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SUSTAINABLE DEVELOPMENT IN BUSINESS: STRIVING FOR A NEW PARADIGM

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CHRIST (Deemed to be University),
Bangalore, India

Editors:

Eddy Madiono Sutanto
Jeevananda S.
Leena James
Halimin Herjanto
Jashim Khan

Proceedings



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School of Business and Management

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PREFACE

Business sustainability refers to doing business without negatively impacting the environment, community, or society as a whole. A growing number of organizations are integrating sustainability into their business strategy. Sustainability in business generally addresses two main categories such as the effect business has on the environment and the effect business has on society. The main goal of a sustainable business strategy is to make a positive impact on these areas. When companies fail to assume responsibility, the opposite can happen, leading to issues like environmental degradation, inequality, and social injustice. Sustainable businesses consider a wide array of environmental, economic, and social factors when making business decisions. These organizations monitor the impact of their operations to ensure that their short-term profits don't turn into long-term liabilities. Businesses and societies can find approaches that will move towards all three goals - environmental protection, social wellbeing, and economic development at the same time.

The School of Business and Management (SBM) CHRIST (Deemed to be University), Bangalore, India in cooperation with Petra Christian University, Surabaya, Indonesia will be hosting the "Fifth International Conference on Management and Entrepreneurship (5th i-CoME) 2022". This conference is made possible with the support of several accredited journals (SCOPUS, ESCI, among many). The conference will present keynote speakers from different countries. This conference is also calling for research articles and papers from scholars, researchers, and students from all over the world. There are five sub-themes with various topics covering management and entrepreneurship areas. The conference will be a forum where fellow academics share experiences, exchange knowledge, work hand-in-hand, and find managerial and entrepreneurial solutions for a sustainable business world. The detailed information is available in the 5th i-CoME 2022.

This conference also calls for research articles and papers from scholars, researchers, and students from all over the world. There are six sub-themes with various topics covering management and entrepreneurship topics. The conference is a forum where fellow academics share experiences, exchange knowledge, work hand-in-hand, and find managerial and entrepreneurial solutions for a better business world.

The objectives of the 5th i-CoME 2022 are to become scholar's forum to discuss a recent scholarly work, to become scholars' forum where scholars from all over the world can gather and network, and to discover new findings that can benefit the business management and entrepreneurship world.

September 1, 2022

Editor

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INVENTORY MANAGEMENT ANALYSIS OF FOREST FIRE EXTINGUISHER IN XYZ Inc.

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ABSTRACT

The purpose of this study is to analyze the inventory management of fire forest extinguisher in XYZ Inc. XYZ Inc. has many kinds of products, so the inventory system has becoming one of the critical keys in the company. XYZ Inc. has not run optimal inventory management because of the non-fulfillment of customer/client requests for 25% to 30% per year of the total demand from 2019 to 2021. This condition makes XYZ Inc. must bear a penalty cost of 3.5% of the project value in the 2019 period and 7.5% of the project value from 2020 to 2021. The researcher wants to analyze inventory management at XYZ Inc. by first grouping inventory items using the ABC method and analyze using the ABC inventory matrix method. Then calculate the best demand forecasting method for the product that is being analyzed. After that, calculate the total cost efficiency of inventory in 2021 before and after using the EOQ method at XYZ Inc. The next step is to calculate the demand for 2022 using the predetermined demand forecasting method and calculate using the EOQ and ROP method in the 2022 period as suggestions for improvement for the company.

Keywords: *ABC analysis, ABC inventory matrix, demand forecasting, EOQ, ROP.*

INTRODUCTION

Companies engaged in the procurement of goods and services sector strive to provide good service level in procuring goods/services required by customers/clients. To have a good service level, the company must have sufficient inventory. Therefore, you must understand how to manage and organize it, from how to get it, store it, and how to sell it. Inventory management needs to be done for several purposes, including anticipating changes in demand and supply, and eliminating or reducing the risk of price increases. According to Hashmicro (ERP software management), there are several ways that companies can do to manage inventory, including monitoring inventory levels, using the FIFO (First In – First Out) method, conducting regular inventory audits, and optimizing supplier management. Companies that carry out inventory management well will produce better service levels in procuring goods/services for clients.

Najoan, Palandeng, and Sumarauw (2019) stated that “inventory is needed to anticipate various possibilities that could threaten the company. The EOQ method produces a more efficient total cost through the optimal quantity and frequency of product purchases.” Putra and Carolina (2019) states that “the amount of inventory that is too high in the company will make the inventory costs high and increases the risk of damage to storing the products, on the other hand, low inventory will risk the occurrence of a shortage of inventory (out of stock) which results in delays in the sales process resulting in a higher service level. not good in the process of procuring goods/services.”

Sanjaya and Purnawati (2021) states that “inventory is one of the most expensive assets of a company that plays a role in the company's operational activities to determine the balance between inventory investment and customer service. The company will be able to streamline inventory costs to maximize profits and improve inventory management performance by using the EOQ method, holding safety stock, and considering the reorder point.”

XYZ Inc. is a medium-sized company engaged in the procurement of goods and services for forest fire extinguishers. XYZ Inc. carries out the procurement process by carrying out inventory at the beginning of the year based on estimates made by the company owner based on historical sales data without using

analytical calculations. Based on observations made by researchers, XYZ Inc. has not run optimal inventory management because of the non-fulfillment of customer/client requests for 25% to 30% per year of the total demand for overall products from 2019 to 2021. This condition makes XYZ Inc. must bear a penalty cost of 3.5% of the project value in the 2019 period and 7.5% of the project value from 2020 to 2021 for each good/service procurement project that experiences product shortages. The percentage increase in the penalty cost reached 7.5% in the 2020-2021 period, also caused by inventory management problems, and it was also affected by the Covid-19 pandemic caused delays in deliveries from suppliers.

Therefore, the researcher wants to analyze inventory management at XYZ Inc. by first grouping inventory items using the ABC method based on the inventory value in the 2021 period and the ABC method based on annual dollar usage. ABC classification analysis using two criteria aims to see the items that are included in the class A component by comparing the two criteria, the results of the ABC analysis with these two criteria, are intended to be analysis the ABC Inventory Matrix method. The next stage of analysis uses the ABC Inventory Matrix method to identify the classification of the matrix area for the products being analyzed including areas of lack of inventory or indicated out of stock, areas of inventory that can meet market demand, and areas of excess product inventory. ABC inventory matrix analysis is needed to map the area classification of each product being analyzed. The next stage is to determine the best demand forecasting method for the product that is being analyzed. After that, calculate the total cost efficiency of inventory in 2021 before and after using the EOQ method at XYZ Inc. The next step is to calculate the demand for 2022 using the predetermined demand forecasting method. Then do the inventory management calculations using the EOQ and ROP method in the 2022 period as suggestions for improvement for the company.

LITERATURE REVIEW

Presenting Quotation Source

Teunter, Babai, and Syntetos (2010) explained that the ABC classification can be done by dividing it into three classes or six classes resulting in a good analysis. The ABC method is classified into three classes consisting of 50%, 30%, and 20% or 80%, 15%, and 5%. As for the classification of the ABC method into six classes consisting of 38%, 25%, 16%, 10%, 7%, and 4%. Both types of classification ABC method must improve the service level of each class but class A is required to have a service level highest compared to other classes.

Zhu, Ninh, Zhao, and Liu (2021) stated that demand forecasting is very important for supply chain efficiency. Forecasting begins with detecting historical data patterns to create the right model to forecast demand.

Zinn and Charnes (2005) stated that the EOQ method is the best choice for managers compared to the QR method. There are several situations when EOQ is the recommended analytical method, including:

- a) Short delivery times and high order costs.
- b) Moderate or high order costs.
- c) Low order costs and long delivery times.
- d) Low risk.
- e) High risk and long delivery times.
- f) Low product value.
- g) The product value is medium or high and the time between shipments is long.
- h) Low daily demand.
- i) Daily demand is high and the time between deliveries is moderate or high.

Gordon (2016) explained that the use of the EOQ model helps optimize the functions of operations management. A company needs to keep the essential inventory in a good productivity system. Inventories owned by the company reflect the capital that has been issued, if not carried out by good management such as using the EOQ method, it will have a bad impact on the company.

Wang, Zinn, and Croxton (2010) stated that reorder point (ROP) and safety stock are important components in inventory. ROP is needed to manage inventory to meet daily demand, while safety stock is carried out to mitigate the risk of changes in demand.

RESEARCH METHOD

ABC Classification Analysis

Then do the analysis of the ABC classification method begins with performing the ABC classification based on the inventory value. Inventory value is the value of product inventory that is still stored and has not sold yet. Inventory value is determined by looking at the amount of product inventory that is still stored. ABC classification based on inventory value is divided into three classes including A has 80% inventory value from total inventory value, B has 15% inventory value from total inventory value, and C has 5% inventory value from total inventory value. After that, the next step is to analyze the data that has been obtained including the inventory value data of 10 types of forest fire extinguishers XYZ Inc. by determining the classification class for each type of product inventory value. This analysis will determine the critical level of the type of forest fire extinguisher inventory value and class A is a product that has a high critical level because it has the highest inventory value.

Similarly, the ABC classification is based on annual dollar usage by dividing into three classes A has 80% of the total annual inventory investment, B has 15% of the total annual inventory investment, and C has 5% of the total annual inventory investment. Annual dollar usage is the percentage value of the number of products that have been sold. Annual dollar usage is obtained by multiplying sales with product prices. After that, the next step is to analyze the data that has been obtained including the inventory value data of 10 types of forest fire extinguishers XYZ Inc. by determining the classification class for each type of product based on the annual dollar usage value. This analysis will determine the critical level of the type of forest fire extinguisher with the largest sales value and class A is a product that has a high critical level because it has the largest product sales value. The purpose of this analysis is to determine the classification of critical product types in each classification and will be further analyzed using the ABC inventory matrix method.

ABC Inventory Matrix Analysis

Analysis using the ABC inventory matrix is done by making a matrix based on the results of the ABC classification based on inventory value and product sales value. This analysis begins by making a matrix by combining the two ABC classifications into the X-axis (ABC classification based on inventory value) and Y-axis (ABC classification based on annual dollar usage). After that, divide the area into three referring to Wisner, Tan, and Leong (2017) including:

- Area one: Lack of product inventory or indicated out of stock.
- Area two: Inventory can meet demand.
- Area three: Excess product inventory.

The next step is to determine the meeting point between the x-axis and the y-axis for each classification that has been obtained for each type of product. After that analyze each type of product in each area that has been previously determined. The purpose of this analysis is to map the classification of the matrix area for each type of product being analyzed.

Demand Forecasting

The analysis uses the forecasting method for forecasting the 2022 period. This analysis is carried out on the type of product that is in area one because the product is in area one which causes XYZ Inc. to get a penalty cost. This analysis begins with determining data patterns based on historical demand data in the 2015–2021 period. According to Heizer, Render, and Munson (2017), there are four kinds of time series data components including trends, seasonality, cycles, and random variations. After determining the pattern of the resulting data, the next step is to perform a demand forecasting analysis with the demand forecasting method with the resulting pattern. The purpose of this analysis is to forecast demand in the 2022 period and further analysis will be carried out using the EOQ method and the ROP method. According to Chopra and Meindl (2015), forecasting methods are divided into two types, qualitative and quantitative.

The qualitative method is based on personal experience while the quantitative method is based on historical sales data from the previous year. In the quantitative model, there are two types, namely the time series method and the causal method (Heizer *et al.*, 2017). The time series method is an analysis that predicts future demand based on certain historical data in the past as an independent variable to predict demand. To find the right forecasting method, it will be analyzed using several methods and testing the error level to get the method with the smallest error. After that, the method with the smallest error will be analyzed using tracking signal analysis which serves to show the validity of the method used to predict future demand. Chopra and Meindl (2015) define several forecasting techniques as follows:

Exponential Smoothing

The exponential smoothing method is a forecasting method widely used in supply chain management (Ferbar, Creslovnik, Mojskerc, & Rajgelj, 2009). The analysis of this method uses the exponential function for the next period. According to Chopra and Meindl (2015), this method uses historical data from time-series data to forecast future demand with the data condition that there is no trend and season in historical data. The initial estimate for analysis by this method is called L_0 . This initial estimate is obtained from the average of all historical data. The following is the L_0 equation in the exponential smoothing method

$$L_0 = \frac{1}{n} \sum_{i=1}^n D_i$$

Remarks:

L_0 = Initial estimated level

n = amount of historical data

D_i = Data demand period i

After calculating the initial estimated value, we will calculate the next level value using the following equation.

$$L_{t+1} = D_{t+1} + (1-\alpha) L_t$$

Remarks:

L_{t+1} = Demand level value for period $t+1$

= Smoothing constant value

D_{t+1} = Value of real demand in the eke period $t+1$

L_t = Demand level value for period t

Next, determine the forecast value generated with the following equation:

$$F_{t+1} = L_t \text{ and } F_{t+n} = L_n$$

Remarks:

F_{t+1} = Demand level value for period $t+1$

L_t = Demand level value for period t

Moving Average

The moving average method is a method that uses the average of the historical data arithmetic of product demand in forecasting demand in the next period. According to Chopra and Meindel (2015). This method can be used if the type of data pattern does not have a trend or seasonality (seasonality). The following is an equation for calculating the level value in this method.

$$L_t = (D_t + D_{t-1} + \dots + D_{t-N+2})/N$$

Remarks:

D_{t-1} = Value of real demand in the eke period $t-1$

D_t = Value of real demand in the eke period t

L_t = Demand level value for period t
 N = amount of historical data

After calculating the level value for each period, the demand forecasting value will be calculated with the following equation.

