



# TRAINING EFFECTIVENESS: BUSINESS INTELLIGENCE INFLUENCING PRODUCTIVITY OF THE EMPLOYEES

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## Abstract

Business intelligence (BI) ingests commercial data and presents it in scrutable ways, similar as reports, dashboards, maps, and graphs. The following distinct criteria were looked at: complexity, compatibility, relative advantage, information quality, and system quality. These characteristics may have an impact on users' intentions to embrace BI in their decision-making process. As a result, these variables could have an impact on decision-making abilities. The study's goal is to examine how business intelligence affects workers' productivity after receiving training. The survey is based only on the impression of employees. There were 120 respondents in the entire sample used for the study. The study employed a descriptive research methodology and convenience sampling procedures. Throughout the study, both primary and secondary data were employed. To arrive at the study's conclusion, correlation analysis, chi square analysis, and simple percentage analysis were all used. The perception of training provided by the firm and the respondents' ages was shown to be positively correlated. It is advised that the business check to see if the workers' quality of work life is improved by the training. It is determined that the business must regularly assess the effectiveness of its training and update it to reflect the situation at hand and current business trends.

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## INTRODUCTION

### Business Intelligence (BI)

Business intelligence (BI) is the term used to describe the administrative and technical framework that gathers, organizes, and evaluates the data generated by a company's operations. Better business decisions are supported and made possible by business intelligence, which is its sole goal. BI gives businesses access to data that is essential to the performance of many departments and areas, including sales,

finance, marketing, and a variety of other departments.

Executives, managers, and employees can use business intelligence (BI) as a technology-driven process for data analysis and effective information delivery. Organizations gather data from internal IT systems and external sources, prepare it for analysis, run queries against the data, create data visualisations, BI dashboards, and reports, and the business users may use the analytics findings for tactical decision-making and long-term planning. Better

business choices that help enterprises boost revenue, boost operational effectiveness, and gain a competitive edge over competing companies are the ultimate aim of BI projects. To do that, BI combines analytics, reporting, and data management technologies with several different data management and analysis approaches.

### Definition

According to Forrester Research, this process involves "a combination of strategies, rules, organisational structures, and technological improvements for transforming raw data into meaningful and useful information that can be leveraged to improve strategic, tactical, and operational decision-making".

Business intelligence, according to Moss and Atre (2003), is an architecture made up of a group of linked operational and decision-supporting applications and databases that give the business community easy access to company data.

According to Saggion's definition from 2007, business intelligence (BI) is the process of finding, obtaining, aggregating, and evaluating information for decision-making. It makes use of several technologies that make it possible to collect and analyze data to enhance business workflows and decision-making.

### Examples of BI

#### ➤ Lowe's Corp

One of the first big-box retailers to use BI tools was Lowe's Corp, which runs the second-largest home improvement retail chain in the country. 1 In particular, it has relied on BI technologies to streamline its supply chain, examine items to spot any fraud and address issues with group shipping fees from its stores.

#### ➤ Coca-Cola Bottling Company

The daily manual reporting procedures used by Coca-Cola Bottling had a drawback in that they limited access to real-time sales and operational data. Yet the business drastically optimized the

process and saved 260 hours a year by swapping out the manual procedure with an automated BI solution (or more than six 40-hour work weeks). 2 With only a few clicks, the staff of the organization is now able to swiftly monitor indicators like delivery operations, budget, and profitability.

### Business Intelligence Process Work

Business intelligence architecture also includes elements outside BI software. Data warehouses built for the whole organisation or smaller data marts, which commonly link to an enterprise data warehouse and carry subsets of business information for certain departments and business units, are common places where business intelligence data is held. Log files, sensor data, text, and other types of unstructured or semi-structured data are among the types of BI and analytics data that are increasingly being stored in data lakes built on Hadoop clusters or other big data platforms as repositories or landing pads.

By utilising data from source systems that can include both historical information and real-time data that is acquired as it is generated, BI solutions can help tactical and strategic decision-making processes. Before being used in BI applications, raw data from several source systems must often be combined, aggregated, and cleaned using data integration and data quality management technologies. This is done to ensure that BI teams and business users are analysing accurate and consistent data.

The subsequent steps in the BI process are as follows:

- data preparation, which involves modeling and organizing data collections for analysis;
- analyzing the prepared data with queries;
- key performance indicators (KPIs) and other findings should be distributed to business users.

- decision-making should be affected and driven by the information.

Originally, BI and IT specialists were the main consumers of BI technologies, running queries and creating dashboards and reports for business users. Yet as self-service BI and data discovery technologies have developed, business analysts, executives, and employees are increasingly adopting BI systems themselves. Business users can independently query BI data, produce data visualizations, and construct dashboards in self-service business intelligence systems.

Advanced analytics techniques including data mining, predictive analytics, text mining, statistical analysis, and big data analytics are frequently used in BI applications. Predictive modeling, which permits what-if examination of many business situations, is a typical example. The majority of the time, however, simple querying and analysis of business data are handled by BI teams, while sophisticated analytics projects are carried out by distinct teams of data scientists, statisticians, predictive modelers, and other experienced analytics specialists.

