anchoring behavior of investors across various levels of income of investors. The null hypothesis is accepted in the case of herding (p=0.474), and mental accounting (p=0.268) biases as the p-value is greater than 5%. Thus we can say that level of income has no association with herding and mental accounting biases.

**H<sub>1</sub>:** There is a significant difference in behavioral biases of investors with reference to investment experience.

Table 12 exhibits the results of ANOVA showing an association between the levels of experience of investors and behavioral biases. The p-value is less than 5 % in the case of anchoring bias ( $p=0.004$ ); therefore null hypothesis is rejected. It means there is a significant difference in the anchoring behavior of investors across various levels of investment experiences of investors. The null hypothesis is accepted in the case of overconfidence ( $p=0.379$ ), herding ( $p=0.146$ ), loss aversion ( $p=0.633$ ), and mental accounting ( $p=0.967$ ) biases, as the p-values are greater than 5%. Thus we can say that level of investment experience has no association with overconfidence, herding, loss aversion, and mental accounting biases.

**$H_0$ :** There is a significant difference in behavioral biases of investors with reference to trading frequency.

Table 13 exhibits the results of ANOVA showing an association between the trading frequency of investors and behavioral biases. The p-value is less than 5 % in the case of overconfidence bias ( $p=0.001$ ), loss aversion ( $p=0.028$ ), herding ( $p=0.005$ ), and mental accounting ( $p=0.016$ ), resulting in the rejection of the null hypothesis. It means there is any evidence of a significant difference in overconfidence, loss aversion, herding, and mental accounting behavior of investors across various levels of trading frequency of investors. The null hypothesis is accepted in the case of anchoring ( $p=0.700$ ) biases as the p-value is greater than 5%. Thus we can say that trading frequency has no association with the anchoring bias of investors.

## 5. Discussion and Conclusion

Despite the extensive literature on behavioral finance, there has been little academic research on the relationship between the demographic factors of retail investors and behavioral biases, particularly in India (Sahi & Arora, 2012). This study contributes to bridging that gap by finding

an association of demographic factors of investors with their corresponding investment behavior. Individual investors are important participants in the fastest-growing Indian economy, and the financial markets are appealing due to their breadth and efficiency. The behavior of individual investors is a matter of concern for market regulators and policymakers. This study investigates the association of demography and behavioral biases based on the responses of 184 retail investors from the Delhi NCR region. As per the results biases, individual investors are prone to behavioral biases like overconfidence, anchoring, herding, loss aversion, and mental accounting. As a result, the findings of the study support the notion that individual investors are not always rational. Rather, financial decision-making is linked to emotions, heuristics, and other biases. These findings are consistent with those of previous studies (Sahi & Arora, 2012; Prosad et al., 2015; Mishra & Metilda, 2019). To check the reliability of the data, Cronbach  $\alpha$  is calculated, and it comes up as 0.836, which is higher than 0.7 and represents high internal consistency among the responses. This reliability parameter is consistent with the findings of Sekaran (2000). The study's findings show that age, occupation, and investment experience are the most relevant demographic characteristics that influence individual investors' behavioral biases. These findings are in line with the research results of Renu Isidore (2019) and Mittal and Vyas (2008). The average of the responses for items loaded on the construct is calculated to check the existence of biases. Herding bias has the highest mean of 2.517, followed by overconfidence with a mean of 2.333 and mental accounting with 2.247 as the mean value. Thus we can infer that herding is the most prominent bias among individual investors. Independent T-Test and analysis of variance (ANOVA) are used to study the variation across demographic factors concerning behavioral biases. Males appear to be more overconfident in their stock market knowledge than females; these findings are similar to Lewellen et al. (1977), Barber and Odean (2001), Bhandari

**Table 13. One-Way ANOVA and Empirical Results across Trading Frequency**

Biases	F –Value	P-Value	Decision Rule	Significant Association
<b>Overconfidence</b>	3.519	0.001	$H_0$ Rejected	Yes
<b>Anchoring</b>	1.915	0.70	$H_0$ Accepted	No
<b>Herding</b>	3.050	0.005	$H_0$ Rejected	Yes
<b>Loss Aversion</b>	2.307	0.028	$H_0$ Rejected	Yes
<b>Mental Accounting</b>	2.538	0.016	$H_0$ Rejected	Yes

Source: Author's Calculations



and Deaves (2006), Lin (2011), Kumar and Goyal (2011). But there is no significant difference across gender with reference to anchoring, herding, loss aversion, and mental accounting bias as it has a P-value greater than 5%. There is a significant difference in the herding behavior of investors across various age groups. The p-value is less than 5 % in the case of herding biases, which means there is a significant difference in herding. Furthermore, compared to younger investors, older investors appear to be less prone to herding bias. Overconfidence has an association with investment experience; this finding is consistent with Bhandari and Deaves (2006), Deaves et al. (2010), and Prasad et al. (2015). The findings further reveal the existence of a significant difference in overconfidence, loss aversion, and anchoring in the behavior of retail investors across various levels of income of investors. The p-value is less than 5 % in the case of anchoring bias ( $p=0.004$ ), which means there is a significant difference in the anchoring behavior of investors across various levels of investment experiences of investors. The evidence confirms that demographic factors like age, gender, marital status, education, investment experience, income, and occupation have an association with one or other behavioral biases in individual investors. These findings are consistent with Lin (2011), Prasad (2015, 2017), Kent Baker et al. (2018), Mushinada et al. (2019), and Abdu et al. (2021). Based on the responses of investors, we can infer that herding is the most prominent bias, followed by overconfidence, mental accounting, anchoring, and loss aversion, which is consistent with the findings of Nguyen (2018), Kalugala (2019), Economu (2018) and Aharon (2020).