$$F_{t+1} = L_t$$

Remarks:

F_{t+1} = Demand level value for period $t+1$
 L_t = Demand level value for period t

Trend Corrected Exponential Smoothing (Holt's Model)

The trend corrected exponential smoothing method is a method that uses exponential smoothing estimates and fixes that value with the positive or negative average value of the moving trend in the data. According to Chopra and Meindl (2015), this method is used when the data has a level and trend type pattern but is not seasonal. The alpha and beta values in this method are obtained using the solver in excel. The L_0 and T_0 values are obtained from linear regression calculations where the intercept is used as L_0 and the slope is used as T_0 . The formula for calculating the level value in this analysis can be seen in the following equation.

$$L_{t+1} = D_{t+1} + (1-\alpha) (L_t + H_t)$$

Remarks:

L_{t+1} = Demand level value for period $t+1$
 = Smoothing constant value
 D_{t+1} = Value of real demand in the eke period $t+1$
 L_t = Demand level value for period t
 T_t = The value of the demand trend of the t period

Then calculate the level value in each period using the following equation.

$$N_{t+1} = (L_{t+1} - L_t) + (1-\beta) N_t$$

Remarks:

N_{t+1} = The value of the demand trend of the $t+1$ period
 L_{t+1} = Demand level value for period $t+1$
 = Smoothing constant value for trend
 L_t = Demand level value for period t
 T_t = The value of the demand trend of the t period

After calculating the level and trend values in each period, the next step is to calculate the forecast value for each period using the following equation.

$$F_{t+1} = L_t + T_t$$

Remarks:

L_t = Demand level value for period t
 T_t = The value of the demand trend of the t period

Trend Projection

The trend projection method is an analysis that is carried out using trend lines on historical data and projecting trend lines into the future for medium to long-term forecasting. This method begins with analyzing linear regression on historical data to find the intercept and slope values. Next is the calculation of the demand forecast value for the period you want to know. The formula for calculating the forecast can be seen in the following equation.

$$Y = b_0 + b_1X$$

Remarks:

Y = Predicted value

b_0 = Intercept value

b_1 = Slope value

X = Time period

Total Annual Inventory Cost Before and After EOQ Method

The next step is to calculate the efficiency before and after using the EOQ and ROP methods at XYZ Inc. period 2021. The object compared in this analysis is the total cost of the resulting inventory. The purpose of this analysis is to determine the level of efficiency produced before and after using the EOQ and ROP methods.

EOQ and ROP Analysis for 2022

The next stage is an analysis using the EOQ and ROP methods for forecasting demand for the 2022 period. The results of the demand forecasting for the 2022 period are further analyzed using the EOQ and ROP methods to determine inventory management recommendations that can be made by XYZ Inc. in the 2022 period. The purpose of this analysis is to determine inventory management that can be carried out by XYZ Inc.

REFERENCES

- Chopra, S., & Meindl, P. (2015). *Supply chain management: Strategy, planning & operation*. (6th ed.). Pearson International Edition.
- Ferbar, L., Creslovnik, D., Mojskerc, B., & Rajgelj, M. (2008). Demand forecasting methods in a supply chain: Smoothing and denoising. *International Journal of Production Economics* Volume 118(1), 49–54. <https://doi.org/10.1016/j.ijpe.2008.08.042>
- Gordon, S. A. (2016). *Overview of the classic economic order quantity approach to inventory management*. The Business Age.
- Heizer, J., Render, B., & Munson, C. (2017). *Operation management, Twelfth Edition*. USA: Pearson.
- Najoan, R. J., Palandeng, I. D. & Sumarauw, J. S. B. (2019). Analisis pengendalian persediaan semen dengan menggunakan metode EOQ pada toko Sulindo Bangunan. *Jurnal EMBA*, 7(3), 4387–4396
- Putra, R. A. M., & Carolina, A. (2019). Inventory accounting methods: Factors affecting basis of the choice. *Journal of Auditing, Finance, and Forensic Accounting*, 7(1), 12–19. <https://doi.org/10.21107/jaffa.v7i1.6145>
- Sanjaya, I. P. A., & Purnawati, N. K. (2021). Analisis kinerja manajemen persediaan produk UD. Sinar Jaya Karangasem. *E-Jurnal Manajemen*, 10(3), 270–289. <https://doi.org/10.24843/EJMUNUD.2021.v10.i03.p04>
- Teunter, R. H., Babai, M. Z., & Syntetos, A. A. (2010). ABC classification: Service levels and inventory costs. *Production and Operations Management*, 19(3), 343–352. <https://doi.org/10.1111/j.1937-5956.2009.01098.x>
- Wang, P., Zinn, W., & Croxton, K. L. (2010). Sizing inventory when lead time and demand are correlated. *Production and Operations Management*, 19(4), 480–484. <https://doi.org/10.1111/j.1937-5956.2009.01109.x>
- Wisner, J. D., Tan, K.-C., & Leong, G. K. (2017). *Principles of supply chain management, Fifth Edition*. USA: Cengage Learning.
- Zhu, X., Ninh, A., Zhao, H., & Liu, Z. (2021). Demand forecasting with supply chain information and machine learning: Evidence in the pharmaceutical industry. *Production and Operations Management*, 30 (9), 3231–3252. <https://doi.org/10.1111/poms.13426>
- Zinn, W., & Charnes, J. M. (2005). A comparison of the economic order quantity and quick response inventory. *Journal of Business Logistics*, 26(2), 119–141. <https://doi.org/10.1002/j.2158-1592.2005.tb00208.x>

FIRM-LEVEL FACTORS OF EXPORT PERFORMANCE: EVIDENCE FROM INDIAN SMEs

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ABSTRACT

Exporting is one of the easiest ways for foreign market entry modes, and for some enterprises, it is a successful method of internationalizing. This study attempts to identify the firm-level factors that explain the export performance of Indian small and medium-sized manufacturing enterprises (SMEs). By integrating the resource-based view, contingency theory, and institutional theory, this paper provides unique insights into the level of influence of the firm-level determinants and their combined effect on export promotion programs and export marketing strategy will be provided from the study findings. The methodology used in this study is a qualitative approach incorporating multiple case studies. The primary data source is semi-structured, in-depth interviews conducted with four SME Indian exporters. This study employed semi-structured interview script to collect primary data, facilitating in-depth inquiry and enhancing validity. Rather than a single driver, the findings suggest that factors of export performance are cumulative and interactive. Changes in firm resources, capabilities, and institutional environments affect a firm's export performance. The study further provides insights into perceived export barriers and type the of institutional support the SMEs require to overcome these barriers.

Keywords: *Export performance, resource-based view, firm-level factors, small and medium enterprises, manufacturing firms, case study.*

INTRODUCTION

Exporting is considered as a tool for a firm's growth and efficiency (Wagner, 2013). Exporting becomes a challenging activity for small and medium-sized enterprises (SMEs) as it requires adequate firm's resources and their capabilities. The importance of a firm's resources and their capabilities is explained by the resource-based view (RBV) theory. A firm's resources and their capabilities play a significant role in explaining how firms achieve competitive advantage and are capable of serving domestic and international markets. Lack of firm resources exposes SMEs from effectively achieving competitive advantage and achieving better performance (Peteraf & Barney, 2003). Both internal and external agents can encourage the factors that support SMEs to export. The internal factors emerge within the organization like resources, capabilities and export marketing strategy. The external factors are related to forces outside the organization like export promotion programs (EPPs), aiming to increase the export sales of SMEs.

Firms must devote their resources to carry out exporting activities and reduce various existing barrier to export. Many SMEs fail to identify the existing opportunities and cannot achieve their true potential to export (Freixanet, 2012). Thus, SMEs must study the various firm-level factors that restrict the performance of exporting firms (Lu & Beamish, 2001). Governments are also increasingly extending various export promotion programs to support these SMEs in their export operations. These EPPs are often questioned for their efficiency in achieving their objectives, particularly in developing countries. Several studies have investigated the relevant antecedents of export performance at the export venture level. However, the literature is fragmented and reports contradictory results.

Thus, this study investigates the essential resources and capabilities that drive the SME's export performance in an emerging market like India. This study is based on integrating three critical theories – the resource-based view (RBV), Contingency theory and Institutional theory. Thus, the impact of both firm's internal and external factors on the export performance of Indian manufacturing SMEs in foreign markets is studied.

LITERATURE REVIEW

Literature suggests numerous models or theories that attempt to explain various determinants of export performance. The resource-based view (RBV), Contingency theory (CT), and Institutional theory (IT) support the relationship between the study variables and export performance.

Resource-Based View

According to Peteraf and Barney (2003), resource-based approach (RBV) sees a firm as a bundle of resources. This theory attributes a firm's greater financial performance to its resources and capabilities. RBV purports that, for a firm's sustainable competitive advantage, the resources should be valuable, non-substitutable, inimitable and rare. It considers the firm as a distinct package of tangible and intangible resources and controllable factors of firms that determine its competitive advantage and performance in foreign markets (Katsikeas, Leonidou, & Morgan, 2000). However, many scholars consider that its resources and external market factors determine an exporting firm's competitive advantage and other environmental forces it is confronted with (Peng, Wang, & Jiang, 2008). The firm's resources and capabilities play a vital role in achieving and maintaining a competitive advantage in foreign markets (Young, Dimitratos, & Dana, 2003). The assets that the firm possesses, controls, or owns partly, tangible or intangible, are termed resources (Wernerfelt, 1984; Helfat & Peteraf, 2003). The literature has identified different firm resources like financial, physical, technological, and human (Loane & Bell, 2006; Bakar & Ahmad, 2010). Miller and Shamsie (1996) stated that resources should have the ability to reduce loss and increase a firm's profits. Besides, Henderson and Cockburn (1994) stated that resources should refer to a firm's assets and capabilities. The firm's capability to do tasks using its resources for better performance refers to capability (Helfat & Peteraf, 2003). Dhanaraj and Beamish's (2003) study reported that an export venture's resources and their capabilities positively affect exporting activities and firm's performance.

Firm Resources

Financial resources refer to the firm's ability to quickly access cash and capital, that are essential for international activities (Morgan, Vorhies, & Schlegelmilch, 2006). It also depends on the timeframe the financial resources can be deployed.

Human Resources

The number of employees with experience, knowledge and skills for exporting (Cavusgil & Zou, 1994). Networking resources refer to external organizations a firm must network with to acquire knowledge and experience of exporting firm (Pfeffer & Salancik, 1978; Johanson & Mattson, 1988). A firm has the prospect of identifying opportunities, gaining expertise and learning from other firms through networking.

Proposition 1: Every firm depends on its financial, human and networking resources for exporting. Each resource plays a different role in achieving better export performance.

Firm Capabilities

Relational capability means an organisation's ability to build lasting relationships with its strategic partners (Lages, Silva, & Styles, 2009). Developing mutual trust and strong relationships with strategic business partners and maintaining them helps in better export performance (Snehota & Hakansson, 1995). According to RBV, marketing capabilities refer to marketing mix processes. Pricing capabilities, informational capabilities, and advertising capabilities are all drivers of export performance in literature (Morgan, Katsikeas, & Vorhies, 2012; Kaleka, 2012). Innovation capabilities refer to a new product, process, or marketing strategy development according to RBV and result in a competitive advantage that enhances the firm's export performance. Building new products and processes will increase production efficiency by reducing costs. Azar and Drogendijk (2016) reported a positive influence of innovation capabilities on export performance.

Proposition 2: Every firm possesses relational, marketing and innovation capabilities. The level of utilization of these capabilities differs from firm to firm.

Contingency Theory

This theory states that an organization's different components must 'fit' with each other to achieve overall optimum performance (Perrow, 1967). There are no general set of strategies suitable for all firms. Instead, firms need to formulate their strategies specific to their environment and industry types. According to contingency theory, an export venture can achieve greater performance by using their internal and external factors (Scott, 1995). The external determinants of export performance are supported by contingency approach (Cavusgil & Zou, 1994). External environmental factors are an important factor for every firm to consider, to prosper and grow. Gnizy, Cadogan, Oliveira, and Nizam (2017) use this theory to explain the fit between strategic marketing factors and export performance.

Export Marketing Strategy

An export marketing strategy refers to adapting the marketing mix (product, price, promotion and distribution) to achieve firm objectives (Lee & Griffith, 2004). Literature has reported a positive influence on export marketing strategy and performance (Westhead, Wright, & Ucbasaran, 2002; Karelakis, Mattas, & Chrysochoidis, 2008). Researchers often use different names to indicate export marketing strategies like business strategy, firm strategy or export strategy.

Proposition 3: Firms employing export marketing strategy achieve better export performance.

Institutional Theory

Institutional Theory complements RBV by considering context-specific issues. According to North (1990), "institutions are the rules of the game in a society or formally they are the humanly devised constraints that shape human interaction." The strength domestic institutions/agencies reveal whether exporting is viable and profitable. Strong domestic institutional support drives firm to be more rigorous in allotting their resources to foreign operations. Institutional support critically cultivates export market-oriented practices and helps to reduce the exporting challenges, thereby enabling them to seize opportunities in foreign markets.

Export Promotion Programs

Export promotion programs are implemented by public agencies, trade associations and other export-aid organizations with an objective to overcome export barriers and SMEs limitations to export (Leonidou, Palihawadana, & Theodosiou, 2011). EPPs act as an external resource to these firms, which can capture the full advantages of these programs to improve their export performance (Ayob & Freixanet 2014). EPPs also motivate firms to deploy resources and utilize their capabilities in planning and operating exporting activities. Some EPPs provide financial support to SMEs.