### Types of BI Tools and Software

There are many distinct types of BI software and solutions.

- Spreadsheets: Some of the most popular BI tools are spreadsheets like Microsoft Excel and Google Docs.
- Reports software: Data may be organized, filtered, and shown using reporting software.
- Data visualization software: To quickly get insights, data visualization software converts datasets into understandable, aesthetically attractive graphical representations.
- Data mining tools: Using techniques like artificial intelligence, machine learning, and statistics, data mining tools "mine" vast volumes of data for patterns.
- Online analytical processing (OLAP): OLAP technologies let users examine datasets from many different views depending on various corporate vantage points.

### BI methods

Much more than a singular "thing," business intelligence is an umbrella word that embraces the procedures and methods of gathering, storing, and evaluating data from company operations or activities to maximize performance. All of these elements work together to provide a comprehensive image of a company that enables decision-makers to operate in a better, more efficient manner. Business intelligence has developed over the last several years to now encompass additional procedures and actions that aid in performance. The following are some of these procedures:

- Data mining: the process of looking for patterns in massive datasets using databases, statistics, and machine learning (ML).
- Reporting: Disseminating data analysis to interested parties so they may come to conclusions and take action.
- Performance metrics and benchmarking: Monitoring performance concerning goals by comparing current performance data to previous performance data, generally using customized dashboards
- Descriptive analytics: Examining occurrences using fundamental data analysis
- Querying: BI asks inquiries about particular data sets and extracts the responses.
- Data visualization: Transforming data analysis into visual representations like charts, graphs, and histograms more easily consumes data.
- Statistical analysis: Taking the results from descriptive analytics and further exploring the data using statistics, such as how and why this trend happened.

- Visual analysis: Investigating data using visual storytelling to share findings immediately and maintain analysis flow
- Data preparation: Gathering data from various sources, determining its dimensions and measurements, and preparing it for analysis

- ✓ To comprehend the influence of training on productivity and its efficacy.

## NEED FOR STUDY

Business intelligence's purpose is to use pertinent data to enhance an organization's business operations. Companies that employ BI tools and approaches effectively have the potential to transform the data they have collected into valuable knowledge about their operational processes and business strategies. These insights may then be applied to better business decisions, resulting in faster business growth and more profitability through raising productivity and revenue. Without BI, organisations struggle to reap the benefits of data-driven decision-making. Instead, executives and employees are mostly left to rely on other criteria, such as acquired knowledge, prior experiences, intuition, and gut feelings, when making critical business decisions. Because there isn't enough evidence to support these strategies, even while they can provide wise judgments, they also carry a high risk of mistakes and blunders.

## OBJECTIVES OF THE STUDY

### Primary objective

- To research how business intelligence affects workers' productivity following training.

### Secondary objectives

- ✓ To gauge how the company's training program is perceived.
- ✓ To be aware of the workers' level of business intelligence.
- ✓ To research how business intelligence is impacted by training efficacy.

## CONCEPTUAL AND THEORETICAL REVIEW

**Rasmey Heang and Raghul Mohan (2018), "Literature Review Of Business Intelligence", Journal of Ambient Intelligence and Humanized Computing, 12(2), 3139-3150.**

Raghul Mohan and Rasmey Heang (2018), We will employ secondary data from the previous literature study on business intelligence, which included several articles and secondary sources of data collecting, in this work. The business intelligence (BI) market is expanding as a result of the quick development of new technologies, which requires businesses to adapt their products to the demands of the market. One of the most significant organizational and technological advancements in contemporary organizations that foster information dissemination and serve as the basis for corporate decision-making is the use of business intelligence systems. It is crucial to approach BI literature by adapting BI applications and their implementation, BI architects, and enabling elements in BI projects because the way BI is integrated and implemented differs significantly between enterprises. We will also go through how organizational and technological characteristics, such as flexibility and support for risk management, are crucial for BI success regardless of the decision environment, including user access, data quality, and the integration of BI with other systems in the company. Last but not least, this essay will also cover how the school of thought has been used to build the concept of BI. We anticipate that the outcomes will be valuable and informative for businesses planning to adopt a BI application within their company.

**Mostafa Medhat Nazier, Dr. Ayman Khedr, Mohamed Haggag(2019), “Business Intelligence and its role to enhance Corporate Performance Management”, International Journal of Management & Information Technology, Volume 3 Issue No.3.**

Dr. Ayman Khedr, Mohamed Haggag, and Mostafa Medhat Nazier (2019) An enterprise may produce enormous volumes of data as a result of the extensive usage of information technology. For the decision-makers in the organization, this data provides priceless information. Using this amount of accumulated data in a business requires BI. Non-technical people may identify what motivates their company actions with the help of BI. They can support cost-cutting, revenue-building, and client happiness initiatives. While many of these advantages can be measured, some of the more elusive ones, including enhanced internal communication, better job satisfaction for users who have greater authority, or the sharing of intellectual capital, might provide your company the biggest advantage over rivals. Cost management, resource optimization, and ensuring that business units deliver value can all be greatly aided by CPM. By providing information in a timely and understandable manner and by enabling the ability to reason and comprehend the meaning behind performance information through discovery, analysis, and ad hoc querying, business intelligence (BI) has a critical role to play in performance management. This essay illustrates the significance of BI, its range, its elements, and how KPIs affect CPM. Also, this essay illustrates the distinctions between BI, MIS, DSS, EIS, and ES.