## 6. Theoretical and Practical implications of Study

This study contributes to the existing literature on behavioral finance, especially the influence of demographic factors on the behavioral biases of individual investors. Understanding psychology is important for designing and selecting an appropriate investment avenue for individual investors. This study may help individual investors cater to their investment requirements based on their demographic aspects. Financial educators may also find this study useful in designing financial awareness programs for individuals. Understanding their clients' decision-making processes can help financial advisors become more effective, allowing them to provide customized financial services depending on their client's preferences. Individual financial potential is increased as a result of policy, resulting in financial well-being for both individuals and the economy. Behavioral insights are being used to improve public policy by

members and partner countries of the Organization for Economic Co-operation and Development. The Australian Securities and Investment Commission conducted a series of multistage laboratory tests to see how behavioral biases can impact preferences for hybrid securities over less sophisticated financial products. Similarly, to raise investor knowledge and enhance government laws and procedures, the Indian regulatory authority should conduct behavioral insights initiatives. Further research can be conducted to determine the generalizability of the study's findings beyond a sample of individual investors. Researchers can examine the relationship between income and wealth as explanatory variables to check the impact on the investment pattern of investors.

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# Impact of Intellectual Capital Efficiency on the Financial Performance of the Indian Banks: The Role of Diversification as a Moderator

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This study has investigated the moderating role of diversification to explore the impact of intellectual capital efficiency on the financial performance of Indian commercial banking firms. The study has used the financial data of 44 public and private sector banks for a period of ten years comprising the financial years 2011-2020. Taking the Value-Added Intellectual Capital (VAIC) as a dependent variable, panel data has been analyzed with the help of the Hierarchical Multiple Regression technique. The study has concluded that the VAIC significantly and positively impacts the financial performance of the Indian commercial banks. The results have stated that the two components of the VAIC, i.e., human resource efficiency and the capital employed efficiency are positively and significantly linked with the bank's performance. Further, the study has found that income-based diversification plays a positive and significant role in strengthening the relationship between the VAIC and the bank's performance. However, the study has not provided any significant results for the role of assets-based diversification. The current study is the first in this area that has investigated the strategic intent behind intellectual capital. The area of this study can be further extended to explore the other knowledge-based sectors of the Indian economy for more evidence, and the other factors could also be analyzed to check this effect.

**Keywords:** *Diversification, Intellectual Capital, Indian Banks, Management, Performance, VAIC*

## 1. Introduction

The banking system is the backbone of the financial development of an economy. Its good performance is of utmost importance for the smooth and well-functioning of the financial system. The performance of the banking institutions could be measured in tangible and intangible ways. There are various measures for tangible performance like financial and operating performance, financial stability, efficiency, and many more. The intangible aspect of performance is the strategic management concept that focuses on innovative strategies, is long-lived, and continuously builds new-age advantages for business entities (McGrath, 2013). Accounting standard setters shifted their views from the tangible assets (AS:38) to the intangibles as the experts found a disparity between a 1990s financial statement and the same financial statement of the year 2020 (Clarke & Gholamshahi, 2018; Drucker, 1993). This disparity and discrepancy have also been pointed out by Sullivan and Sullivan (2000) and Corrado and Hulten (2010). Thus, analyzing the intangible performance of a firm became as important as tangible assets and investments.

Among the intangible assets, skills, experience, and knowledge of human resources have been weighed among the important factors to a firm's capabilities (Coff, 2002). The service sector, such as the banking industry, needs a strategic role of a managerial team to efficiently manage intangible capital like human resource capital, structural capital (systems and processes), and the relational capital of the firm. Thus, the management of intangible assets impacts the strategic development and expansion of the business.

In the earlier studies, the relationship between the intellectual capital (IC, hereafter) efficiency and performance of the firms was established in the literature (Alhassan & Asare, 2016; Joshi et al., 2013; Vishnu & Gupta, 2014; Xu & Wang, 2018). But there were other factors also that directly or indirectly influenced or aggravated this relationship (Bontis et al., 2000; Wang & Chang, 2005). The Resource-Based View (RBV) of the shareholders offered a strong theoretical base for further research in the deployment of a firm's resources for the superior performance of the organizations (Mahoney & Pandian, 1992; Mahoney, 1995; Penrose, 1959). This suggested that the differences in the performance of the firms within the same industry and across the industries could be related to the differences in the deployment and the effective management of the resources of the respective firms (Barney, 1986; Peteraf, 1993; Penrose, 1959;

Makadok, 2001). In this line of research, the diversification strategies were the ones that leverage the firms' specific resources to beat the competencies and help develop new industrial advantages (Tidd & Taurins, 1999).

This paper explores the multi-stakeholders RBV theory in the Indian banking sector that analyzed the impact of intellectual capital on performance via diversification strategies. The previous studies in the Indian context have focused on finding the relationship of diversification with the firms' performance, financial stability, efficiency, etc. (Ghosh & Mondal, 2009; Mishra & Sahoo, 2012; Mondal & Ghosh, 2012; Sharma & Anand, 2019; Trivedi, 2015; Vidyarthi, 2019). And the Value-Added Intellectual Capital (VAIC) was largely examined with performance (Chen, 2005; Clarke et al., 2011; Joshi et al., 2013; Smriti & Das, 2018; Xu & Liu, 2020); with bank risk (Aiyubi & Chalid, 2020; Ghosh & Maji, 2014); and with bank productivity (Alhassan & Asare, 2016). The evidence has also been provided by Githaiga (2020), which examined the role of diversification as a moderating factor to study the impact of human resource capital on the firm's performance.

The current study is the first in this area to examine the moderating role of diversification strategies to establish the relationship between the IC and the financial performance of Indian commercial banks. The first objective aimed to determine the VAIC efficiency of the Indian commercial banks. And it has further examined the relationship between the VAIC and the financial performance in the Indian commercial banking sector. The third objective aims to study the role of diversification as a moderating factor to establish the relationship mentioned above. The study employed the diversification measures developed by Laeven and Levine (2007). And the VAIC coefficient, a model to measure IC efficiency, which was developed by Pulic (1998), has been employed in the study.