Proposition 4: Firms participating in export promotion programs capture better foreign market opportunities and achieve better export performance.

RESEARCH METHOD

Qualitative research using multiple case studies was adopted to capture the influences of firm resources and their capabilities on the export performance of Indian manufacturing small and medium-sized enterprises. This study has employed the purposive sampling technique, in-depth semi-structured interviews and not a random sampling because the logic and coherence of social processes are minimized (Miles & Huberman, 1994). The firms identified were from export directories from Peenya Industrial Association (PIA), Federation of Karnataka Chambers of Commerce and Industry (FKCCI). Purposive sampling allows the selection of primarily informative cases regarding the research question (Patton, 2002). We contacted eight SMEs by telephone to arrange interviews; Only five of them participated voluntarily, which is within four to ten cases as Eisenhardt (1989) mentioned for adequate case analysis. The selection criteria for the sample firms were:

- It has to be a fully Indian owned small or medium-sized enterprise (turnover does not exceed 250 crore rupees) as typified by the ministry of MSME of India.
- It has to manufacture engineering goods and
- It has to be engaged in exporting for at least three years, with at least two export destinations.

Multiple case studies were used in this research since propositions will be deeply grounded in varied empirical evidence by creating a more robust theory (Eisenhardt & Graebner, 2007). We conducted Semi-structured interviews in Bangalore, India, from January to March 2022 with the owners/directors, who are the key decision-makers responsible for their firm's exporting activities. Each interview lasted two to three hours. These interviews were conducted at the firm's site and were recorded. Consistencies in the interviews suggested the decision on when to end data collection. For data collection, However, the significant contribution of the case studies has been interviews with the firm's directors. Additional information about the sample firms were collected from other sources, viz. internet, company websites, annual reports and other documents, to triangulate the relevant information for the research. A semi-structured interview guide was used to collect data that included questions about general information about the firm, their international experience and how exporting began, the determinant factors of export performance.

REFERENCES

- Ayob, A. H., & Freixanet, J. (2014). Insights into public export promotion programs in an emerging economy: The case of Malaysian SMEs. *Evaluation and Program Planning*, 46, 38–46. <https://doi.org/10.1016/j.evalprogplan.2014.05.005>
- Azar, G., & Drogendijk, R. (2016). Cultural distance, innovation and export performance: An examination of perceived and objective cultural distance. *European Business Review*, 28(2), 176–207. <https://doi.org/10.1108/EBR-06-2015-0065>
- Bakar, L. J. A., & Ahmad, H. (2010). Assessing the relationship between firm resources and product innovation performance: A resource-based view. *Business Process Management Journal*, 16(3), 420–435. <https://doi.org/10.1108/14637151011049430>
- Cavusgil, S. T., & Zou, S. (1994). Marketing strategy-performance relationship: An investigation of the empirical link in export market ventures. *Journal of Marketing*, 58(1), 1–21. <https://doi.org/10.2307/1252247>
- Dhanaraj, C., & Beamish, P. W. (2003). A resource-based approach to the study of export performance. *Journal of Small Business Management*, 41(3), 242–261. <https://doi.org/10.1111/1540-627X.00080>
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14(4), 532–550. <https://doi.org/10.2307/258557>
- Eisenhardt, K. M., & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50(1), 25–32. <https://doi.org/10.5465/amj.2007.24160888>
- Freixanet, J. (2012). Export promotion programs: Their impact on companies' internationalization performance and competitiveness. *International Business Review*, 21(6), 1065–1086. <https://doi.org/10.1016/j.ibusrev.2011.12.003>
- Gnizy, I., Cadogan, J. W., Oliveira, J. S., & Nizam, A. (2017). The empirical link between export dispersion and export performance: A contingency-based approach. *International Business Review*, 26(2), 239–249.
- Helfat, C. E., & Peteraf, M. A. (2003). The dynamic resource-based view: Capability lifecycles. *Strategic Management Journal*, 24(10), 997–1010.
- Henderson, R., & Cockburn, I. (1994). Measuring competence? Exploring firm effects in pharmaceutical research. *Strategic Management Journal*, 15(S1), 63–84. <https://doi.org/10.1002/smj.4250150906>
- Johanson, J., & Mattsson, L. G. (1988). Interorganizational in industrial systems - A network approach compared with the transaction cost approach. *International Studies of Management & Organization*, 17(1), 34–48, DOI: 10.1080/00208825.1987.11656444
- Karelakis, C., Mattas, K., & Chryssochoidis, G. (2008). Greek wine firms: Determinants of export performance. *Agribusiness: An International Journal*, 24(2), 275–297. <https://doi.org/10.1002/agr.20159>
- Kaleka, A. (2012). Studying resource and capability effects on export venture performance. *Journal of World Business*, 47(1), 93–105. <https://doi.org/10.1016/j.jwb.2010.10.024>

- Katsikeas, C. S., Leonidou, L. C., & Morgan, N. A. (2000). Firm-level export performance assessment: Review, evaluation, and development. *Journal of the Academy of Marketing Science*, 28, 493–511. <https://doi.org/10.1177/0092070300284003>
- Lages, L. F., Silva, G., & Styles, C. (2009). Relationship capabilities, quality, and innovation as determinants of export performance. *Journal of International Marketing*, 17(4), 47–70. <https://doi.org/10.1509%2Fjmk.17.4.47>
- Lee, C., & Griffith, D. A. (2004). The marketing strategy-performance relationship in an export-driven developing economy: A Korean illustration. *International Marketing Review*, 21(3), 321–334. <https://doi.org/10.1108/02651330410539648>
- Leonidou, L. C., Palihawadana, D., & Theodosiou, M. (2011). National export-promotion programs as drivers of organizational resources and capabilities: Effects on strategy, competitive advantage, and performance. *Journal of International Marketing*, 19(2), 1–29. <https://doi.org/10.1509%2Fjmk.19.2.1>
- Loane, S., & Bell, J. (2006). Rapid internationalisation among entrepreneurial firms in Australia, Canada, Ireland and New Zealand: An extension to the network approach. *International Marketing Review*, 23(5), 467–485. <https://doi.org/10.1108/02651330610703409>
- Lu, J. W., & Beamish, P. W. (2001). The internationalization and performance of SMEs. *Strategic Management Journal*, 22(6–7), 565–586. <https://doi.org/10.1002/smj.184>
- Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*. Sage.
- Miller, D., & Shamsie, J. (1996). The resource-based view of the firm in two environments: The Hollywood film studios from 1936 to 1965. *Academy of Management Journal*, 39(3), 519–543. <https://doi.org/10.2307/256654>
- Morgan, N. A., Vorhies, D. W., & Schlegelmilch, B. B. (2006). Resource-performance relationships in industrial export ventures: The role of resource inimitability and substitutability. *Industrial Marketing Management*, 35(5), 621–633.
- Morgan, N. A., Katsikeas, C. S., & Vorhies, D. W. (2012). Export marketing strategy implementation, export marketing capabilities, and export venture performance. *Journal of the Academy of Marketing Science*, 40, 271–289. DOI 10.1007/s11747-011-0275-0
- North, D. C. (1990). A transaction cost theory of politics. *Journal of Theoretical Politics*, 2(4), 355–367. <https://doi.org/10.1177%2F0951692890002004001>
- Patton, M. Q. (2002). Two decades of developments in qualitative inquiry: A personal, experiential perspective. *Qualitative Social Work*, 1(3), 261–283. <https://doi.org/10.1177%2F1473325002001003636>
- Perrow, C. (1967). A framework for the comparative analysis of organizations. *American Sociological Review*, 32(2), 194–208. <https://doi.org/10.2307/2091811>
- Peteraf, M. A., & Barney, J. B. (2003). Unraveling the resource-based tangle. *Managerial and Decision Economics*, 24(4), 309–323. <https://doi.org/10.1002/mde.1126>
- Peng, M. W., Wang, D. Y., & Jiang, Y. (2008). An institution-based view of international business strategy: A focus on emerging economies. *Journal of International Business Studies*, 39, 920–936.
- Pfeffer, J., & Salancik, G. R. (1978). The External Control of Organizations: A resource dependence perspective. University of Illinois at Urbana-Champaign's Academy for Entrepreneurial Leadership Historical Research Reference in Entrepreneurship, retrieved from: <https://ssrn.com/abstract=1496213>
- Scott, W. R. (1995). Institutions and organizations: Ideas, interests, and identities. *Management*, 17, 136–140. <https://doi.org/10.3917/mana.172.0136>
- Snehota, I., & Hakansson, H. (1995). *Developing relationships in business networks*. London, UK: Routledge.
- Wagner, J. (2013). Exports, imports and firm survival: First evidence for manufacturing enterprises in Germany. *Review of World Economics*, 149(1), 113–130.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5(2), 171–180.
- Westhead, P., Wright, M., & Ucbasaran, D. (2002). International market selection strategies selected by ‘micro’ and ‘small’ firms. *Omega*, 30(1), 51–68. [http://dx.doi.org/10.1016/S0305-0483\(01\)00056-1](http://dx.doi.org/10.1016/S0305-0483(01)00056-1)

Young, S., Dimitratos, P., & Dana, L. P. (2003). International entrepreneurship research: What scope for international business theories? *Journal of International Entrepreneurship*, 1(1), 31–42. <https://doi.org/10.1023/A:1023286232541>

IMPACT OF TECHNOLOGICAL HUMAN RESOURCE FACTORS ON ANALYTICAL TRANSFORMATION OF LARGE INDIAN IT ORGANIZATIONS

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ABSTRACT

Analytics is an important tool for a sustainable future. Analytics acts as a critical tool for the company to gain insights into the organizational processes. However, it has been seen that analytics is restricted to predictive analytics, especially in Indian IT organizations. The transition from predictive to prescriptive analytics is important for critical decision-making and organizational sustainable development. The main objective of the study is to focus on technological human resource factors which impact and influence transition. The extensive and structured literature review on analytics has identified the following factors such as data and system infrastructure, centralization of data, information processing capability, and sensory network capability. The study identified base papers and theories which validated these key constructs. This study also aims at the holistic review of sustainable development goals 'transition from predictive to prescriptive analytics framework' for technology-driven industries. Future studies can attempt to empirically validate the conceptual framework proposed in this research.

Keywords: *Sustainable development, analytical decision making, predictive analytics, prescriptive analytics, data analysis, technology adoption.*

INTRODUCTION

Economists offer awareness as to how existing systems are steady by various techniques which can be transformed to reach sustainability. However, the real transition toward sustainability has not yet started (Helne & Hirvilammi, 2015; Chang *et al.* 2017). Sustainable development based on technological advancement has made organizations transform from traditional ways of business operations to technology-based modern business methods. The OECD (2018) says that digital transformation affects growth, job, trade, and quality of life. Societal wellbeing and digital and analytics transformation have presented opportunities and challenges to society. Komm, Pollner, Schaninger, and Sikka (2021) say that for organizations to be successful, transformation should be based on emerging models that are creative, adaptable, and antifragile which provide data-driven insights. Talent-driven transformation, automation, digitization strategy, and technology drive organizational efficiency (Komm *et al.*, 2021). Technology advancement has brought a significant transformation in the analysis of raw data. Data has the potential to provide a lot of value to the business. However, to utilize the value, we need to develop data insight. This insight could come from the study of analytics. Kapoor and Kabra (2014) say that analytics means extensive use of data by leveraging computer programming techniques, statistical and quantitative analysis, and operations research. Detailed analysis in an organization uses predictive models based on historical evidence which in turn leads to derived actions for decision making by leaders and to take automated decisions (Kapoor & Kabra, 2014). Analytics evolved through various phases such as descriptive, diagnostic, predictive, and prescriptive analytics (Figure 1) (Kohavi, Rothleder, & Simoudis, 2002).

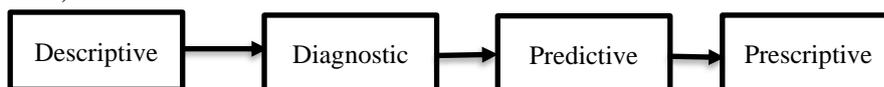


Figure 1. Stages of analytics

Source: Kohavi *et al.*, 2002

The study of analytics began by understanding what decision needs to be taken and what insights lead to better outcomes. It involves a transition from intuitive decision-making to databased analytics. This acts as a significant step towards achieving superior organizational sustainable development. Generally, descriptive analytics is performed at the initial stage of the organizational analysis by focusing on finding the ‘what’, to get a good understanding of the structure of the data (Shi-Nash & Hardoon, 2017). The next level is diagnostic analytics (when coupled with descriptive analysis) deals with the ‘correlations’ or ‘observations’ (Shi-Nash & Hardoon, 2017). Predictive analytics (PA) acts as the next step of evolution which involves using the information of the past to recognize the possible occurrence of the future (Shi-Nash & Hardoon, 2017). This phase of analytics helps organizations improve efficiency by leveraging business intelligence tools using data mining and statistics to make future predictions (Fitz-Enz, 2010). PA provides the organization with predictions about future events, however, does not prescribe solutions for avoiding unwanted future events and also provides solutions for improving organizational sustainability development. Predictive analytics forecasts future events based on data inputs, whereas prescriptive analytics make actionable recommendations to reach particular objectives based on inputs from predictions. Prescriptive analytics focuses on all potential outcomes, decisions, and effects of decisions to assist in prescribing the best possible solution and decision. Prescriptive analytics addresses issues of what a problem-solving person should do, similarly to why a particular approach should be taken to solve the problem, and recently, prescriptive analytics has been gaining curiosity in research (Lepenioti, Bousdekis, Apostolou, & Mentzas, 2020). Advanced analytics (prescriptive) solution offers a set of techniques that helps to deal with challenges through statistical and technical methods, finally supporting strategic and fact-based decisions. As per the NASDAQ OMX's news release distribution channel (2020), prescriptive analytics uses various techniques to examine data such as graph analysis, simulation, complex event processing, neural networks, recommendation engines, heuristics, and machine learning.