**Erhun Giray Tuncay, Onder Belgin(2020), “Effects of Business Intelligence Techniques on Enterprise Productivity”, Journal of Computer Information Systems, 59(2), 188-196.**

Onder Belgin, Erhun Giray Tuncay (2020), Data about business processes are analyzed using certain approaches. The term "business intelligence" refers to one of the most well-known subsets of these strategies. Business intelligence primarily focuses on gathering and analyzing data about an organization, its clients, and its rivals. These methods are used to collect, store, analyze, and make intelligent information about corporate data accessible to spot important trends or patterns that support decision-making. As a result, businesses may decide more accurately on tactical and strategic management concerns, such as how to organize their supply chain or compete in a particular market. Query and reporting, OLAP, statistical analysis, forecasting, and data mining are business intelligence applications that are frequently used in decision support systems. These programs can be a component of an enterprise resource planning system and often employ data acquired from a data warehouse or data mart. The approaches utilized for carrying out business intelligence activities in organizations, the logic employed by business intelligence tools in the decision-making process and their contribution to boosting organizational efficiency will all be covered in this paper.

**Sunet Eybers, Marie J. Hattingh, Liako Kuo (2019). Examining the variables that affect end users' adoption of BI systems in the southern African mining sector. Trondheim, Norway will host the 18th Conference on e-Business, e-Services, and e-Society (I3E) in September 2019.**

Sunet Eybers, Liako Kuo, and Marie J. Hattingh (2019), Investigating the impact of end-user system adoption of BI systems in a mining corporation in South Africa is the main goal of this study. Business Intelligence (BI) systems, one of the technologies that might meet an organization's information demands,

regrettably have a high failure rate. Some of the causes include technological problems (such as data structures and data warehouses), process problems (such as information retrieval procedures and analysis), human problems (such as acceptance opposition), and the complexity of BI. The work environment and user empowerment as proposed by Kim and Gupta were taken into consideration in this qualitative study to examine the adoption of BI systems by end users. Semi-structured interviews were used to collect data while taking into account the work environment and user empowerment. According to the study's findings, job autonomy is restricted by a strong bureaucratic culture and stringent safety regulations. In turn, job autonomy has a detrimental effect on end users' propensity to produce their own BI reports. The older workforce finds it challenging to use all the sophisticated features of BI systems and capabilities due to poor management support and a lack of training in their utilization. Lastly, end users were uninspired to utilize the system since they could not make business decisions.

**Binzafrah, F. and Taleedi, F. (2022), "The effect of business intelligence practices on job satisfaction in the Saudi Electricity Company in the Asir Region", Journal of Money and Business, Vol. 2 No. 1, pp. 107-131.**

Taleedi and Binzafrah both have a Ph.D. (2022), This study's goal is to ascertain how business intelligence affects employee happiness at the Saudi Electricity Company in Asia. After implementing a BI system for job practices, it wants to measure employee job satisfaction. A mixed-method approach was adopted, combining analytical, descriptive, and data-gathering questionnaires. 354 employees out of 3,000 make up the population of the random sample. It is discovered that the adoption of a BI system and the related procedures affect employee work satisfaction in a statistically meaningful

way. The report suggests implementing BI systems for business operations. To solve business difficulties, these firms must take into account the newest BI technologies. To the best of the authors' knowledge, this study is the first to assess how well BI practices are working in the area and concerning employee job satisfaction. This will help researchers better understand worker satisfaction in similar work environments.

**Danijel Bara, Nedeljko Knezevic (2020), "The impact of right-time business intelligence on organizational behavior", International Review of Management and Business Research,5(3),1059-1067.**

Nedeljko Knezevic and Danijel Bara (2020), The purpose of this study is to demonstrate how properly positioned right-time business intelligence systems support sound business judgment at all organizational levels. These business intelligence platforms influence organizational behavior for all workers of the company by fostering a culture of lifelong learning. Businesses that are set up such that business choices are made based on the favorable effects of an ongoing learning process will subsequently provide great business results. It was discovered that the processes of decision-making and learning inevitably result in behavioral changes, which then affect the behavior of the entire organization. Intuition-based decision-making is difficult to prevent at higher levels of the organization, but it can nearly entirely be eliminated at lower ones. The future lies in automated right-time decisions.

**Yanni Gao and Lixiang Guo (2021), "Analysis on Influence of Business Intelligence Information Quality over User Information Adoption Based on Multiple Mediating Effects", Volume 2021**

Lixiang Guo and Yanni Gao (2021), To better understand the impact of business intelligence (BI) on user information adoption, this research develops a theoretical model based on the information system (IS) success model and the information adoption model (IAM) (UIA). Initially, models of the BI variables influencing UIA were developed using the body of available literature. After that, a questionnaire survey was conducted to gather reliable samples from 423 Chinese businesses. Afterward, using Amos 24.0 and SPSS 26.0, a structural equations empirical analysis was done. The results show that user experience (UIA) is highly influenced by BI information content quality (ICQ), anticipated performance (EP), expected ease-of-use (EEOU), and perceived risk (PR), and that ICQ further considerably effects UIA via mediators like EP, EEOU, and PR. Contrarily, UIA is directly but insignificantly influenced by BI information access quality (IAQ), but UIA of BI is significantly enhanced by EP and EEOU. The study offers fresh insight into big data's impact on BI user behaviors and serves as a useful guide for successfully implementing and utilizing BI in real-world settings.