The study has been structured according to the following sections: Section II has explained the theoretical background of the study. Section III has given a brief review of the previous studies that had focused on the diversification efficiency and the IC as well as on the performance of the firms. The methodology is provided in section IV. Section V has pointed toward the results and discussion, and the conclusion and implications for future research have been given in Section VI.

## 2. Theoretical Background

The IC includes human capital, capital employed, relational capital, and structural capital investments as its components

(Pulic, 2004). The effective use of intangible assets and intellectual capital defines the success and failure of a business in a competitive environment (Chen, 2005). The Shareholders' Wealth theory (Friedman, 1970) and RBV theory (Barney, 1991) are the two perspectives through which the investors evaluate the business growth and, accordingly, their stakes in the firm. The intellectual capital comes under the RBV theory, wherein the efforts are put in to make all the resources invested in a firm efficient. Interestingly, Kor and Leblebici (2005) stated in their study that the RBV theory had provided powerful insights about the deployment of the firm's resources. However, there was a paucity of literature to address this effect at the corporate level. Searching the keywords "diversification" and "Intellectual Capital", only seven articles were found in the EBSCO database and not over one in Scopus academic online database (Kor & Leblebici, 2005).

The Industrial Organisation (IO) approach has considered the importance of outside or external determinants for explaining the firm's performance. Whereas the RBV approach proposed by Bain (1968) and Porter (1979, 1980, 1985) had given importance to the internal sources of the sustainable competitive advantage as these complement the IO approach (Barney, 2001; Peteraf & Barney, 2003). RBV has made the proposition of a relationship among the strategies, human capital, and performance of the firm (Githaiga, 2020). This proposition has spelled the need to clear the interaction between the resource deployment (i.e., Intellectual Capital) and the diversification strategies and, thereby, their impact on the firm's financial performance.

### 3. Literature Review

Intellectual Capital (IC) is interpreted as the information and knowledge-based assets that create value for an organization and differentiate it from the competitors in the market (Choiriah, 2019). As an important resource of the firm, IC should be analyzed strategically (Roos et al., 2001). It forces the management to use strategies that focus on the emotional and political lens along with the rational lens backed up by the human capital giving it a meaningful sense (Roos et al., 2001). The traditional view has stressed the strategies to fit between the resources and the opportunities at present times (Hamel & Prahalad, 1989). In comparison, IC fits well the gap between the resources and the firms' ambitions and desires with a strategic viewpoint.

Some studies empirically examined how the IC affected efficiency, profitability, and financial stability. Using the financial data of Thailand banks, Saengchan (2008) found a

strong positive effect of capital employed efficiency on the banks' profitability. In their study, Xu and Liu (2020) stated that human capital could be used as a performance-enhancing measure, but relational capital could adversely impact the performance of companies. Among the components of IC, human capital efficiency has been found to be the key driver of performance, which was also evidenced by Duho and Onumah (2019). On another side of the literature, studies such as Choiriah (2019) and Mehralian et al. (2012) have also pointed out the insignificance of the IC in the performance and business risk of the companies. Moreover, in the Indian pharmaceutical companies, Vishnu and Gupta (2014) found that the elements of VAIC, except the structural capital demonstration, had a significant positive impact on the bank's financial performance. Another study by Mondal and Ghosh (2012) claimed that IC had a different impact on the profitability and productivity of Indian banks. Thus, the literature has been divided on how IC affects the performance of companies.

RBV theory gives importance to the internal managerial capabilities, such as the diversification decision of a firm that enables the better deployment of its resources (Githaiga, 2020). Before going towards its mediating role, this part of the literature has pointed out the individual studies that had focused on diversification and firms' performance. A part of the literature claimed the positive side of diversification on the firms' performance, reducing the risk and improving the stability of the firms (Drucker & Puri, 2009; Senyo et al., 2015; Nisar et al., 2018). At the same time, the other part found the opposite results (Banerjee & Velamuri, 2015; Berger & Ofek, 1996; Jensen, 1986; Servaes, 1996). However, the need at present is to shift the approach of the management towards a strategic viewpoint regarding the level of diversification. Through the meta-analysis of 55 studies, Palich et al. (2000) studied the level of diversification and performance. They found that the moderate level of diversification yielded higher performance than either the extensive or the limited level of diversification. Also, Palich et al. (2000) supported the curvilinear model, stating that the performance would increase as a response to the shift from one business to related diversification than unrelated diversifications.

Both topics had been widely researched individually with the non-intellectual performance of the companies. A few studies have explored the relationship between IC efficiency and its strategic role in diversification activities. Hashim et al. (2012) studied the ICP disclosures and firms' value; and the influence of the diversification on these two in 233 firms



in Malaysia. They found that diversification significantly influenced the relationship between the IC disclosure and the firm's value. Massaro et al. (2015) also explored the strategic intent of IC development. Through the response to a questionnaire, they found that all three elements of IC had supported the organization's performance measured by the product and the income diversification.

Duho and Onumah (2019) studied the direct relationship between diversification strategies and ICP and concluded that intellectual capital, like human and strategic capital, significantly determines asset diversification. On the other hand, the ICP did not persuade the income diversification strategy. Studies are there that did not find any strong evidence of the relationship between ICP, diversification, and firms' value, such as Yustyarani and Yuliana (2020), in their empirical evaluation of banks, stated that diversification as a mediator does not improve the connection between ICP and value of the firm. The reason behind this could be the excess diversification at a high cost that puts the banking firms at risk (Aprilia & Darmawan, 2019; Sianipar, 2015).

Studies have shown that firms with better internal capital, such as human resources, preferred diversifying their business resources to leverage the capabilities of their excess capital. Chen et al. (2021) in their study had concluded that firms with significant human resources having ex-ante employment mobility were highly preferred to be acquired. On this line, Lee et al. (2018) also found that firms with better human resources were motivated to consider mergers and acquisitions, thereby increasing the firms' performance. Similar findings for human capital and diversifications were observed by Mengistu (2009). Thus, human capital, an element of the IC, impacts the firm's performance via diversification activities. As literature found a theoretical interconnection among the ICP components, diversification, and performance, the gap of the limited studies in this area leads to further discussion on this topic in the knowledge-based industries. The Indian banking institutions are one such area which is not yet been researched in how this service sector uses its intellectual capital efficiency via diversification decisions to enhance the business performance with strategic intent. The following hypotheses have been framed to be analyzed:

**H1:** There is a positive and statistically significant impact of the VAIC on the financial performance of Indian commercial banks.