Organizations started moving from basic decision-making to diagnosing data while identifying phenomena. Organizations also aim to predict future scenarios based on predictive analytics to attain sustainable development. Some multinational organizations have transitioned from diagnostic analytics to predictive analytics thus enabling them to become successful (Lepenioti *et al.*, 2020; Deloitte, 2021). There is a need to move from predictive analytics to prescriptive analytics as it increases the maturity of analytics data that leads to effective decision making and improves business sustainability development (Goasduff, 2019). Lawler, Levenson, & Boudreau (2004) and SuccessFactors (2015), the use of analytics across the organization has not kept pace with the need and has not identified the role of strategic business partners in the implementation of analytics. There is a need for a coherent strategy to implement four stages of analytics that are leading to improved organizational sustainability. Predictive analytics informs decision-makers about numerous decision options. There have been technological advancements in both software and hardware that enable more complex analytics to be performed (Shi-Nash & Hardoon, 2017). Prescriptive analytics is still immature in terms of implementation (Gartner, 2019). The inhibition of statistical and mathematical modeling-based analytics is limiting organizational decision-making capability which is restricting Indian technology organizations from moving toward prescriptive analytics (Lepenioti *et al.*, 2020; Deloitte, 2021). There is limited research happened in the implementation of advanced analytics especially about the transition from predictive to prescriptive analytics to achieve sustainable development.

Objective

Indian information technology organizations are slow in transitioning toward prescriptive analytics when compared to multinational companies even though they are aware of the benefits of transforming organizations based on advanced analytics to attain sustainable development. The objective of this study is to identify technological human factors which influence Indian IT organizations to transform towards statistical and mathematical modeling based on prescriptive analytical decision making across various functions (departments) in an integrated manner.

LITERATURE REVIEW

This study presents a comprehensive literature review while conducting an in-depth analysis of peer-reviewed journals. Parisa et al., (2020) say that there are different technological factors (can also be referred to as system factors such as considerable advantage, compatibility, risk, complexity, insecurity, trainability, observability), organizational factors (such as support from top management, organizational readiness) and environmental factors (such as competitive pressure, external support, government regulations). Technology factor can be defined as a set of broad mechanisms or principles and procedures for interconnecting complex working items. Organizations are undergoing a sea of change due to the adoption of technology. The need for studying technological human resource factors arises due to technological transformation within the organization. Further study of technological human resource factors is critical to the study of effective analytical decision-making of organizations by adopting prescriptive analytics. Prescriptive analytics play a vital role in building efficient systems to achieve organizational sustainable development.

Most of the research focuses on information technology system architecture rather than building comprehensive systems which enable the transition from predictive to prescriptive decision making. Thus, this study focuses research work on technological human resource factors such as analytical orientation, analytical centralization, information processing capability, sensory network capability, data infrastructure, and data quality management. This study also would like to focus on the influence of system-related factors on the transition from predictive to prescriptive analytics in achieving sustainable development. Sustainability transformation is defined as multifaceted, everlasting, and elementary transformation processes through which established human-technical systems move toward sustainable alternatives (Markard, Raven, & Truffer, 2012).

Information Processing Capability

Information processing theory identifies three important notions, information processing needs, information processing capability, and relevance between the two to obtain excellent performance (Galbraith, 1974). The capability of an organization can be interpreted as to its capacity to represent information and data, integrate information, and analyze data to gain useful insights in the context of organizational decision-making (Cao, Duan, & Li., 2015). Information processing capability (IPC) significantly impacts organizational decision-making to achieve sustainable development based on organizational policy, strategy, structure, and business processes to guide and enable analytical decision-making (Cao *et al.*, 2015). Premkumar, Ramamurthy, and Saunders (2016), say that the information processing capabilities of the organization based on IT support helps various organizational activities such as the procurement life cycle. IPC leads to effective aggregation of data and information leading to superior data quality management. Information processing capabilities of systems play a vital role in understanding multilevel data and cryptic information emerging from complex analytical algorithms, any lag in system capabilities leads to non-transformation. Information processing is one of the key system factors which play a tremendous role in the transition from predictive to prescriptive analytics to attain sustainable development.

Analytical Orientation

One of the system factors identified through the literature review is analytics orientation (AO). AO of an organization has been recognized as an important factor in a firm's ability to adopt advanced analytics (Grant, 2020). Analytical orientation (AO) comprises analytical culture, skill, talent, insights from analysis, and data management (Kiron, Prentice, & Ferguson, 2014; Dias, de. Oliveira, Filho, & Rodrigues, 2021). Many organizations highlighted technology and data infrastructure initiatives, but they have disregarded the organizational, cultural, and strategic changes. Skills and experiences vary according to the capacity and process of companies' analytical orientation (Davenport, Harris, De Long, & Jacobson, 2001). Analytics culture is a 'secret sauce' which creates value for AO (Kiron *et al.*, 2014). Lack of orientation towards analytics in the organization hinders the transition from predictive to prescriptive analytics. AO leads to decision-makers taking efficient decisions to organize data, analyze data and create data infrastructure to achieve effective data quality management and sustainable development. Effective AO and DIFR & DQM lead to the transition of the organization towards prescriptive

analytics hence achieving efficient analytical transformation. Decision-makers in Indian IT organizations say that it is essential to transform the organization towards prescriptive analytics, even though the organization has to learn new skills in statistical and mathematical modeling that establishes the need for analytical orientation.

Analytics Centralization

Centralization of information and data leads to improved analytical decision-making, thus resulting in transforming organizations towards advanced analytics for a sustainable future. Centralization can smoothly make the adoption process by minimizing friction and uncertainty (ASHE-ERIC Higher Education Report, 1988). There is a significant need for the centralization of data and information to take centralized analytical decisions. Komm *et al.* (2021) while highlighting the need for the right kind of data centralization strategy says that too much decentralization can be hard to prioritize data thus leading to ineffective analytical decision making. Analytics centralization is a system factor (organizational context) that considers the characteristics of analytics such as when data is available, the scope of analytics, understanding of various organizational needs, and alliance (Grossman & Siegel, 2014). Analytical centralization coupled with AO leads to effective aggregation of data at a central point by creating an effective data infrastructure leading to efficient data quality management. Decision-makers initiative to centralize data, information, and technology infrastructure powered by analytical centralization leads to the transformation of organizations towards prescriptive analytics.

Sensory Network Capability

The sensory network acts as the brain behind analytics (Sendi *et al.*, 2021). The development of sensor networks has aided data collection from various sources expanding the number of internet-enabled devices (IoT-Internet of things) (Oppermann, Boano, & Römer, 2014). Jones *et al.* (2018) highlight that for efficient data collection appropriate sensors have to be selected strategically designed to optimize organizational utilization. The lack of sensors to collect information and data leads to inefficient sensory network capability thus reducing analytical decision-making capability, in turn hindering the transition from predictive to prescriptive analytics. The sustainable sensory network plays a critical role in data collection, data sending, and data control (Yang, Liu, & Lee, 2020). The descriptive analysis in the organization is made based on cross-sectional historical sensor data, however predictive analytics is based on sensor data, organizational processes, information, and operational matrices (Zadorojniy, Wasserkrug, Zeltyn, & Lipets, 2019). The Decision-making process which is based on prescriptive analytics directly impacts organizational efficiency parameters based on sensor network capability while offering recommendations (Zadorojniy *et al.*, 2019). This study considers sensor network capability and its impact on data infrastructure and data quality management. These factors help an organization to transit from predictive to prescriptive analytics which impacts analytical decision-making and organizational sustainable development.

Data Infrastructure and Data Quality Management

Data of the organization may be organized, unorganized, exclusive, or shared, and data processing is accomplished by various organizational rules and regulations (Deshpande, Sharma, & Peddoju, 2019). There is a lack of capture of data at multiple levels in large organizations (Johnston, Warkentin, Dennis, & Siponen, 2019). Analytical and IT skills are balanced by statistics as well as computer science for managing and analyzing both exclusive data and shared data (Chen, Chiang, & Storey, 2012). SAS Institute report (2021) says that analytics uses data inputs, mathematics, and statistics to answer business problems, find relationships, predict undisclosed outcomes, and automatic decisions making. Data infrastructure (DIFR) can be said that capable of data that is necessary to acquire genuine insights (Nam, Lee, & Lee, 2019). DIFR along with centralization of data coupled with system architecture helps in processing information by adopting prescriptive analytics. Data quality management (DQM) refers to an organization principle that requires the right people, processes, and technologies to reach the common goal of every organization to improve the data quality measure (BMC, 2018). Based on the above literature, it can be observed that a lack of DIFR and DQM leads to reduced capability to transform the organization from predictive to prescriptive analytics. Data has to be transformed into meaningful in-

formation using analytics, DIFR, and DQM, driven by mathematical, statistical, and computational sciences-based approaches to discover, interpret and communicate meaningful information to transform an organization from predictive to prescriptive analytics to take effective analytical decisions to reach sustainable development. Thus, DIFR and DQM can be considered as information system factors in the proposed model that gives necessary insights to the IT team to provide accurate and structured data to convert them into meaningful insights.

Analytical Transformation

One of the big challenges in Indian IT organizations is transforming from predictive to prescriptive analytics, which is hindering critical decision making thus, reducing organizational effectiveness. Prescriptive analytics drives business decisions into actions (Gokalp *et al.*, 2022). Big-data analytics provides decision-making that must be powerful to provide an effective decision for the decision-makers in the organization with the help of predictive and prescriptive analytics (Deshpande *et al.*, 2019). The way organizations take decisions is fundamentally changing, in the past decisions used to be made on the ‘intuition and gut instinct’ of the manager, and progressive organizations are making use of data-based analytics to support decisions (Kryscynski, Reeves, Stice-Lusvardi, Ulrich, & Russell, 2018). It is argued by Popovič, Hackney, Coelho, and Jaklič (2012) and Bayram and Akin Ateş (2020) that in organizations with accomplished analytical decision-making employees are motivated to use information and data for making decisions while adopting the advanced tool of statistical, mathematical, and analytical techniques of the decision-making process. To become successful in the digital age, leaders and managers should adopt analytical decision-making. Discussions in this study reveal important insights into organizational phenomena associated with building organizational sustainable challenges. This study gives a comprehensive view of organizational behavior, and behavioral studies, about analytical decision-making effectiveness. Advanced analytical tools and techniques can be applied to enhance the capability of an organization. Oppermann *et al.* (2014), Zadorojniy *et al.* (2019), Yang *et al.* (2020), Sendi *et al.* (2021), confirm there is a significant contribution of sensory network capability in transitioning the organization from predictive to prescriptive analytics.

This sustainability transition study proposes that the transition from predictive to prescriptive analytics leads to improved analytical decision-making and has a direct relationship with organizational sustainable development. As the organization moves from descriptive, diagnostics, and predictive analytics to prescriptive analytics, effectiveness in the organization increases exponentially. This study also proposes that improvement in system factors like data collection quality, data integration, data aggregation, data centralization, analytical orientation, sensory network capability, and information processing capability leads to transformation from predictive to prescriptive analytics impacting decision-making quality and leading to increased organizational sustainability. The key findings of the review of literature can be seen in the following prepositions:

- 1: Transition from predictive to prescriptive analytics impacts analytical decision-making in turn affects organizational sustainability development.
- 2: Data collection, data infrastructure, data aggregation, data quality management, and data centralization lead to centralized analytical decision-making in turn impacting the transition from predictive to prescriptive analytics.
- 3: Analytical orientation among decision-makers coupled with analytical centralization impacts data infrastructure quality, affecting the transition from predictive to prescriptive analytics.
- 4: Information processing capability positively influences data infrastructure and quality in turn significantly impacting the transition from predictive to prescriptive analytics.
- 5: Sensory network capability coupled with data infrastructure impacts analytical decision-making effectiveness, thus transitioning from predictive to prescriptive analytics.

Conceptual Model

The Indian IT organizations are facing critical issues in the collection of data at multiple levels in the organization as there is a lack of sensory network capability and lack information processing capability. It can also be observed that Indian IT organizations lack capturing depth and breadth of data thus resulting in a lack of building sensory network capability to process information when employee strength

is in multiple ten thousand. Though Indian IT organizations are having technologically advanced employees in the organization, they are having hesitancy to transiting to advanced analytics (prescriptive analytics) due to a lack of analytical orientation. Decision-makers who are supposed to transform have limited knowledge of statistical modeling and mathematical algorithms due to a lack of analytical culture. Decision-makers also exhibit resistance toward transformation, thus inhibiting new initiatives and the transition from predictive to prescriptive analytics. This is highlighted by Rogers (1962), wherein his research work highlights barriers toward innovation that can be proved based on diffusion of innovation theory (DOI).

These propositions are represented in the conceptual model (Figure 2). Considers information processing capability, analytical orientation, analytical centralization, and sensory network capability as an independent variable, data infrastructure and quality management as mediating variable, and transition from predictive to prescriptive analytics as a dependent variable.