## RESEARCH REVIEW

**Mohamed Z. Elbashir, Philip A. Collier, Michael J. Davern (2018), "Measuring the effects of business intelligence systems: The relationship between business process and organizational performance", *International Journal of Accounting Information Systems*, Volume 9, Issue 3, Pages 135-153**

Systems for business intelligence (BI) enable the analysis of corporate data to assist and improve management decision-making across a wide range of business operations, according to Michael J. Davern, Philip A. Collier, and Mohamed Z. Elbashir

(2018). The considerable value that is locked up in a company's data resources may be unlocked by using the significant investments that businesses have made in their data infrastructure (such as ERP systems). Although there is a growing amount of major company investment in BI systems, it is impossible to know with any degree of certainty or rigor whether any economic value has been realized. We create a new measure based on an understanding of the features of BI systems in a process-oriented framework using the data we have gained from prior attempts to quantify the business value of IT-intensive systems. The relationship between organizational performance and business process performance is then examined using the measure, and the findings indicate that there are significant differences in the strength of the linkage between various industrial sectors. This study highlights the necessity for more research into contextual factors to achieve such performance gains and highlights the need of taking into consideration each user's specific usage environment when designing performance evaluation for IT-intensive systems.

**Bose and Vallurupalli, both V. (2018). A case-based study of business intelligence for performance evaluation. 72–85 in *Decision Support Systems*, 111.**

According to Vallurupalli and Bose (2018), business intelligence contributed to the creation of a favorable atmosphere for the organization in which it may attain standout performance by regulating performance assessment tools and rules for controlling it. Business is the ability to give information that has been processed from massive amounts of data, which improves decision-making and, as a result, improves performance. The current study aims to determine the role of business intelligence and big data in raising the performance level of organizations by incorporating business intelligence approaches (Strategic, Analytical, and Operational) and big data,

and measuring its quantitative impact on organizational performance and performance management.

**Muhmmad I. Nofal, Zawiyah M. Yusof (2018), "Integration of Business Intelligence and Enterprise Resource Planning within Organizations", *Procedia Technology*, Volume 11, 2013, Pages 658-665**

Business intelligence (BI) and enterprise resource planning (ERP) technology have garnered substantial investment from organizations, according to Zawiyah M. Yusof and Muhmmad I. Nofal (2018). Within the framework of complex BI and ERP, these technologies have evolved into key strategic tools in today's competitive environment, which has a direct impact on the success of any project execution. Yet, insufficient attention has been paid to the integration of business information and enterprise resource planning (BIERP). A little amount of study was done in wealthy countries, while the underdeveloped world received far less attention. Despite the efforts made to describe the integration of many systems, the literature is still categorized as being fragmented and heterogeneous. This article assesses and evaluates publications published between 2000 and 2012 on the integration of BI and ERP.

**Russell Torres, Anna Sidorova, Mary C. Jones(2018), "Enabling firm performance through business intelligence and analytics: A dynamic capabilities perspective", *Information & Management*, Volume 55, Issue 7, Pages 822-839.**

Mary C. Jones, Anna Sidorova, and Russell Torres (2018), The sense-seize-transform theory of dynamic capacities are used in this study as the theoretical lens for analyzing the function of BI&A in organizations. This viewpoint holds that BI&A is the detecting and capturing

component of dynamic capabilities that enhance company performance by supporting business process transformation. Results support a link between BI&A and performance that is mediated by business process transformation skills. The relevance of BI&A grasping capabilities and the significance of business process transformation in converting BI&A output into enhanced performance are highlighted in this study in response to the need for a theoretically informed investigation of the link between BI&A and company performance.

**Abualoush, S., and Abusweilem, M. (2019). the effect of business information and the knowledge management process on organisational performance. *Journal of Management Science*, 9(12), 2143-2156.**

Abualoush, S., and Abusweilem, M. (2019). To ensure the progress of business and follow the steady steps of Solid and distinguished performance, organizations strive to work intelligently by early problem detection and trying to solve them so as not to interfere and affect the production line or the supply of service. They also strive to reach a state of rapid vision and take the right decisions (Richards et al, 2019). As humans are among the sharpest animals on the planet, the idea of intelligence is not new. As a result, man has long been the planet's king and master. Because of his brilliance, he was also necessary to create the world, which is what happened (Abusweilem and Abualoush, 2019). Business intelligence, which many CEOs are used to perceiving as a term but which is now recognized as a trigger in almost every success story in most firms because it allows them to make wise, data-driven decisions and so improve the performance of organizations, was the study's conclusion.