**H2:** Diversification positively and significantly impact the financial performance of Indian commercial banks.

**H3:** Diversification significantly moderates the relationship of VAIC with the financial performance of the Indian commercial banks.

## 4. Methodology

### 4.1 Data

The sample comprises the Indian public and private sector commercial banks, and the descriptive and explanatory research design has been adopted. The Prowess Database of the Centre for Monitoring Indian Economy (CMIE) and the Database of Indian economy (DBIE) have been used as the source of data collection. The study period was ten years, from 2011 to 2020. The study has not included foreign banks in the sample because of the data unavailability regarding the VAIC components. The panel data of a total number of 44 banks were studied, yielding a total of 406 observations. Inclusion criteria of the banking firms have been based on the accessibility of the data, and banks that were merged in a year were taken only up to that year.

### 4.2 Variables Construction

The dependent variable, i.e., Return on Assets (ROA), presents the financial performance of the banks. ROA is a traditional accounting performance measure widely used in the literature as a key performance indicator (Berger et al., 2010; Duho & Onumah, 2019; Githaiga, 2020). VAIC model developed by Pulic (1998, 2000, 2001, 2004, 2008) was dwelt upon as an independent variable that comprised the three elements. These elements were HCE, SCE, and CEE, defined in Table 1. The fourth element, i.e., Relational Capital Efficiency (RCE), has not been taken due to the non-availability of the required data for that purpose.

HCE refers to human capital efficiency denoting the efficiency of the knowledge-based investment made by the firm in its human resources. SCE refers to structural capital efficiency, talking about the non-physical infrastructure that includes the database, supportive infrastructure, and the processes which enable the human resources to work. As value efficiency is not created on its own when capital is employed in a business. Thus, the third element, CEE (capital employed efficiency), was also important while calculating the value-added efficiency (Pulic, 2004).

The combination of these three elements gives the value of VAIC. In spite of some criticisms which were found in the studies (Maditinos et al., 2011; Stahle et al., 2011) regarding the usage of VAIC as a measure of IC efficiency, it is one of the scholarly preferred models to evaluate the IC (Joshi et al., 2010). Its practical validity and usage of the quantitative data as used in the audited financial statement have proved it

to be an ideal measure of ICP, having the feature of simplicity, reliability, and comparability (Clarke et al., 2011; Joshi et al., 2010). The controlling factors used in the study were geographical competition, asset quality, firm size, leverage of the firm, ownership, and the listing characteristics of the firm on the stock market. The moderating variable was the diversification strategy, which includes revenue- and assets-based diversification.

The diversification scores were calculated following these two equations as used by Abuzayed et al. (2018), Stiroh and Rumble (2006), Trivedi (2015):

$$DIV (1) = 1 - (SH_{NON}^2 + SH_{IN}^2) \tag{a}$$

$$DIV (2) = 1 - (SH_{LOAN}^2 + SH_{OEA}^2) \tag{b}$$

Where  $SH_{IN}$  is Share on Interest Income in total income;  $SH_{NON}$  is Share of Non-interest Income or other income in total income;  $SH_{LOAN}$  is Share of the Net Loans in loans and operating earning assets apart from loans;  $SH_{OEA}$  is Share of Operating Earning Assets in net loans and operating earning assets apart from loans.

**Table 1. Variable Specification**

<b>Dependent Variable: Performance</b>	
<b>ROA</b>	Return on assets
<b>Moderating Factors: diversification</b>	
<b>DIV1</b>	Income diversification; equation (a)
<b>DIV2</b>	Assets-based diversification; equation (b)
<b>Independent Variables</b>	
<b>VA</b>	Value added (Interest expenses+ depreciation+ dividend paid+ tax paid+ equity of minority shareholders in net income of subsidiaries+ retained profits+ wages and salaries + profit after tax)
<b>HCE</b>	Human Capital Efficiency (VA /sum of the salaries and wages)
<b>SCE</b>	Structural Capital Efficiency [calculated as (VA -HC)/VA]
<b>CCE</b>	Capital employed efficiency (VA/net capital employed taken on book value)
<b>VAIC</b>	HCE+SCE+CEE
<b>Control Variables</b>	
<b>HHI</b>	Herfindahl-Hirschman Index; a market concentration measure
<b>Assets Quality</b>	Non-performing loans (NPL) to total loans
<b>Size</b>	Natural logarithm of total assets of the banks
<b>Leverage/Liquidity</b>	Ratio of total equity to total liabilities
<b>Ownership</b>	A dummy variable for ownership; value=0, if public and vice versa
<b>Listing</b>	A dummy variable, value=1, if stocks are listed and 0, if not listed

### 4.3 Empirical Model

Hierarchical Multiple Regression analysis has been used to test the research hypotheses framed in the study. The study has adapted the empirical models used in Githaiga (2020). The following set of models have been used to obtain the empirical evidence for the objectives of the study:

Model1: Impact of VAIC on the performance

$$ROA = \alpha + \beta_1 VAIC_{i,t} + \sum_{j=1}^5 \lambda_j Controls_{i,t} + u_{j,t} \quad (1.1)$$

$$ROA = \alpha + \beta_1 HCE_{i,t} + \beta_2 SCE_{i,t} + \beta_3 CEE_{i,t} + \sum_{j=1}^5 \lambda_j Controls_{i,t} + u_{j,t} \quad (1.2)$$

Model 2: Impact of the independent variable and the moderator on the performance

$$ROA = \alpha + \beta_1 VAIC_{i,t} + \beta_2 INCDIV + \beta_3 ASSDIV + \sum_{j=1}^5 \lambda_j Controls_{i,t} + u_{j,t} \quad (2)$$