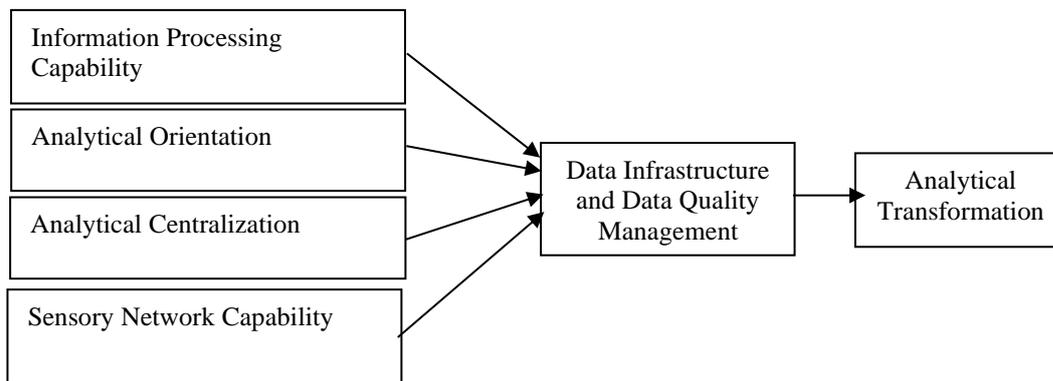


Figure 2. A proposed analytical decision-making framework

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The study has identified technological human factors related to the transition of the organization from predictive to prescriptive analytics and analytical decision in the Indian IT sector, However, the conceptual model needs to be empirically tested, this study also was restricted to the Indian IT sector, however, Future researchers may expand this study to global IT sector and other industry verticals to reach sustainable development.

REFERENCES

- ASHE-ERIC Higher Education Report. (1988). *Organizations and innovation*. Retrieved from <https://doi.org/10.1002/aehe.3640170304>
- Bayram, N., & Akin Ateş, M. (2020). The determinants of business analytics adoption: Does one-size fit all? *Journal of Business Research - Turk*, 12(1), 583–598. <https://doi.org/10.20491/isarder.2020.864>
- Cao, G., Duan, Y., & Li., G. (2015). Linking business analytics to decision making effectiveness: A path model analysis. *IEEE Transactions on Engineering Management*, 62(3), 384–385. <http://dx.doi.org/10.1109/TEM.2015.2441875>
- Chang, R. D., Zuo, J., Zhao, Z. Y., Soebarto, V., Zillante, G., & Gan, X. L. (2017). Approaches for transitions towards sustainable development: Status quo and challenges. *Sustainable Development*, 25(5), 359–371. <https://doi.org/10.1002/sd.1661>
- Chen, H., Chiang, R. H. L., & Storey, V. C. (2012). Business intelligence and analytics: From big data to big impact. *MIS Quarterly*, 36(4), 1165–1188. <https://doi.org/10.2307/41703503>
- Deloitte (2021). *2021 global human capital trends: Special report*. Retrieved from <https://www2.deloitte.com/us/en/insights/focus/human-capital-trends.html>

- Deshpande, P. S., Sharma, S. C., & Peddoju, S. K. (2019). Predictive and prescriptive analytics in big-data era. *Security and Data Storage Aspect in Cloud Computing*, 71–81. https://doi.org/10.1007/978-981-13-6089-3_5
- Dias, F. M., de Oliveira, M. P. V., Filho, H. Z., & Rodrigues, A. L. (2021). Analytical guidance or intuition? What guides management decisions on the most important customer value attributes in the supermarket retail? *Brazilian Journal of Marketing*, 20(2), 385–414. <https://doi.org/10.5585/remark.v20i2.16106>.
- Fitz-Enz, J. (2010). *The new HR analytics: predicting the economic value of your company's human capital investments*. New York, NY: AMACOM.
- Galbraith, J. R. (1974). Organization design: An information processing view. *Interfaces*, 4, 28–36.
- Goasduff, L. (2019). This Gartner Hype Cycle highlights how AI is reaching organizations in many different ways. Retrieved from <https://www.gartner.com/smarterwithgartner/top-trends-on-the-gartner-hype-cycle-for-artificial-intelligence-2019>
- Gokalp, M. O., Gokalp, E., Kayabay, K., Gokalp, S., Koçyigit, A., & Eren, P. E. (2022). A process assessment model for big data analytics. *Computer Standards & Interfaces*, 80, 103585. <https://doi.org/10.1016/j.csi.2021.103585>.
- Johnston, A. C., Warkentin, M., Dennis, A. R., & Siponen, M. (2019). Speak their language: Designing effective messages to improve employees' information security decision making. *Decision Sciences*, 50(2), 245–284. <https://doi.org/10.1111/deci.12328>
- Jones, P. M., Lonne, Q., Talaia, P., Leighton, G. J. T., Botte, G. G., Mutnuri, S., & Williams, L., (2018). A straightforward route to sensor selection for IoT systems. *Research-Technology Management*, 61(5), 41–50. <https://doi.org/10.1080/08956308.2018.1495965>
- Kapoor, B., & Kabra, Y. (2014). Current and future trends in human resources analytics adoption. *Journal of Cases on Information Technology*, 16(1), 50–59. <https://doi.org/10.4018/jcit.2014010105>
- Kiron, D., Prentice, P. K., & Ferguson, R. B. (2014). The analytics mandate. *MIT Sloan Management Review*, 55(4), 1–22.
- Kohavi, R., Rothleder, N. J., & Simoudis, E. (2002). Emerging trends in business analytics. *Communications of the ACM*, 45(8), 45–48.
- Komm, A., Pollner, F., Schaninger, B., & Sikka, S. (2021). *The new possible: How HR can help build the organization of the future*. Retrieved from <https://www.mckinsey.com/business-functions/organization/our-insights/the-new-possible-how-hr-can-help-build-the-organization-of-the-future>
- Krscynski, D., Reeves, C., Stice-Lusvardi, R., Ulrich, M., & Russell, G. (2018). Analytical abilities and the performance of HR professionals. *Human Resource Management*, 57(3), 715–738. <https://doi.org/10.1002/hrm.21854>
- Lawler, E. J., Levenson, A., & Boudreau, J. W. (2004). *HR metrics and analytics - Uses and impacts*. Retrieved from file:///C:/Users/ASUS/Downloads/HR_Metrics_and_Analytics_-_Uses_and_Impacts.pdf
- Lepenioti, K., Bousdekis, A., Apostolou, D., & Mentzas, G. (2020). Prescriptive analytics: Literature review and research challenges. *International Journal of Information Management*, 50, 57–70. <https://doi.org/10.1016/j.ijinfomgt.2019.04.003>
- Markard, J., Raven, R., & Truffer, B. (2012). Sustainability transitions: An emerging field of research and its prospects. *Research Policy*, 41(6), 955–967. <https://doi.org/10.1016/j.respol.2012.02.013>
- Nam, D., Lee, J., & Lee, H. (2019). Business analytics adoption process: An innovation diffusion perspective. *International Journal of Information Management*, 49, 411–423. <https://doi.org/10.1016/j.ijinfomgt.2019.07.017>
- NASDAQ OMX's news release distribution channel. (Feb 26 2020). Available from: <https://www.proquest.com/wire-feeds/predictive-amp-prescriptive-analytics-market-was/docview/2364283216/se-2?accountid=146178>.
- OECD. (2018). *Going digital in a multilateral world*. Meeting of the OECD Council at Ministerial Level, May, 30–31 retrieved from <http://www.oecd.org/mcm/documents/C-MIN-2018-6-EN.pdf>
- Oppermann, F. J., Boano, C. A., & Römer, K. U. (2014). A decade of wireless sensing applications: Survey and taxonomy. In H. M. Ammari (Ed.), *The art of wireless sensor networks* (pp. 11–50), Springer, Berlin, Heidelberg.

- Popovič, A., Hackney, R., Coelho, P. S., & Jaklič, J. (2012). Towards business intelligence systems success: Effects of maturity and culture on analytical decision making. *Decision Support Systems*, 54, 729–739. <http://dx.doi.org/10.1016/j.dss.2012.08.017>
- Premkumar, G., Ramamurthy, K., & Saunders, C. S. (2005). Information processing view of organizations: An exploratory examination of fit in the context of interorganizational relationships. *Journal of Management Information System*, 22, pp. 257–294. <http://dx.doi.org/10.1080/07421222.2003.11045841>
- Rogers, E. M. (1962). *Diffusion of innovations*. Third Edition. New York, NY: The Free Press.
- Sendi, M. S. E., Pearson, G. D., Mathalon, D. H., Ford, J. M., Preda, A., van Erp, T. G. M., & Calhoun, V. D. (2021). Multiple overlapping dynamic patterns of the visual sensory network in schizophrenia. *Schizophrenia Research*, 228, 103–111. <https://doi.org/10.1016/j.schres.2020.11.055>
- Yang, S. K., Liu, C. G., & Lee, T. L. (2020). An efficient user authentication scheme for multiple accesses scenario in WSN based in IOT notion. *International Journal of Organizational Innovation*, 12(3), 10–24.
- Zadorojniy, A., Wasserkrug, S., Zeltyn, S., & Lipets, V. (2019). Unleashing analytics to reduce costs and improve quality in wastewater treatment. *INFORMS Journal on Applied Analytics*, 49(4), 262–268. <https://doi.org/10.1287/inte.2019.0990>

LINEAR OPTIMIZATION ANALYSIS ON CESSNA CARAVAN AND EMBRAER LEGACY MAINTENANCE PROJECTS TO DETERMINE MAXIMUM PROFIT

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ABSTRACT

The 2019 pandemic affected various industrial sectors with health protocol and mobility restrictions. One of the most affected is the airline industry. In order to increase potential revenue, PT. XYZ, an Approved Maintenance Organization for business aviation sector, has decided to add its maintenance capability in order to penetrate a new market segment. Optimization of current resource utilization is needed. Using linear programming, the optimal number of projects between two types of aircrafts are determined with the goal to maximize profit. These projects are scheduled within a year with the constraint of the current available manpower and hangar space per year. The resulting mix of optimized number of projects will then be scheduled improved by rearranging the teams to increase TAT and improve profit. Results are that the optimal number of Cessna Caravan Projects per year is four projects where as Embraer Legacy Projects per year is 93. After rearranging Caravan Team to six personnel from four and Embraer Team to eight personnel from four, decrease of TAT for both projects was achieved. After recalculating optimal number of projects per year, total number of Cessna and Embraer are six and 163 respectively, achieving a 75.06% increase in profit.

Keywords: *Linear optimization, manpower scheduling, project management, aviation industry, maintenance.*

INTRODUCTION

In early 2020, Covid-19 started its spread into Indonesia, negatively impacting various industrial sectors due to mobility restrictions and physical distancing protocols. One of the most heavily affected industry is the aviation industry. Though, the business aviation sector is not as negatively impacted as commercial aviation. Where chartered flights passengers can be more heavily regulated and observed, this sector experienced a milder drop in passenger flights. PT. XYZ is an Approved Maintenance Organization (AMO) in the business aviation sector, where its main market is to maintain, repair and overhaul Embraer Legacy and Cessna Caravan aircrafts. These types of aircraft are one of the main aircrafts used in the chartered business aviation sector.

PT. XYZ has increased its capability to maintain Cessna Piston aircrafts, therefore increasing its potential revenue. Albeit in order to prepare for capability expansion, optimization of current work schedule need to be performed to determine whether production capacity expansion is necessary to support the maintenance capability increase.

Using linear programming the optimal number of projects in a year can be determined, with time, manpower and hangar capacity as constraints, to maximize yearly profit. Elaborated by Heizer Render, and Munson (2020), linear optimization is an excellent tool to determine a decision between a few variables. Those variables are tied to certain limitations and resources that limit its maximum available number to be attained. The variables also determine an objective that is to be either minimized or maximized.

As elaborated by Qin *et al.* (2020), linear programming can optimize-staffing schedule and hangar area usage for aircraft maintenance purposes. Publication by Qin *et al.* (2020) also discussed minimizing turned down aircraft maintenance projects by optimizing the hangar space usage and integrating that with maintenance personnel schedules. Beliën, Demeulemeester, de Bruecker, van den Bergh,

and Cardoen (2013) also discussed integrated staffing and scheduling regarding aircraft line maintenance, where minimizing total cost of labor by scheduling manpower to always have on standby should there be an aircraft that needs maintenance.

The difference between this research and prior research is that the scope of this research is within the business aviation sector where maintenance projects are not as densely scheduled as commercial aviation. Line maintenance in the commercial aviation projects is usually compared to hospital emergency rooms where unexpected aircraft issues can rise and need to be addressed prior to aircraft operation. This is completely different to business aviation base maintenance where fewer aircrafts are operating and aircrafts are typically parked for long periods until a chartered flight is booked or the aircraft is leased to fly high profile clients. Hence, the low utilization maintenance programs implemented on the aircrafts annually.

The main objective of this research is to maximizing profit acquisition for PT. XYZ by optimizing number of projects taken and also optimizing project manpower composition and schedules. Depending on the results that will be discussed with XYZ's management, capacity expansion will be determined.