**Dimovski and Bozic, K. (2019). A dynamic capabilities perspective on business information and analytics utilisation, innovation ambidexterity, and firm success. 28(4), 101578; Journal of Strategic Information Systems.**

According to Bozic, K., and Dimovski, V. (2019), "BI" refers to a group of activities aimed at utilizing the organizational data that is currently available to improve the performance of organizations through data analysis and conversion into information, assessment of strengths and weaknesses, and development of an appropriate strategy for the organization. The scope of the current study was restricted to Jordanian businesses operating there during the fiscal year 2021–2022, and the variables of the study were restricted to business intelligence and big data, which are accessed through businesses' heavy reliance on technology and IT to run their businesses.

**The impact of business intelligence capability, network learning, and innovativeness on startups' success is discussed by Nuno Caseiro and Arnaldo Coelho in their article published in the Journal of Innovation & Knowledge, Volume 4, Issue 3, Pages 139–145.**

Arnaldo Coelho and Nuno Caseiro (2019), To study the direct impacts of business intelligence (BI) on performance as well as the indirect effects via network learning (NL) and creativity, this paper develops a model (INNOV). Based on a sample of 228 startups from various European nations, the study was conducted. We use structural equation modeling to investigate those links. The findings of this study indicate beneficial interactions between the various factors, and we may conclude that business intelligence capabilities affect network learning, inventiveness, and performance. Due to the potential influence on company performance, it may be claimed that

business intelligence capabilities in startups need to receive some attention. The network learning effect produced by BI is also significant and has a favorable impact on performance. The team has multiple demands for their attention, and it was found that startups commonly suffer with a shortage of resources. It seems that recommending business intelligence methods is a new obstacle to overcome, but since information is a crucial tool for better decision-making, it can be profitable.

**Gregory Richards, William Yeoh, Alain Yee Loong Chong & Ales Popovic (2019), “Business Intelligence Effectiveness and Corporate Performance Management: An Empirical Analysis”, Journal of Computer Information Systems, Volume 59, Issue 2**

Alain Yee Loong Chong, Ales Popovic, William Yeoh, Gregory Richards, and (2019), Both academics and practitioners have given business intelligence (BI) technology a lot of attention, and academic research is starting to be produced in the newly growing discipline of business analytics (BA). Unfortunately, no research has yet been done on how BI and BA compare in terms of their influence on corporate performance management (CPM). We developed a CPM framework based on the Integrative model of IT business value and information processing theory to fill this gap. Information was gathered from a global poll of top managers in 337 businesses. According to research, the planning and analytical techniques associated with CPM are more effective the more successfully BI is implemented. The effectiveness of BI is closely correlated with BA, planning, and measurement. Yet, planning has a stronger influence on BA efficacy than measurement does. According to the study, BI and BA both contribute to corporate management practices, but the information requirements depend on how much uncertainty or

ambiguity is there in the management practice.

**Bordeleau, F. E., Mosconi, E., & de Santa-Eulalia, L. A. (2020). Business intelligence and analytics value creation in Industry 4.0: A multiple case study in manufacturing medium enterprises. *Production Planning & Control*, 31(2-3), 173-185.**

According to Bordeleau and others (2020), decision support systems (DSS), which first appeared in the 1960s and reached their peak in the middle of the 1980s as business models based on technology in decision-making and the development of organizational performance, were the catalyst for the emergence of business intelligence. Business intelligence is one of the systems that help to create optimal use of data analysis, according to Howard Dresner, a Gartner analyst, who also suggested that as the volume of large data increases, tools are needed to make decisions based on data analysis, utilization, processing, and providing information that is visual, understandable, and shareable. At this point, business intelligence systems have ways of interacting with one another that make up the fundamental idea that leads to business integration and can result in a choice that has a favorable impact on how well businesses function, these techniques included.

**The Management of Operations, Volume 31, 2020 - Issue 2-3, Fanny-Eve Bordeleau, Elaine Mosconi, and Luis Antonio de Santa-Eulalia (2020), "Business intelligence and analytics value creation in Industry 4.0: a multiple case study in manufacturing medium firms, *Production Planning & Control*."**

Elaine Mosconi, Luis Antonio de Santa-Eulalia, and Fanny-Eve Bordeleau (2020), Despite being the majority of businesses in many places, medium-sized businesses (MEs) are underrepresented in

the literature. New data streams are introduced into businesses via the Industry 4.0 (I4.0) digital transformation. Business intelligence and analytics (BI&A) will be used by MEs and large companies alike to boost their operational efficiency, thus it is interesting to investigate the factors that encourage BI&A to add value. There are, however, few studies that concentrate on the effect of BI&A on I4.0 value creation and none that concentrate on MEs. This study examines variables related to BI&A business value creation in manufacturing MEs going through an I4.0 transformation using a multiple case study approach. According to research, an organization's resources and capabilities are insufficient to forecast business value since organizational learning and culture have a non-negligible impact on MEs.

**Nithya, N., & Kiruthika, R. (2021). Impact of Business Intelligence Adoption on the performance of banks: a conceptual framework. *Journal of Ambient Intelligence and Humanized Computing*, 12(2), 3139-3150.**

According to Nithya and Kiruthika (2021), one of the most significant factors that raised the level of performance of financial organizations, or "banks," was the concept of business intelligence, which relied on data retrieved from the business environment, analyzed it, and then provided it accurately and reliably to decision makers to make the decisions necessary to direct the organization's activity towards strategic goals. The report concluded that managing, measuring, and developing performance forces organizations to recognize the value of having a precise understanding of past and present events that are still evolving. As a result, businesses will be required to keep investing in their business intelligence solutions and will increasingly rely on advanced analytics to make future predictions.