Model 3: Moderating role of diversification between VAIC and the performance

$$ROA = \alpha + \beta_1 VAIC_{i,t} + \beta_2 INCDIV + \beta_3 ASSDIV + \beta_4 VAIC * INCDIV + \beta_5 VAIC * ASSDIV + \sum_{j=1}^5 \lambda_j Controls_{i,t} + u_{j,t} \quad (3)$$

DIV refers to diversification, which can be either side, such as income-based and assets-based diversification. In the equations, VAIC is an IC efficiency measure; HCE, SCE, and CEE are the three elements of VAIC: human capital, structural capital, and the capital employed. The vector denoted as the Controls is a five-factor variable including HHI, assets quality, leverage, bank size, listing in the stock market, and ownership. Previous research has also proven that size, asset quality, and leverage are the factors that could affect management decisions (Muljono & Suk, 2018; Purba et al., 2022), and this study has been using these factors as controlling variables. Additionally,  $\alpha$  is a constant, and  $\beta$  is taken as the regression coefficients of the explanatory variables and the moderators and the regression coefficient of the control variables denoted by  $\lambda$ ;  $i$  and  $t$  presenting each bank and each year taken in the observations.

### 4.4 Analytical Tools used in the Study

Hierarchical Multiple Regression analysis has been performed to check the impact of the independent variable (VAIC) on the study's dependent variable (ROA) moderating the diversification variable. STATA analytical software has been used to explore this relationship. This is a special form of multiple regression in which the variables are added stepwise to the model called 'Block.' As per the

hypothesis formation and the characteristics of the data, this technique has been selected and performed for the empirical evaluation of the study.

## 5. Findings and Discussion

### 5.1 Descriptive

A total number of 406 observations have been examined during the study. Table 2 shows the descriptive outcomes of all the variables used in the study. The descriptive statistics have shown that ROA has a mean score of 0.486 with a value of 1.082 as the standard deviation. Income and assets diversity have an average value of 20.00 per cent and 43.46 per cent, respectively. The mean score of diversification is less than what was reported by Laeven and Levine (2007), which is 20 per cent and 43.5 per cent, respectively. HCE has an average of 10.676 with a deviation of 5.746, showing a high variation. In comparison, SCE is recorded as the least value among the VAIC components, which is like the previous results of Duho and Onumah (2019). The third component, CEE, has been reported to be an average of 1.488 with a maximum value of 21.329, having a deviation of 2.614 percent. Further, VAIC resulted in an average of 13.065 going through a maximum value of 77.372, which was higher than the previous findings (Alhassan & Asare, 2016; Duho & Onumah, 2019). Considering the market concentration (HHI) with an average value of 749.192, showing less than moderately concentrated Indian banking firms. This index is shown in Graph 1, stating an upward trend in the index score across the study period.

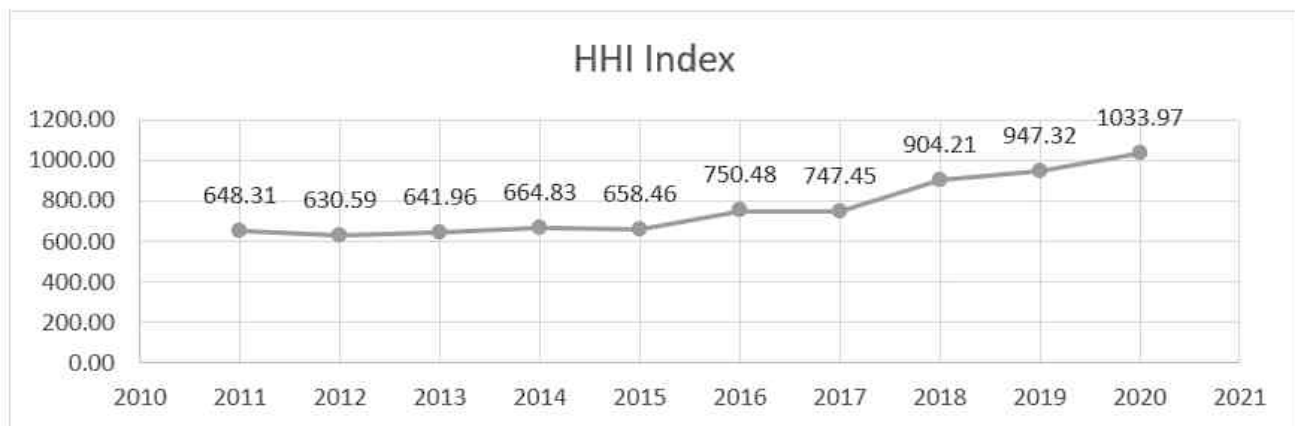
The AQ of the banking firms had a mean score of 3.037, showing the level of non-performing loans over the net loans distributed by the banks. It marked a deviation of 3.050 with a maximum value of this ratio of 16.69. The leverages of the firms had shown an average of 71.60 percent, representing the ratio of the total equity to total liabilities. For the banks' size, this value was 14.120 with a variation of 1.310. Of the total banks, 38 were listed on the stock exchange, 25 were in the public category, and 19 were private sector commercial banks. The VAIC distribution for the public and the private sector banks, is shown in Graph 2 and Graph 3. For the public sector banks, Indian Bank had the highest score of 19.63, while Allahabad Bank Ltd. had the lowest value of 8.07. Among the private sector banks, Dhanlaxmi Bank Ltd. had the lowest score with an 8.53 value, and IndusInd Bank Ltd. gained a high value of 30.03, as shown in Graph 3.