LITERATURE REVIEW

Airworthiness and Aircraft Maintenance

Airworthiness of an aircraft refers to the condition in which an aircraft complies with local authority standards of operations that is signified by an issue of Certificate of Airworthiness (CofA). For aircrafts to remain in service and fit for flight an active CofA is required, and in Indonesia, this certificate is issued by the Directorate General of Civil Aviation (DGCA). To receive this certificate the aircraft needs to accomplish the following terms as stated in Civil Aviation Safety Regulations (CASR) Part 21 (Directorate General of Civil Aviation Indonesia, 2015):

1. The owner or operator submitting proof to the DGCA stating that the aircraft complies with the type design under the type certificate or supplemental type certificate and complies with all Airworthiness Directives (ADs) that are applicable to the aircraft.
2. Stated serviceable for flight by the following:
 - a. Manufacturer,
 - b. Approved Maintenance Organization (AMO) as stated in CASR part 145,
 - c. Authorized personnel that possess license to release the aircraft, further elaborated in CASR part 65
3. DGCA agrees that after performing maintenance, the aircraft complies with the type design issued by the manufacturer and the aircraft is in a condition to operate safely.

Point 2.b and 2.c is where aircraft maintenance organization (AMO) is needed to preserve the airworthiness of an aircraft.

Manufacturers of an aircraft will issue an inspection package that lists the tasks needed to be performed in order to declared the aircraft serviceable, should there be no defects found. These inspection packages come with Flight Hour (FH), Flight Cycle (FC) and Calendar Days intervals to be performed on the aircraft. Each inspection package needs a certain number of Man Hour (MH) of labor from certified mechanics and engineer to be completed. AMOs generate revenue from performing maintenance packages on aircraft and selling MHs.

Turn Around Time (TAT) is the time needed to complete a project. By a project requiring a certain amount of MHs to complete, a team of engineer and mechanics can apply a set amount of MHs per day, according to the effective working hours of the company. Hence, TAT is a product of total MH required for the project to be completed divided by the number of MHs a maintenance team can accomplish within a working day. The more manpower a maintenance team has, the shorter the TAT required to complete the project, and vice versa.

Linear Optimization

Resources are finite whether the context is in the company, a country and or in a scale as big as the universe. With this in mind, the task of an operations manager is to develop the most effective and efficient way to utilize this finite resource with minimal waste. Linear optimization is one of the ways a company can fully utilize a resource given constraints and operating variables.

According to Heizer *et al.* (2020), there are four requirements for a linear optimization problem:

1. Objective: linear optimization problems seek to maximize or minimize some quantity, usually profit or cost.
2. Constraint: The presence constraints limit the degree in which we can reach our objective.
3. Alternatives: a linear optimization problem must have alternative actions to choose from.
4. Linearity: the problem must be expressed in terms linear equations or inequalities. Within the objective or constraint equations, there cannot be products (example x_1x_2) or powers (example x_1^2) between variables. Only additions are allowed.

Linear Optimization Applied

The operational aspect of this research is divided into two; (1) finding out the optimal number of each project type in a year with regards to various constraints, (2) then manpower arrangement is performed to decrease the TAT of each project and recalculation is then performed with the new variables. The increase in projects, manpower composition, and subsequently profits will then be discussed at a managerial level to determine the impact of decision.

Publication by Qin *et al.* (2020) focused on minimizing penalty costs regarding project delay and turned down projects. By optimizing hangar space utilization, maintenance planning and manpower scheduling using a two-stage optimizing method and is solved using mixed integer linear programming (MILP) in CPLEX solver. This research by Qin *et al.* (2020) is the backbone of this research and will be simplified to accommodate the nature of business aviation maintenance environment, the aircraft type relevant at XYZ, as well as resources available at XYZ.

After the optimal number of each type of project has been determined in a year, scheduling those projects and the manpower composition will be decided. For this purpose, research by Beliën *et al.* (2013) is reviewed where the goal of this research is to minimize operating cost by optimizing manpower schedule for aircraft line maintenance. The core concept that this research will implement from Beliën *et al.* (2013) is the scheduling and manpower optimization. Line maintenance is a form of aircraft maintenance that is unscheduled and is likely compared to an emergency room at a hospital in the healthcare industry. This concept is far from the base maintenance nature of PT.XYZ where scheduled maintenance is the norm.

Lastly, a focused group discussion will be conducted with the management at PT. XYZ and a fish-bone diagram will be presented and discussed. With this the information and result gathered in the study will be presented in an efficient manner and discussions regarding the feasibility of implementing changes with the results can be efficiently conveyed (Evans, 2016).

RESEARCH METHOD

Research Design

This research used descriptive quantitative approach in finding facts and describing what has happened in PT. XYZ and using secondary data from the company build a quantitative analysis using linear optimization as a tool in a decision analysis process.

Data Collection

Data for this research are primarily sourced from company historical data of past projects as well as Embraer and Cessna technical data for MH required for each corresponding maintenance projects.

The following is the current snapshot of the company:

- Average number of Cessna Caravan projects per year: 4 projects/year.
- Average number of Embraer Legacy per year: 8 projects/year.
- Average MH for Cessna Caravan Annual Inspection project: 130 MH.
- Average MH for Embraer Legacy Low Utilization 12 Months Inspection (LU12 Inspection): 200 MH
- Cessna Caravan MH Rate: \$45 / MH.
- Embraer Legacy Rate: \$90 / MH.
- Average total revenue per year: \$167.400.
- Number of Engineers and Mechanics: 26 personnel.
- Available hangar area: 1073.5 m².
- Effective area required for Cessna Caravan maintenance: 109.46 m².
- Effective area required for Embraer Legacy maintenance: 367.38 m².
- Working hours per day: 8 hours.
- Working days per year: 225 days.

Data Analysis

Linear Optimization Process

Data gathered is input into Microsoft Excel worksheet that has the mathematical models written in various cells and formula that correlates with the constraints and variables that will be explained in the mathematical models' section. Solver from the Analysis Toolpak is then used and configured in such away following the mathematical models as the guideline. Solving the linear optimization problem will result in the optimal number of projects for Embraer and Caravans to maximize total profit.

Nomenclature

Referring Beliën *et al.* (2013) research the following are the relevant nomenclature for this research:

A_{crv}	: Effective area needed for Caravan project
A_{emb}	: Effective area needed for Embraer project
A_h	: Effective hangar area
A_{hangar}	: Hangar area availability per year
C_{crv}	: Caravan project total cost
C_{emb}	: Embraer project total cost
CL_j	: Labor cost per project
CM_{crv}	: Material and facility cost per Caravan project
CM_{emb}	: Material and facility cost per Embraer project
D	: Working days per year
MH_{crv}	: Manhour required Per Caravan project
MH_{emb}	: Manhour required Per Embraer project
MH_{total}	: Total Manhour per year
Min_{crv}	: Minimum Caravan project per year
Min_{emb}	: Minimum Embraer project per year
MP_{crv}	: Number of manpower assigned to a Caravan project
MP_{emb}	: Number of manpower assigned to a Embraer project
N_{crv}	: Number of Caravan Project per year
N_{emb}	: Number of Embraer Projects per year
P_{xyz}	: XYZ profit
R_{crv}	: Caravan MH rate
R_{emb}	: Embraer MH rate
T	: Effective working hours per day
TAT_{crv}	: Days needed to complete a Caravan project in working days
TAT_{emb}	: Days needed to complete a Embraer project in working days
W_{emp}	: Average wage per mechanic or engineer per hour
X_{emp}	: Number of total mechanic and engineer

Mathematical Models

The following details the mathematical models used in this research.

Decision Variables: Number of Cessna Caravan (N_{crv}) dan Embraer Legacy (N_{emb}) projects per year.

Objective Function:

$$P_{xyz} = (N_{emb} \times MH_{emb} \times R_{emb} + N_{crv} \times MH_{crv} \times R_{crv}) - (N_{emb} \times C_{emb} + N_{crv} \times C_{crv}) \quad (1)$$

The main objective of this research is to maximize the profit from the number of projects that can be implemented, which is described in equation (1). Profits are derived from the income described in the first bracket of equation (1), and is deducted by the total cost per project, the second bracket in equation (1).

Constraints:

$$N_{emb} \geq Min_{emb} \quad (2)$$

$$N_{crv} \geq Min_{crv} \quad (3)$$

$$MH_{total} : N_{emb} \times MH_{emb} + N_{crv} \times MH_{crv} \leq X_{emp} \times T \times D \quad (4)$$

$$A_{hangar} : N_{emb} \times A_{emb} \times TAT_{emb} + N_{crv} \times A_{crv} \times TAT_{crv} \leq A_h \times D \quad (5)$$

The constraints for this research can be seen in equations (2) to (5). Where the minimum number of projects in a year is determined by equations (2) and (3). The limit on the number of manhours per year is explained by equation (4), where the total number of project manhours per year obtained from the multiplication of the number of projects and the manhours required to complete the project, must be less than the total manhour capacity owned by XYZ. In addition, another limitation is the total number of hangar areas available per year which is described in equation (5). This limit states the XYZ hangar capacity based on the need for the hangar area for each type of aircraft maintenance project.

Other Data:

$$CL_i : MH_i \times W_{emp} \quad (6)$$

$$C_{emb} : CL_{emb} + CM_{emb} \quad (7)$$

$$C_{crv} : CL_{crv} + CM_{crv} \quad (8)$$

Labor costs are described in equation (6) with i replaced for Embraer or Cessna respectively. Equations (7) and (8) state the costs incurred by company XYZ for each Embraer or Caravan project carried out. Both in terms of employee costs which are averaged and divided into per working hour, as well as in terms of raw materials needed when carrying out the aircraft maintenance.

REFERENCES

- Beliën, J., Demeulemeester, E., de Bruecker, P., van den Bergh, J., & Cardoen, B. (2013). *Integrated staffing and scheduling for an aircraft line maintenance problem*. *Computers & Operations Research*, 40(4), 1023–1033. <https://doi.org/10.1016/j.cor.2012.11.011>
- Directorate General of Civil Aviation Indonesia (2015). *Civil aviation safety regulations part 21*. Kementerian Perhubungan Republik Indonesia.
- Evans, J. R. (2016). *Business analytics, Global Edition* [E-book]. Pearson Education Limited.
- Heizer, J., Render, B., & Munson, C. (2020). *Operations management: Sustainability and supply chain management* (12th ed.) [E-book]. Pearson Education.
- Qin, Y., Zhang, J. H., Chan, F. T. S., Chung, S. H., Niu, B., & Qu, T. (2020). A two-stage optimization approach for aircraft hangar maintenance planning and staff assignment problems under MRO outsourcing mode. *Computers & Industrial Engineering*, 146, 106607.

FORECASTING, PURCHASING STRATEGY AND SAFETY STOCK AT AUTOMOTIVE RETAIL

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ABSTRACT

One of the main problems that occur in the retail industry is the availability of inventory due to uncertainty in demand. Inventory costs can reach 40% of the invested capital of the organization. In fact, the availability of inventory is one of the factors that determine customer satisfaction. Optimum inventory management become the solution of this problem. The purpose of this study is to find forecasting models, purchasing strategies and automotive retail safety stock policy. The forecasting methods compared are moving average and exponential smoothing moving average by looking at the smallest Mean Square Error (MSE) value. For purchasing strategies and safety stock using the economic order quantity (EOQ) and periodic order quantity (POQ) methods for comparison. Safety stock will be determined after finding the best purchase strategy. This study focusses on automotive retail because the product has lower product life cycle than groceries product. The research results are still in progress.

Keywords: *Forecasting, purchasing strategy, safety stock, automotive retail, inventory.*

INTRODUCTION

The main purpose of this study to find the best forecasting method, purchasing strategy and safety stock policy that suitable for automotive retail. The main issue at the retail is uncertainty of demands. This causes inaccuracies in product forecasting, high turnover for slow moving products and loss sales for fast moving products. The object at this study is one of the automotive retail at Indonesia. Main focus on this retail are selling oil, tire and battery for motorcycle. The average loss sales that occurs is 35% for fast moving products and 510% turn over inventory for slow moving products.

Inventory management have an important role at saving organization costs. Inventory costs can reach 40% of the invested capital at the organization. It can be reduce by determining the optimum inventory, but there is a possibility that product unavailability can occur if the inventory management set is inaccurate (Amrina & Dewi, 2021). Inventory management plays an important role at customer satisfactions. Helm, Hegenbart, and Endres (2013) find one of the key success factors at retail is product availability. There are five consumer reactions when there is an unavailability of products, that are switching products, switching brands, switching stores, delaying purchases and canceling purchases. If this reaction happen, it will be a loss for the retail store. Inventory management become the answer to prevent this case. The purpose of inventory management is to ensure that the product availability is maintained at an optimum level and minimum cost.

There are several techniques used in inventory management. One of them is safety stock policy. Safety stock is a solution to maintain the products due the uncertainty demand. However, an inappropriate safety stock can cause two things happen, that is product shortage or overstock which can lead to an increase in inventory costs. Therefore, it is necessary to plan and control inventory at the optimum level (Mekel, Anantadjaya, & Lahindah, 2014).

Most of the current study examine the inventory management for fast moving current goods (FMCG). The study about inventory management at automotive retail has not been found yet. The product life cycle of automotive product is different from FMCG. Automotive product has a slow cycle than FMCG. That's why this study is needed to help automotive retail maintain the stock at optimum level and minimum cost. This study will compared forecasting methods of moving average and exponential moving average by looking the smallest value of Mean Square Error (MSE). For the purchasing strategy will compare economic order quantity and periodic order quantity to find the best strategy. The safety stock will determine by the purchasing strategy that will be choosen.

LITERATURE REVIEW

This part consist of three section, that are inventory management, retail and previous research.