**Yansheng Chen, Zhijun Lin(2021), “Business Intelligence Capabilities and Firm Performance: A Study in China”, International Journal of Information Management, Volume 57, 102232.**

Chen Yansheng and Lin Zhijun (2021), Business intelligence (BI), which has fostered the transformation of information approaches to optimize company decisions and operations, emerged as a result of the expansion of the boundaries of business practice brought about by the development of artificial intelligence (AI) technology. Unfortunately, there is yet no theoretical agreement or assessment of the technologies used in BI. To explain the fundamental BI capabilities, this study constructs the Sense-Transform-Drive (STD) conceptual model of BI based on the theories of dynamic capacities and organizational history. We extract the latent constructs, empirically validate the STD model, and further investigate the correlation and mode of interaction of the three core BI capabilities and the impact of BI application on firm performance in the real economy using a sample contextual to Chinese business practices. We do this by using factoring analysis and structural equation modeling analysis. The study's findings indicate that the structural elements of the STD conceptual model have direct and highly intensified cumulative beneficial impacts and that BI-related dynamic capabilities can improve operational efficiency and firm performance.

**Heba Al-Malahmeh (2022), “Influence of Business Intelligence and Big Data on Organizational Performance”, Journal of System and Management Sciences Vol. 12 (2022) No. 5, pp. 193-212**

Al-Malahmeh Heba (2022), The current study set out to investigate how big data and business intelligence (BI) affect organizational effectiveness. The quantitative and positivist methodological

technique used in this study involved distributing a questionnaire to a sample of (98) general, executive, and operational managers from Jordanian organizations functioning in Jordan during the fiscal year 2021–2022. In that way, the researcher relied on SPSS to deal with the numerical main data that was gathered during the application procedure. The study's findings suggested that using both business intelligence and big data to improve decision-making in businesses—that is, to make the correct choice at the right time—proved that business intelligence had a considerable positive impact on an organization's performance level. The present study is anticipated to be very beneficial for businesses whose operations rely on IT tools and generate large volumes of data. It will assist to increase interest in BI and big data for improved decision-making, which will improve performance. Theoretically, it is anticipated that this study will serve as a springboard for other academics and interested parties to take the initiative and conduct studies relevant to handling large data.

**The impact of business intelligence, organisational learning, and innovation on the financial performance of innovative companies based in Science Park was studied by Mingguo Yang, Riza Sulaiman, Yahua Yin, Valentina Mallamaci, and Hussam Alrabaiah in Information Processing & Management, Volume 59, Issue 2.**

Hussam Alrabaiah, Valentina Mallamaci, Yahua Yin, Mingguo Yang, and Riza Sulaiman (2022), For many businesses, the effective use of data to make better, quicker, and perfect choices is the secret to corporate success. To do this, businesses must employ reliable and effective technologies like business intelligence (BI), which may help them automate the processes of analysis, decision-making, strategy development, and forecasting. In other words, the goal of

BI in these organizations is to gather, handle, and analyze massive amounts of data to transform them into useful business value for decision-making through the development of analytical intelligence reporting platforms. Consequently, the purpose of this study is to determine whether operationalizing BI, OL, and innovation and utilizing their applications may improve the financial performance of these firms. The statistical population of this study is innovative businesses, as was previously indicated. 196 workers of these businesses, which have 400 employees and are located in Science Park, were chosen as the statistical case. The questionnaire, whose validity and reliability have been assessed, is a tool for accumulating information. Study findings show that BI and innovation have a significant impact on how businesses behave. But, there was no connection between OL and these firms' financial success.

## RESEARCH GAP

The focus of earlier research has been on understanding the variables that affect BI adoption across different organizations. They have concentrated on examining the organization's business intelligence capabilities. They failed to investigate how the company's training program is perceived. The level of business intelligence of the person following training was not examined in any research investigations. The goal of the current study is to assess how training efficacy affects business intelligence. Evaluation of training efficacy and its influence on employees' productivity following training is helpful.

## STATEMENT OF THE PROBLEM

Nowadays, training is essential for each firm. It aims to prepare workers for their present employment as well as future ones. The efficacy of the training may significantly boost the company's production and efficiency. Businesses have

been making investments and committing resources to boost business intelligence. The concern would become more productive as a result of the higher degree of business intelligence. Without monitoring its effectiveness, management finds it difficult to allocate resources often and keep them constant over time. So, it is crucial that we carry out research and experiments to evaluate the development of business intelligence following training in organizations. Analysis of how business intelligence affects employees' productivity following training is the goal of the study.

## SIGNIFICANCE OF THE STUDY

Many businesses use BI to support a wide range of operations, including hiring, compliance, production, and marketing. It is challenging to identify a company segment that does not benefit from having better information to work with because BI is a basic business value. Faster, more accurate reporting and analysis, better data quality, improved employee satisfaction, decreased costs and increased revenues, and the capacity to make better business decisions are just a few of the many advantages businesses can experience after incorporating BI into their business models. The majority of businesses can gain from implementing BI solutions; managers who have erroneous or limited information typically make worse judgments than those who do.