**Table 2. Descriptive Outcomes**

VARIABLES	MEAN	STD. DEV.	MIN.	MAX.
ROA	0.486	1.08	-5.39	2.02
HCE	10.676	5.746	-6.110	75.361
SCE	0.901	0.172	0.083	2.622
CEE	1.488	2.614	-0.432	21.329
VAIC	13.065	6.559	-5.245	77.372
INCDIV	0.200	0.061	0.081	0.430
ASSDIV	0.435	0.072	0.072	0.500
VINCDIV	2.583	1.650	-1.226	15.402
VASSDIV	5.735	3.094	-2.576	35.830
HHI	749.192	132.799	630.588	1033.972
AQ	3.037	3.050	0	16.69
LEVERAGE	0.716	0.258	0.357	0.336
SIZE	14.120	1.310	10.383	17.552
OWNERSHIP	0.547	0.498	0	1
LISTING	0.884	0.320	0	1

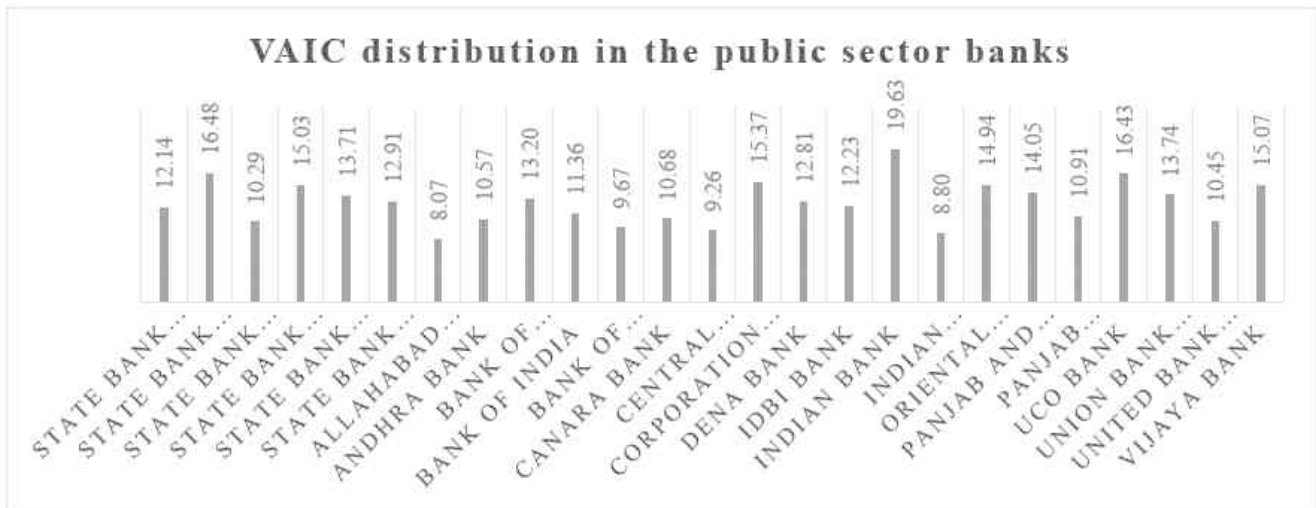
**NOTES –**

*In this table, descriptive statistics of each variable is given  
Authors' calculations*



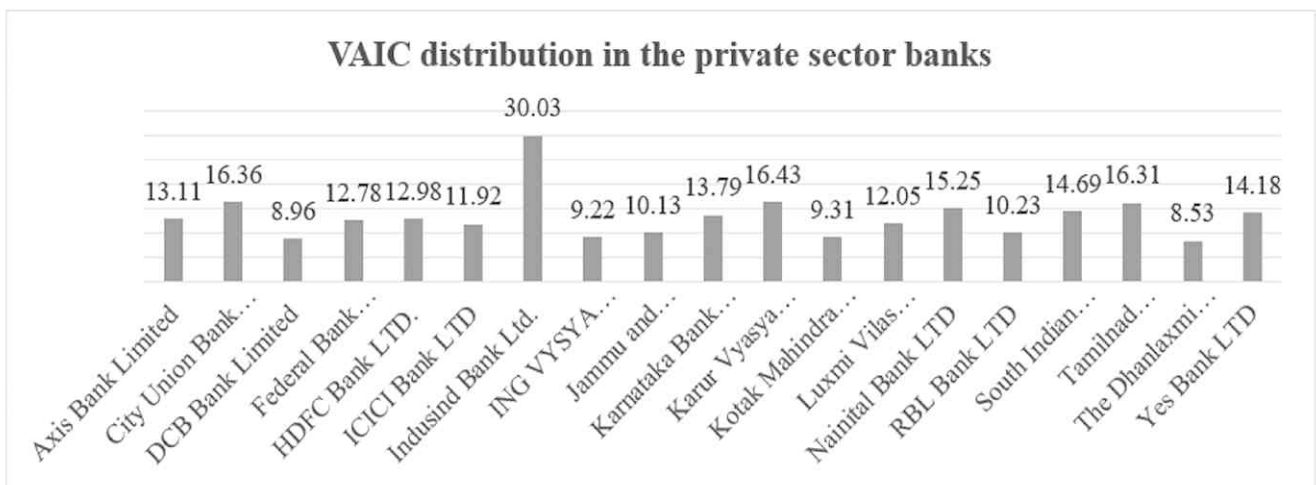
*Note: Authors' calculations*

**Graph 1. Competition (HHI) matrix across years**



Note: Authors' calculations

Graph 2. VAIC distribution in the public sector banks throughout the study period



Note: Authors' calculations

Graph 3. VAIC distribution in the private sector banks throughout the study period

The correlation results for the main variables of the study have been given in Table 3, explaining the significant and positive correlation between VAIC and its two components with the ROA. For the diversification, the assets diversification positively and significantly correlated with the ROA. The income diversity has negatively and

significantly correlated with HCE and VAIC but had not shown any significant association with SCE. In contrast, it was positively correlated with the CEE, and also, this was statistically significant. On the other side, the assets diversity had been significantly correlated with ROA, HCE, CEE, and VAIC