1. Inventory Management

Inventory management is a trade off between holding costs and profits. A high inventory level makes holding costs increase but the possibility of losing sales is small. A low inventory level makes inventory costs smaller but the possibility of loss of sales increases. One of strategy in inventory management is safety stock policy. Safety stock is buffer to anticipate the uncertainty of demand and delay lead time for purchases. Safety stock is one of the factors that considered in purchasing reorder point. Reorder point is a point where a purchase must be made if it has reached that point. Another factor that affects inventory is demand. Information about demand patterns is needed to determine the optimum inventory (Kritchanchai & Meesamut, 2015). Derhami, Montreuil, and Bau (2021) defined that inventory planning and management is a very challenging tactical strategy in retail operational networks. Inventory management has a direct impact on customer satisfaction and sales. Asana, Radhitya, Widiartha, Santika, and Wiguna (2020) said that retail performance was strongly influenced by inventory. In order to meet consumer needs, retailers need to ensure that products are always available. This is a way for retailers to survive and not lose customers.

Replenishment is related to the purchase of optimum inventory to meet customer demand. The replenishment involves two cost components, holding and ordering costs. One method to minimize these cost components is to use the economic order quantity (EOQ) method. This method can be implemented optimally if the demand is constant. However, as is known, in reality demand is fluctuating, so proper forecasting is needed to carry out optimum inventory management (Seaman, 2018). Fildes, Ma, and Kolassa (2019) in his research, explained that a retailer is very dependent on the forecasting used. This is because forecasting can be a tool for making strategic decisions. Nunnari and Nunnari (2017) also explained that forecasting will determine supply chain management to increase the profit of the organization. One of the most frequently used forecasting methods is time series. Time series is a method that pays attention to changes in data from time to time.

2. Retail

Erbiyik, Özcan, and Karaboğa (2017) explained several definition of retail. According to Kotler (2000) retail is an activity carried out to sell goods or services to consumers for personal use. Meanwhile, Gilbert (2006) said that retail is a business that related to marketing capabilities in terms to satisfy the consumers. Berman and Evans (2001) reveals that retail is a business activity that sells products and services to consumers for personal, family or daily home use. It can be concluded that retail is one of the distribution channels in the supply chain that connected the producers and customers through products or services. Because it is a distribution channel, usually one retailer is located in a different location to reach consumers.

3. Previous Research

Ren, Chan, and Siqin (2020) doing the research about forecasting at fashion retail. Fashion retail also known have high uncertainty of demand because of the lower product life cycle. At this research, combine the quantitative and qualitative method to do the forecasting. Sillanpää and Liesiö (2018) investigate about the forecasting for slow moving product at European Grocery Retailer. Point estimate forecast and distribution model are using at this research. Meanwhile, Seaman (2018) investigate about the factors that considered in forecasting decision making for practitioners. Focus of this study is to convert business objective become forecast performance.

Amirjabbari and Bhuiyan (2014) conducted research on determining the safety stock level by considered the location as part of the supply chain. The goal is to get the optimum total cost by using the simulation method. The researcher made a simulation model by paying attention to the value stream in the supply chain to determine the variables and constraints of the simulation model developed. Meanwhile, Hahn and Leucht (2015) conducted research on how to manage inventory for slow moving product categories. In the research, evaluate the forecasting model with consider the inventory regulation and time series method. The research propose using the binomial model to control slow-moving inventory.

Most of the research investigate about forecasting at grocery retail and focus on slow moving product. Simulation model and time series commonly using at the forecasting. These two methods considered have a capability to covered the data for forecasting. Although can cover variation of data, but the method also have

weakness. Most of the research only apply one distribution model or simulation from the data. In the reality, each product have different characteristic and pattern.

RESEARCH METHOD

Quantitative method was chosen at this study because this method having systematic approach to examine a phenomena. Quantitative method using math formulation as a tool to examine the phenomena. At this study, will using some math formula to examine the forecasting and purchasing strategy method. There are several steps to do as a part of research.

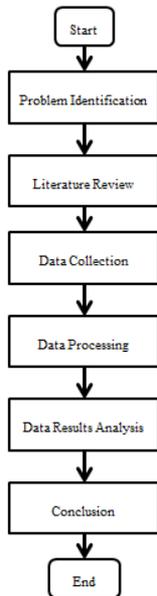


Figure 1. Research methods

Figure 1 shown the methodology of this study.

1. Problem Identification

This study was raised because there are forecasting and inventory problem at automotive retail. Because of this problem, the retail facing loss sales at fast moving product and high turnover for slow moving products.

2. Literature Review

Literature review required to mapping the previous research and finding the realted theory as a guidance of this research.

3. Data Collection

The population of this study is motorcycle automotive retail at Indonesia. Because of the limitations, the research using sample. The sampel of this reseacrh was one of the automotive retail at Indonesia who sells oil, tire and battery for motorcycle. Data of this study obtained from the supply chain team, with the period from 2018 until 2019.

4. Data Processing

Data processing of this study using quantitative method. At this stage, the data will break into weekly to see the trend of weekly. Data 2020 not used because of the pandemic corona. Time series method are using to examine the forecasting method. The methods are moving average and exponential smoothing average. The best forecasting method is having the smallest value of Mean Square Error (MSE). For the purchasing strategy using economic order quantity (EOQ) and periodic order quantity (POQ) as the guidance to calculate the best purchasing strategy. The safety stock policy will be considered from the sales data and lead time delivery.

5. Data Results Analysis

Data analysis will using Microsoft Excel as the tools. For the forecasting method, the smallest value of error will be chosen as the best forecasting method. The purchasing strategy will be compared using EOQ dan POQ and the trend of the data. The safety stock policy will be considered from lead time delivery and sales data.

6. Conclusion

The last stage of this research is conclusion. The conclusion obtained from the data results analysis. Conclusion will be giving new finding from the research.

RESULT

Forecasting Method

The data used at this study is demand from 2018–2019. There are three category product at the retail, they are oil, tire and battery. From the oil category, the biggest demand are oil 5, oil 4 and oil 3. From the tire category, the biggest demand are tire 4 and tire 2. And the last, for the battery category, the biggest demand are battery 1 and battery 2. At this study will be focusing at the fast moving product of each category.

The first forecasting method used is moving average. Moving average is a forecasting method based on data in the past by determining a certain period. The period of this research using period = 2, period = 4, period = 8 and period = 12 where the unit of time used is weeks. This selection is based on current orders are made on a weekly basis. The second forecasting method used is exponential smoothing average. Exponential smoothing average requires constants in its calculations. The constant values used are 0.3, 0.5, and 0.7. This constant value describes the level of accuracy of the request data. The greater value of the constant, the closer it is to the real demand trend.

To determine the right forecasting method, a comparison of the error values of the two methods is carried out. In addition, an error calculation with the assumption stable demand. The results of the comparison of error values are shown at Table 1.

Table 1
Mean Square Error Forecasting Method

Product	Mean Square Error							
	MA2	MA4	MA8	MA12	0,3	0,5	0,7	Stable Demand
Oil 3	6.209	9.661	11.939	12.984	19.753	17.307	15.611	37.015
Oil 4	9.576	18.774	22.113	24.195	31.972	28.533	25.928	35.112
Oil 5	10.566	14.687	19.237	20.509	32.992	28.206	24.457	57.212
Tire 2	286	456	522	561	919	795	695	1.611
Tire 4	347	558	636	677	1.105	955	832	2.181
Battery 1	188	288	325	343	600	516	446	1.362
Battery 2	84	144	160	175	275	241	212	378

Table 1 shows the error value of moving average, exponential smoothing average and stable demand of the retail. The highest error value at stable demand where forecasting is done by assuming that the demand for each period is the same. This also shows that according moving average and exponential smoothing moving average, the trend of the resulting data is fluctuating. For the smallest error value is in the moving average method with MA2 which is the period of the forecasting two weeks. This smallest error value is in all product categories of oil, tires and battery. The error value MA2 for oil category, oil 3 is 6209, oil 4 is 9.576, oil 5 is 10,566. For the tire category, tire 2 is 286, tire 4 is 347. And for the battery category, battery 1 is 188 and battery 2 is 84. Therefore, the most suitable forecasting method is moving average with period of forecasting two weeks because the demand has high fluctuations.

Purchasing Strategy

From the forecasting method, the demand has high fluctuations. Economic order quantity (EOQ) purchasing strategy is not suitable to be applied with high fluctuations demand. This can be seen from the error value if it is assumed that the demand is stable, it becomes the largest error value of the forecasting. This method can be used if the demand is stationary or stable. The existence of this condition makes the economic periodic quantity (EPQ) method more suitable to be applied at this retail. According existing process, the demand was order weekly. It's proven that economic periodic quantity more suitable for this retail.

Safety Stock Policy

Safety stock is a policy of the organization to have a stock buffer of products in order to deal with the uncertainty of demand. The safety stock policies applied by each organizations are different. With the periodic purchase strategy at this retail, the safety stock policy can be determined by considering the delivery lead time. The delivery lead time is 2 days from the order. Therefore, to minimize safety stock at retail, the safety stock policy applied is stock for 4 days. This takes into account if there is a delay in delivery, so that the existing stock can meet the needs until the products arrived at the store.

CONCLUSION

Moving average and exponential smoothing average are the forecasting method that can be used at automotive retail. For the object of this study, moving average with period forecasting two weeks more suitable because of the high fluctuations of demand. With the high fluctuations of demand, the suitable purchasing strategy is periodic economic quantity. Periodic order can deal with the uncertainty of the demand and give optimum quantity for the retail. This method already suitable with existing order method. Safety stock policy at each organizations are different. There are some factors to determine safety stock likes the product life cycle, delivery lead time and sales data. At this automotive retail, the suggestion safety stock is four days of sales. This policy considered the lead time from order until delivery to the around three days.

REFERENCES

- Amirjabbari, B., & Bhuiyan, N. (2014). Determining supply chain safety stock level and location. *Journal of Industrial Engineering and Management*, 7(1), 42–71. <http://dx.doi.org/10.3926/jiem.543>
- Amrina, E., & Dewi, A. Y. (2021). Optimizing inventory control system of crumb rubber raw material: A case study. *IOP Conference Series: Materials Science and Engineering*, 1041(1), 012045.
- Asana, I. M. D. P., Radhitya, M. L., Widiartha, K. K., Santika, P. P., & Wiguna, I. K. A. G. (2020, February). Inventory control using ABC and min-max analysis on retail management information system. *Journal of Physics: Conference Series*, 1469, 012097. doi:10.1088/1742-6596/1469/1/012097
- Berman, B., & Evans, J. R. (2001). *Retail management: A strategic approach*. Upper Saddle River, NJ: Pearson Prentice Hall.
- Derhami, S., Montreuil, B., & Bau, G. (2021). Assessing product availability in omnichannel retail networks in the presence of on-demand inventory transshipment and product substitution. *Omega*, 102, 102315. <http://dx.doi.org/10.1016/j.omega.2020.102315>
- Erbıyık, H., Özcan, S., & Karaboğa, K. (2012). Retail store location selection problem with multiple analytical hierarchy process of decision making an application in Turkey. *Procedia-Social and Behavioral Sciences*, 58, 1405–1414.
- Fildes, R., Ma, S., & Kolassa, S. (2019). Retail forecasting: Research and practice. *International Journal of Forecasting*. <https://doi.org/10.1016/j.ijforecast.2019.06.004>
- Gilbert, D. (2006). *Retail marketing management*. 2nd Edition. Pearson India.
- Hahn, G. J., & Leucht, A. (2015). Managing inventory systems of slow-moving items. *International Journal of Production Economics*, 170(B), 543–550. <https://doi.org/10.1016/j.ijpe.2015.08.014>
- Helm, R., Hegenbart, T., & Endres, H. (2013). Explaining customer reactions to real stockouts. *Review of Managerial Science*, 7(3), 223–246. <http://dx.doi.org/10.1007/s11846-012-0079-8>
- Kotler, P. (2000). *Marketing management*. The Millennium Edition. Upper Saddle River, NJ: Pearson Prentice Hall.
- Kritchanchai, D., & Meesamut, W. (2015). Developing inventory management in hospital. *International Journal of Supply Chain Management*, 4(2), 11–19.
- Mekel, C., Anantadjaya, S. P. D., & Lahindah, L. (2014). Stock out analysis: An empirical study on forecasting, re-order point and safety stock level at PT Combiphar, Indonesia. *RIBER: Review of Integrative Business and Economics Research*, 3(1), 52–64.
- Nunnari, G., & Nunnari, V. (2017). Forecasting monthly sales retail time series: A case study. *2017 IEEE 19th Conference on Business Informatics (CBI)*, 1, 1–6.
- Ren, S., Chan, H. L., & Siqin, T. (2020). Demand forecasting in retail operations for fashionable products: Methods, practices, and real case study. *Annals of Operations Research*, 291, 761–777. <https://doi.org/10.1007/s10479-019-03148-8>

- Seaman, B. (2018). Considerations of a retail forecasting practitioner. *International Journal of Forecasting*, 34(4), 822–829. <https://doi.org/10.1016/J.IJFORECAST.2018.03.001>
- Sillanpää, V., & Liesiö, J. (2018). Forecasting replenishment orders in retail: Value of modelling low and intermittent consumer demand with distributions. *International Journal of Production Research*, 56(12), 4168–4185. <https://doi.org/10.1080/00207543.2018.1431413>

BUSINESS PROCESS ANALYSIS OF RENEWABLE ENERGY SECTOR IN COMPANIES WITH INTEGRATED LINES OF BUSINESS (EPCC, OPERATION & MAINTENANCE AND INVESTMENT)

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ABSTRACT

The purpose of this paper is to investigate the use of energy in Indonesia which is still dominated by the use of non-renewable energy derived from fossils, especially petroleum and coal, but over time, the availability of fossil energy is dwindling and to anticipate new renewable energy (EBT) is the best alternative. Indonesia has a target of a proportion of EBT of 23% of total energy production by 2025 and on that basis, state-owned enterprises are tasked with supporting the growth of new renewable energy. This paper discusses the transformation of the business processes of one of the state-owned enterprises in order to support the new renewable energy target (EBT) which is in line with the company's vision, namely to become a "Total Solution for Integrated and Leading Energy Sector in Southeast Asia" in accordance with the direction of the company's development by using the Company's Long-Term Plan (RJPP) data and literature review. In addition, this study also provides recommendations on whether the value chain and business process are linear with the direction of company development. Business Process Reengineering (BPR) theory emphasizes fundamental thinking and redesigning of a business process to produce dramatic and lasting changes in quality, cost, service, lead time, flexibility and innovation. The results of this study are expected to produce recommendations for business processes relevant to the target proportion of EBT and the direction of development of the company. The current study fills this gap by exploring and examining the business process implementation in a shifting company target regarding the government regulation on the renewable energy sector.