## RESEARCH METHODOLOGY

A topic's material is found, chosen, processed, and analyzed using a certain set of steps or techniques known as the research methodology. In a research article, the methodology section enables the reader to assess the general validity and dependability of a study.

The type of research performed in this study was descriptive. In descriptive research, data are collected, analyzed, categorized, and tabulated concerning current situations,

routines, processes, trends, and cause-and-effect correlations before being appropriately and accurately interpreted, sometimes with or without further study.

## **METHODOLOGY ADOPTED (RESEARCH DESIGN)**

The plan or the road map for data collecting, measurement, and analysis is the research design. Research design, according to Kothari (2004), is a method of study that is planned out to answer certain research questions. In this study, a descriptive design of research was used.

### **Descriptive Research Design**

A population, circumstance, or phenomenon is intended to be correctly and methodically described through descriptive study. Questions about what, where, when, and how can be answered, but those about why cannot. Using a variety of research methods, a descriptive research approach might examine one or more variables.

## **SOURCES OF DATA COLLECTION**

Both primary and secondary data were used in this research.

### **Primary data:**

An initial source is gathered as a main source directly. It is not tainted by the opinions or judgments of others. Primary data are facts discovered by a researcher from first-hand sources utilising methods like surveys, trials, and interviews. Primary data for this study is gathered through a questionnaire. The structured questionnaire asks questions about the respondents' characteristics, their awareness of and satisfaction with treatment services offered through online forums, and other issues.

### **Secondary data:**

Information that has already been collected by another entity is known as secondary data. Data obtained through

studies, surveys, or tests carried out by other persons or for other research is referred to as secondary data. Secondary data examples include books, papers, websites, journals, etc.

## **SAMPLING METHODS**

### **Sampling Technique**

A specific strategy for taking a sample from a given population is known as a sampling technique. The strategy or process the researcher uses to choose things for the sample from the population or universe is referred to as sampling design.

Non-probability sampling was used in this investigation. People are chosen for inclusion in a non-probability sample based on non-random criteria, therefore not everyone has the same chance of doing so.

### **Sample design**

In this study, convenience sampling is employed. Simply said, a convenience sample is made up of people who are the simplest for the researcher to contact. Although it is quick and affordable, this method cannot yield generalizable conclusions since it is impossible to determine if the sample is typical of the population.

### **Population**

Employees that have completed business intelligence training in Chennai make up this demographic.

### **Sample size**

Data for this study was gathered from 120 individuals who had completed business intelligence training in Chennai.

### **Sample unit**

A sample unit is one of the units selected with sampling in mind. The sampling area for this study is Chennai.

## Hypothesis

A hypothesis is a notion or proposition that you examine via study and experiment. In other words, it is a hypothesis that may be investigated by further study. The majority of researchers formulate a hypothesis at the outset of their investigation.

The null hypothesis is a broad assertion that there is no correlation between the two phenomena being studied or that there is no link between the groups being studied. An alternate hypothesis is a claim that there is a correlation between two particular research variables.

### The Hypothesis of the study

There is no significant association between respondents' age and their perception that business intelligence training enhances employee decision-making skills.

There is no significant association between respondents' gender and their perspective on whether a business intelligence training program enhances employee ability and knowledge.

## TOOLS FOR ANALYSIS

### Statistical Test:

$$\text{Chi-square test } (\chi^2) = \sum \frac{(O - E)^2}{E}$$

Degree of freedom = (R-1) (C-1)

Whereas, O = Observed frequency  
 E = Expected frequency  
 R = Number of rows  
 C = Number of columns

### To find E:

$$\text{Expected Frequency} = \frac{\text{Row Total} \times \text{Column Total}}{\text{Grand Total}}$$

Data analytics is the science of analysing unprocessed data to make conclusions about such data. The following statistical approaches were applied to the study's analysis of the acquired data in relation to each of its unique objectives.

### 1. Chi-Square Analysis

A non-parametric test of statistical significance for bivariate tabular analysis is the chi-square. A non-parametric test, such as the chi-square, provides an approximation of confidence. The most common application of chi-square is to assess the statistical significance of data presented in bivariate tables, and understanding bivariate tables is essential to understanding the findings of a chi-square test.

#### Chi-Square Test Method:

Chi-square analysis is a technique used to determine whether there is a substantial discrepancy between observed and predicted values.

#### Null Hypothesis (H<sub>0</sub>):

The theory or presumption we are testing, is generally one of the status quo, with regard to a population parameter.

#### Alternative Hypothesis (H<sub>1</sub>):

When the data do not support the null hypothesis, we accept this conclusion.

**Level of Significance ( $\alpha$ ):**

A number that represents the proportion of sample values, that go beyond predetermined bounds when the null hypothesis is true, or the likelihood of rejecting the null hypothesis when it is true.