**Table 3. Pairwise Correlation Results**

VARIABLES	ROA	HCE	SCE	CEE	VAIC	INDIV	ASSDIV	VAINC	VAASS
ROA	1.000								
HCE	0.506***	1.000							
SCE	-0.086**	0.050	1.000						
CEE	0.252***	0.101***	-0.009*	1.000					
VAIC	0.541***	0.917***	0.071*	0.487***	1.000				
INCDIV	0.057	-0.210***	-0.017	0.226***	-0.094***	1.000			
ASSDIV	0.100**	0.138***	-0.040	0.003***	0.121***	-0.208***	1.000		
VAINC	0.541***	0.619***	0.033	0.707***	0.825***	0.410***	0.024	1.000	
VAASS	0.504***	0.908***	0.075*	0.431***	0.969***	-0.132***	0.328***	0.768***	1.000

**NOTES –**

\*\*\*, \*\*, \* denote the significance level at 0.01 level, 0.05 level and at 0.10 level, respectively.  
Authors' calculations

positively. The interaction of the VAIC and the diversification (VAINC and VAASS) had a positive and statistically significant correlation with the ROA, and it showed the same correlation with the VAIC and its two components, i.e., HCE and CEE. But there was not any significant correlation found between diversification and SCE.

Further, the study requires a multicollinearity check for the data set. The results for the variance inflation factor (VIF) have verified that the data was not highly inflated. The findings claimed that the average VIF was less than 1.72 and had a maximum value of 1.94. All these values were less than the limit given by Wooldridge (2016). Thus, the study variables were not inflated with the problem of multicollinearity, which marked further proceedings with the multiple regression analysis.

### 5.2 Empirical Findings

The results of the regression analysis are given in Table 4. Four models have been evaluated as per the requirement of the study. The variables selection was based on the respective model based on the hypotheses in the study. Table 4 had also shown the Hausman test result for the choice of fixed versus random effect used for the purpose of regression analysis. The results of the Hausman test gave the fixed effect regression model as the best-fit model for the analysis.

Model 1.1 explored the impact of VAIC on the financial performance of the banking firms, showing a positive impact that was statistically significant at 0.01 level. HHI and  $NPL_{it}$  had a negative impact on the ROA, which was statistically significant at 0.01 level, and SIZE had a positive and statistically significant impact on the ROA. Other controlling factors did not significantly impact the dependent variable in this model. Further, Model 1.2 explained the impact of the three components of VAIC on the dependent variable individually. Among these three components, HCE and CEE had a significant and positive impact on the ROA of the banks in which CEE had a higher coefficient value (0.153) than HCE. SCE had a negative but not a highly significant relationship with the ROA.

The Herfindahl Index (HHI) had shown a negative coefficient value of 0.001,  $NPL_{it}$  with a coefficient of -0.167, and a significant impact had been shown on the ROA in this model. Talking about the other control variables, this model showed that the SIZE had a positive and significant impact. In contrast, the ownership had a negative and statistically significant effect at 0.01 level on the ROA. The impact of the three independent variables was checked independently in Model 2, where VAIC had shown a positive and significant impact on the dependent variable, as shown by Model 1.1. Moreover, INCDIV and ASSDIV had shown a positive and statistically significant (at 0.05 and 0.01 levels, respectively)



impact on the ROA with a coefficient value of 0.650 and 0.024, respectively. The study's first two control variables had a negative impact on the dependent variable, which was statistically significant. In contrast, the fourth variable, i.e., SIZE, had a positive and significant impact at 0.01 level.

Model 4 of the study explored the impact of the interaction between VAIC and diversification to define the impact of the independent variables taken in Model 3. This model resulted in a positive relationship between VAIC and ROA, which was statistically significant. Also, the coefficient value (0.297) had increased from the previous model when this impact was included. But this had shown a negative impact

of INCDIV on ROA with a coefficient value of -0.006, statistically significant at 0.05 level. For the assets diversification (ASSDIV), it had given a high coefficient value (5.136) than Model 2, statistically significant at 0.01 level. Among the two-moderating variables, VAINC positively impacted the ROA, proving that income diversification had strengthened the relationship between VAIC and ROA. And another, VAASS had a highly significant negative impact, showing that assets diversity did not strengthen the relationship between VAIC and ROA. The role of moderating factor does not change the impact of the control variable, as shown in the previous model for the HHI,  $NPL_{it}$ , LEVERAGE, and SIZE.

**Table 4. GLS Regression output of VAIC and bank performance using diversification as a moderator**

Variables	Model (1.1)	Model (1.2)	Model (2)	Model (3)
VAIC	0.045***	-	0.045***	0.297***
HCE	-	0.040***	-	-
SCE	-	-1.228*	-	-
CEE	-	0.153***	-	-
INCDIV	-	-	0.650**	-0.006**
ASSDIV	-	-	0.024***	5.136***
VAINC	-	-	-	0.157***
VAASS	-	-	-	-0.634***
HHI	-0.002***	-0.001***	-0.002***	-0.002***
$NPL_{it}$	-0.134***	-0.167***	-0.140***	-0.135***
LEVERAGE	1.642	1.632	-1.745	-0.086
SIZE	0.240***	0.221**	0.247***	0.030***
OWNERSHIP	-0.345	-0.271***	-0.360	-0.206
LISTING	0.075	0.116	0.068	0.124
CONS.	-1.668	-0.377	-1.844	-0.738
R <sup>2</sup>	0.55***	0.635***	0.704***	0.784***
Wald chi <sup>2</sup>	771.23***	113.14***	123.03***	109.34***
Hausman	18.86***	21.97***	23.25***	30.29***

Notes -

*Regression coefficient and z-value with their significance have been provided.*

*\*\*\*, \*\*, \* denote the significance level at 0.01 level, 0.05 level and at 0.10 level, respectively.*

*The coefficient values are reduced to 3 digits for simplicity in understanding.*

*As per the Hausman results, regression analysis with the fixed effect model has been performed for the whole sample.*

*Authors' calculations*

**Table 5. GLS Regression output of VAIC and the bank performance using the diversification as a moderator for the public (3.1) versus the private sector banks (3.2)**

Variables	Model (3.1)	Model (3.2)
VAIC	0.219***	0.210***
INCDIV	-2.331	-0.895
ASSDIV	2.247*	5.734***
VAINC	0.500***	0.237***
VAASS	-0.610***	-0.450***
HHI	-0.004***	-0.004*
NPL <sub>it</sub>	-0.098***	-0.267***
LEVERAGE	-6.127	1.073
SIZE	0.055*	-0.268***
LISTING	0.022	0.650***
CONS.	2.045*	0.686
R <sup>2</sup>	0.764***	0.732***
Wald chi <sup>2</sup>	64.78***	85.37**
Hausman	13.59	183.53***

**Notes -**

*Regression coefficient and z-value with their significance have been provided.*

*\*\*\*, \*\*, \* denote the significance level at 0.01 level, 0.05 level and at 0.10 level, respectively.*

*The coefficient values have been reduced to 3 digits for the simplicity in understanding.*

*As per the Hausman test, the regression analysis with random effect was performed for the public sector banks and the fixed effect model was performed for the private sector banks.*

*Authors' calculations*

Further, the Public versus Private sector banks were analyzed using the regression equation of Model 3. The results have been shown in Table 5 for both of these banks in Model (3.1) and Model (3.2), respectively. The impact of VAIC on the performance is similar to the whole sample of the study. The results have revealed that ASSDIV had a significantly positive impact on the performance of the public and the private sector banks. However, the coefficient value and its significance were more in the case of the private banks. Talking about the moderating role of

diversification, this was similar to the whole sample of the study. The size matters more for the public than the private sector banking firms in India, and results for the other controlling factors remained similar to the whole sample.

### **5.3 Discussion**

From the empirical results reported in Table 4, Model 1.1 presented that the VAIC enhanced the performance of the banks. Further, in Model 1.2, when the elements of VAIC

were analyzed individually, among these, HCE and CEE had a positive and highly significant impact on the financial performance of the Indian banks. The SCE had negatively contributed to the performance of the banks, similar to what was evidenced by Mohapatra et al. (2019) and Ting and Lean (2009). These findings showed that human capital as a knowledge-based investment provided a competitive advantage to the firm, as viewed by RBV theory. These results have been supported by previous findings also, such as Githaiga (2020), Kor and Leblebici (2005), and Maditinos et al. (2011). And the positive impact of the capital investment has also indicated that the bank needed physical capital to be successful. These findings were partially supporting the first hypothesis of the study.

Model 2 analyzed the impact of the value-added efficiency and the diversification variable on the performance of Indian banking firms. The analysis revealed that, similar to Model 1.1, value-added efficiency enhanced the financial performance of the firms. Both types of diversification positively and significantly enhanced the firms' performance. Thus, the results were in favor of the second hypothesis of the study. These were not in line with what was found by Githaiga (2020), which had studied the impact of only one way of diversification (income) on bank performance and concluded that income-based diversification had a significant negative impact on performance.

The results were mixed for the third hypothesis as evidenced by Model 3. The moderating role of diversification has been explored by using two-way diversification. Findings suggested that income diversification played a significant role in strengthening the relationship between VAIC and the financial performance of the banking firm. For the role of income diversification, the results were opposite to the findings of Githaiga (2020). At the same time, the assets diversification does not show a positive role in enhancing this relationship.

For the control variables of the study, geographical diversification has shown that it was beneficial for improving the financial performance of the banks, as found by Sharma and Anand (2019). The assets quality of the banks which have a negative impact on the firms' performance, similar to the studies that had focused on analyzing the impact of the non-performing assets on the performance of the firms (Mittal & Suneja, 2017; Githaiga, 2020). The size of the firm was generally positively related to the performance, showing the importance of the asset size of the banking institutions. The bifurcation of the sample

revealed similar findings for the mediating role of diversification. And the public sector management had taken the bank size to be important to enhance the banking firms' performance. It has become clear from the above findings that in the Indian banking system, the income diversification strategies employed by the management work as a moderator to strengthen the relationship between VAIC and the firm's financial performance.

## 6. Conclusion

RBV approach makes the proposition of relationship among the firm's strategies, capital, and performance. The role of diversification strategies has been studied as a strategic intent behind the intellectual capital, i.e., VAIC, in order to explore the approach mentioned above. The study has been based on the objective of examining the impact of the VAIC on the Indian banks' financial performance while using the diversification strategies as a moderator. Using the data of 44 Indian scheduled commercial banks throughout the ten years, this study has resulted that VAIC has a positive and statistically significant impact on the financial performance of Indian commercial banks.

Among the three components of the VAIC, the HCE, and the CEE significantly positively impact the banks' performance. Also, income and assets-based diversification help to improve the performance of Indian banks. Then the study found that income-based diversification positively and significantly strengthened the relationship between VAIC and the banks' performance. The bifurcation of the sample into public versus private sector banks has revealed similar findings for the role of diversification as the entire sample has shown. This area can be further extended to the other sectors of the Indian economy, and other factors can be included that define the association of VAIC and the performance of the firms in a better way.

## 7. Implications

The study also has practical implications in two ways. First of all, it impacts the policymakers, and second, it directly affects the decision-making of business management. The decision-making pertains to the prudential norms that concern the risks laid down by the regulatory authority of the Indian banking system. The results are also relevant for the board of directors to assess the impact of the entrepreneurial and intellectual ability of the management regarding the decision-making related to diversification. In addition, income diversification strategies play a significant strategic role in VAIC employment. The paper's findings

claim that managers can deploy their resources in best-income avenues and highlights the significance of knowledge-based resources in improving the value of emerging businesses. Another practical implication is towards human resource management, as the results stated that human resources are an important asset to improve the firm's performance. The study theoretically contributes to expanding the literature on intellectual capital in the Indian industry, where very less number of studies are available. The importance of intellectual capital and its impact on various aspects of performance measures could be further analyzed in other Indian sectors, which may be a possible future direction in this area.

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