**2. Correlation Analysis**

To comprehend the nature of relationships between two distinct variables, correlation analysis is utilized. For instance, the quantity of FDI and GDP for the same period might be stated as two variables if our goal is to examine how foreign direct investment (FDI) affects the rate of economic development in Vietnam.

The following formula is used to compute the correlation coefficient "r":

$$r = \frac{n \sum xy - \sum x \sum y}{\sqrt{(n \sum x^2 - (\sum x)^2)(n \sum y^2 - (\sum y)^2)}}$$

Where n is the sample size, x and y are the values of the variables.

The correlation coefficient's value can be understood as follows:

A perfect positive correlation between two values exists if "r" equals 1;

There is a perfect negative correlation between two values if r is equal to -1;

There is no correlation between two values if r is equal to 0.

**DATA ANALYSIS AND INTERPRETATION**

**CHI-SQUARE ANALYSIS**

**RELATIONSHIP BETWEEN THE GENDER OF THE RESPONDENTS AND THE IMPACT OF TRAINING EFFECTIVENESS ON BUSINESS INTELLIGENCE**

**HYPOTHESIS TESTING**

**Null hypothesis (H<sub>0</sub>):**

There is no significant relationship between the gender of the respondents and the impact of training effectiveness on business intelligence.

**Alternative hypothesis (H<sub>1</sub>):**

There is some significant relationship between the gender of the respondents and the impact of training effectiveness on business intelligence.

**Case Processing Summary**

	Cases					
	Valid		Missing		Total	
	N	Percent	N	Percent	N	Percent
GENDER OF THE RESPONDENTS * IMPACT OF TRAINING EFFECTIVENESS ON BUSINESS INTELLIGENCE	120	100.0%	0	.0%	120	100.0%

**Chi-Square Tests**

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	39.178 <sup>a</sup>	16	.001
Likelihood Ratio	47.864	16	.000
Linear-by-Linear Association	32.673	1	.000
N of Valid Cases	120		

a. 27 cells (79.4%) have an expected count of less than 5. The minimum expected count is .31.

**INTERPRETATION:**

As per the above table, it is inferred that the P value is 0.001; it is significant to 5% (0.05) significant level. The minimum expected count is 0.31. Thus alternative hypothesis is accepted and it is found that there is a significant relationship between the gender of the respondents and the impact of training effectiveness on business intelligence.

**CORRELATION ANALYSIS**

**RELATIONSHIP BETWEEN THE AGE OF THE RESPONDENTS AND PERCEPTION OF TRAINING OFFERED BY THE COMPANY**

**Correlations**

		AGE OF THE RESPONDENTS	Perception
AGE OF THE RESPONDENTS	Pearson Correlation	1	.051
	Sig. (2-tailed)		.579
	N	120	120
PERCEPTION OF TRAINING OFFERED BY THE COMPANY	Pearson Correlation	.051	1
	Sig. (2-tailed)	.579	
	N	120	120

**INTERPRETATION:**

The Above table indicates that out of 120 respondents, the coefficient of correlation between the age of the respondents and the perception of training offered by the company is 0.051. It is below 1. So there is a positive relationship between the age of the respondents and the perception of training offered by the company.

**CONCLUSION**

**SUMMARY OF FINDINGS**

The influence of training efficacy on business intelligence is significantly correlated with the respondents' gender.

The age of the respondents and the assessment of the company's training program are positively correlated.

## SUGGESTIONS & RECOMMENDATIONS

- The employees' job happiness must be improved through training.
- The organization must ensure whether the training increases the quality of work life of the employees.
- The training must boost employees' commitment to the business; otherwise, it will need to be revised for organizational reasons.
- Business Intelligence must foster a sense of teamwork to complete tasks on time and accurately.
- For the personnel to properly carry out their jobs, the training must develop their leadership skills.
- The training program needs to be designed to make people productive on the job.
- The training program needs to be set up to instill confidence in the workers.
- The organization must effectively train its staff so that they can make decisions.
- Through training, the company's employees' motivation levels should be raised.
- Through training, the staff must be able to perform independently within the business.
- Employee engagement in the workplace must be ensured by the training.
- Training must affect the ability of the team members to work together.
- The competitive advantages of the people in the company must be impacted by training.
- It must stop other workers from being reliant on one another at work.
- The training program must enhance the employees' abilities and knowledge while keeping them current with industry trends.

- When staff has the training, there should be less surveillance of them.
- By providing appropriate training, the organization must make sure that production waste is reduced.
- The business must assess the success of the training by assessing the organization's current talent pipeline.
- The business should have enough leaders to handle the situation thanks to efficient training.
- The organization must provide adequate training to keep valued people on staff.

## CONCLUSION

Nowadays, training is essential for each firm. It aims to prepare workers for their present employment as well as future ones. The efficacy of the training may significantly boost the company's production and efficiency. Businesses have been making investments and committing resources to boost business intelligence. The concern would become more productive as a result of the higher degree of business intelligence. Without monitoring its effectiveness, management finds it difficult to allocate resources often and keep them constant over time. As a result, the organization must keep an eye on staff levels of business intelligence. The corporation may often organize training programs for the growth of personnel, it is decided. For the organization, the degree of business intelligence is positive. The business must regularly assess the success of its training and update it to reflect the situation and current business trends.

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