Keywords: *Business process, renewable energy, business process reengineering, operations management.*

INTRODUCTION

People's need for energy continues to grow every year in the future electricity needs will continue to increase along with the increase and good development of the population, the amount of investment, technological developments including the development of the world of education for all levels of education. The growth of energy needs in Indonesia during the period 2010 to 2018 is shown in Figure 1.

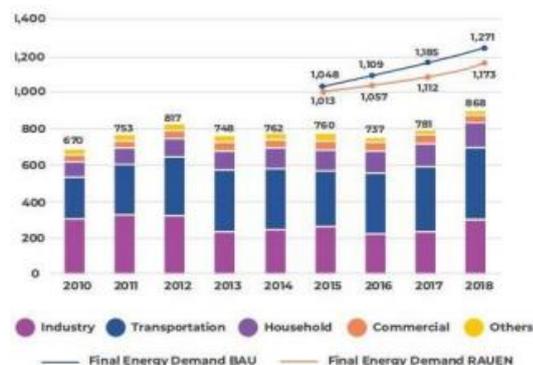


Figure 1. Energy demand

Energy use in Indonesia is still dominated by the use of non-renewable energy derived from fossils, especially petroleum and coal, but over time, the availability of fossil energy is dwindling and in anticipation of new renewable energy (EBT) is the best alternative. The use of new and renewable energy should be the main concern of the Indonesian government not only as an effort to reduce the use of fossil energy but also to realize clean or environmentally friendly energy with a target of a proportion of EBT of 23% of total energy production by 2025.



Figure 2. Renewable energy target

PT. XYZ is one of the companies in Indonesia that is currently expanding in infrastructure development and also investing in the EBT sector. PT. XYZ is designed to be an integrated, aggressive, innovative and professional company in the field of MEP (Mechanical, Electrical, Piping), EPCC (Engineering, Procurement, Construction, Commissioning), O&M (Operation & Maintenance) and Investment in the industrial and power plant sectors and infrastructure facilities. With this development direction, there needs to be an assessment business process model existing and business process reengineering in the development of companies in the field of renewable energy.

LITERATURE REVIEW AND HYPOTHESIS

Business Process in General

The concept of business processes has been defined by Davenport and Short (1990) as "a logical sequence of business activities combined to achieve predetermined business objectives." This understanding has been widely adopted in the literature of design and business management processes. Hammer and Champy (1993) say the same thing, but they also emphasize the customer-centering aspect of business processes: "a collection of activities that use one or more kinds of inputs and produce outputs that have value for customers".

A business process is a set of instruments for organizing an activity and for improving understanding of the interconnectedness of an activity (Weske, 2007). There is another definition of business processes (Sparx Systems, 2004) is a set of activities or activities designed to produce certain output requirements for certain customers. According to Hammer and Champy in Weske (2007) a business process is a set of activities that take one or many inputs and create a useful output for customers.

According to Rummler and Brache (1995) business processes are a set of activities in business to produce products and services. This business process activity can be done either manually or with the help of information systems (Weske, 2007). In a business process, it must have (1) a clear purpose, (2) input, (3) an output, (4) use resources, (5) have a number of activities that in several stages, (6) can affect more than one unit in the organization, and (7) can create value or value for consumers (Sparx Systems, 2004).

Business Process Reengineering

BPR programs in manufacturing and service sector have common aim represented in increasing efficiency and effectiveness of operations in order to achieve customer satisfaction and, consequently, gain competitive advantage. According to the holistic approach of BPR, the different models presented by BPR gurus (e.g., Davenport & Short, 1990; Hammer & Champy, 1993) are applicable to manufacturing as well as service organizations. These models are used to implement BPR in service sectors, such as health care, banking and education institutions. On the other hand, many differences can be recognized in implementing BPR in service sectors from manufacturing ones. Huq and Stolen (1998) pointed out several environmental differences between service and manufacturing sectors to be considered when implementing change programs such as TQM as well as BPR. These differences include: first, serving customer requires the members of the service organization to practice more individual judgment than those in manufacturing organizations; second, achieving consistent quality is more difficult in-service organizations; and, third, controlling and measuring the outputs of service organizations is more difficult due to the intangibility nature.

Three types of organizations need to implement BPR project (Hammer & Champy, 1993; O'Neill & Sohal, 1999; Ringim, Razalli, & Hasnan, 2011): first, organizations in deep difficulties such as high operational costs; customer dissatisfaction; and/or product lag; second, organizations operating in changing economic paradigm or changing business regulations; and, third, organizations facing severe competition in the market and their operations are not matching the conditions of this kind of competition.

RESEARCH METHOD

Flowchart

In this study there are several steps that need to be done which have been presented as follows:

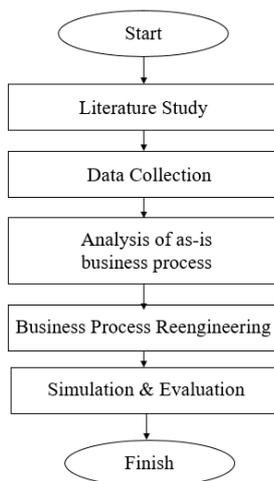


Figure 3. Research flow

The research flow has the aim that this research can be carried out in a directed manner starting from, conducting a literature study, collecting data, analyzing and modeling current business processes (as-is), making a proposed business process design (to-be), conducting simulations and evaluation of business processes.

Qualitative Method

The business process analysis method uses the Value-added analysis method which is an analytical technique consisting of two important parts, namely, Value Classification and Waste Elimination. In the Value Classification, each activity in a process will be identified into several categories. As follows:

1. Value-Adding (VA) Activities that fall into this category are activities that generate value or meet customer satisfaction.
2. Business value-adding (BVA) Activities that fall into this category are activities that are important and useful for business continuity.

3. Non-value adding (NVA) Activities that fall into this category are activities that are not included in the two categories above.

After doing Value Classification, the next thing to do is Waste Elimination. In Waste Elimination, activities in the process that do not add value will be eliminated. The first step in Waste Elimination is to eliminate activities that fall into the non-value adding (NVA) category. Some NVA activities can be eliminated by bringing automation. The next step is to eliminate activities that fall into the Business value-adding (BVA) category. To eliminate BVA activities, it is necessary to map out business goals and business needs. Considering that BVA activities are activities that are necessary for business continuity

REFERENCES

- Davenport, T. H., & Short, J. E. (1990). The new industrial engineering: Information technology and business process redesign. *Sloan Management Review*, 31, 11–27.
- Hammer, M., & Champy, J. (1993) *Reengineering the corporation: A manifesto for business revolution*. New York, NY: Harper Collins.
- Huq, Z., & Stolen, J. D. (1998). Total quality management contrasts in manufacturing and service industries. *International Journal of Quality & Reliability Management*, 15, 138–161. <https://doi.org/10.1108/02656719810204757>
- O'Neill, P., & Sohal, A. S. (1999). Business process reengineering a review of recent literature. *Technovation*, 19(9), 571–581. [https://doi.org/10.1016/S0166-4972\(99\)00059-0](https://doi.org/10.1016/S0166-4972(99)00059-0)
- Ringim, K. J., Razalli, M. R., & Hasnan, N. (2012). Effect of business process reengineering factors on organizational performance of Nigerian banks: Information technology capability as the moderating factor. *International Journal of Business and Social Science*, 2(13), 198–201.
- Rummler, G. A., & Brache, A. P. (1995). *Improving performance: How to manage the white space in the organization chart*. Jossey-Bass.
- Sparx Systems. (2004). *UML tutorial: The business process model*. Cresswick, Victoria: Sparx Systems Pty Ltd.
- Weske, M. (2007.) *Business process management: Concept, languages, architectures*. New York, NY: Springer.

CONSUMER ENGAGEMENT WITH PARTICIPANT SPORTS: A CONCEPTUAL STUDY

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ABSTRACT

The topic of consumer engagement has been gaining the attention of both academics and practitioners. This is because of the outcomes associated with consumer engagement such as increased sales, enhanced competitive advantage, consumer loyalty, and the development of mutual beneficial relationships between organisations and consumers. However, in the field of participant sports, there still lacks research on consumer engagement. The paper seeks to fill that gap by developing a conceptual model on consumer engagement in participant sports. The model provides a complete understanding of the process of consumer engagement in participant sports. The model highlights that sport participation motivation is the antecedent of consumer engagement (such as mastery and weight), sport participants engage on three dimensions (cognitive, emotional, and behavioural), and the outcomes of consumer engagement are word-of-mouth and re-participation intention. The model has implications for participant sport managers. The model provides a better understanding of current and prospective consumers, therefore, improving the targeting of customers through segmentation.

Keywords: *Consumer engagement, participant sports, conceptual, definition, model.*

INTRODUCTION

Consumer engagement was first examined by academics in 2006 but only gained prominence in 2010 and has become an important topic in marketing (Barari, Ross, Thaichon, & Surachartkumtonkun, 2020; Lim, Rasul, Kumar, & Ala, 2022). The growing influence of consumer engagement can be attributed to the positive outcomes of consumer engagement for organisations such as loyalty (Leckie, Nyadzayo & Johnson, 2016; Behnam, Sato, & Baker, 2021), word-of-mouth (Carvalho & Fernandes, 2018) and customer-business relationships (Sashi, 2012). Consumer engagement signifies customer interactions with firms, brands, and offerings (Hollebeek, Sprott & Brady, 2021). Researchers in the service industry desire to understand customer experiences and interactions (Karpen & Conduit, 2020).

Consumer engagement has been researched in sport nevertheless, it has only been researched in spectator sports under the title fan engagement (Yoshida, Gordon, Nakazawa, & Biscaia, 2014; Yun, Rosenberger, & Sweeney, 2021). There is lack of research on consumer engagement in participant sports. Participant sports are sports that individuals participate in as opposed to spectator sports that individuals watch on TV, stadiums and mobile devices (Shamir & Ruskin, 1984; Cohen & Avrahami, 2005; Wicker, Hallmann, & Zhang, 2012).

Problem Statement

Globally, there is a pandemic of physical inactivity (Kohl *et al.*, 2012). Physical inactivity is linked to negative effects, for example, chronic diseases such as heart diseases (Ding *et al.*, 2016), obesity (Kazmi *et al.*, 2022) and depression (Cheval, Maltagliati, Sieber, Sander, & Boisgontier, 2022). Healthcare practitioners and policymakers have to enhance physical activity both during and post the Covid-19 pandemic (Ghozy, Abdelaal, Shah, Parker, & Islam, 2021). This paper seeks to highlight some strategies that can be implemented to increase physical activity through sport participation and engagement.

LITERATURE REVIEW

This paper posits that consumer engagement in participant sport are the mental, emotional, and physical resources that sport participants use when participating in a sport stimulated by motivation to participate in sport that results in attitudinal and behavioural loyalty. This paper posits that motivation is the antecedent of consumer engagement in participant sports. Engagement is an outcome of motivation (Ben-Eliyahu, Moore, Dorph, & Schunn, 2018). Motivation is the reason why people engage in certain behaviours and it is critical in gaining an understanding of engagement (Appleton, Christenson, Kim, & Reschly, 2006). Nevertheless, the lack of motivation is an impediment to individuals taking part in sport (Othman *et al.*, 2022). Individuals are motivated by nine antecedents in the form of enjoyment (Proposition 1), mastery (Proposition 2), exhibitionism (Proposition 3), appearance (Proposition 4), weight (Proposition 5), socialization (Proposition 6), mental wellbeing (Proposition 7), competition (Proposition 8), and challenge (Proposition 9).

There are three dimensions of consumer engagement: affective/emotional, cognitive/mental, and behavioural/physical engagement (Patterson, Yu, & de Ruyter, 2006; van Doorn *et al.*, 2010; Hollebeek, 2011). When individuals participate in sport they use emotional resources, mental resources, and physical resources. However, participants can engage on all three dimensions when participating in sports, but at varying degrees of engagement. For example, a participant can have positive emotional engagement, but negative behavioural engagement, because they do not engage in conversations with other participants.

Loyalty is an outcome of consumer engagement (Vivek, Beatty & Morgan 2012; Leckie *et al.*, 2016). There are two types of loyalty: attitudinal and behavioural loyalty. Attitudinal loyalty is defined as, “the level of customer's psychological attachments and attitudinal advocacy towards the service provider/supplier” whilst behavioural loyalty is defined as, “the willingness of average business customers to repurchase the service and the product of the service provider and to maintain a relationship with the service provider/supplier” (Rauyrueen & Miller, 2007). Engaged sports participants engage in word-of-mouth behaviour and re-participation intention (the intention to re-participate in a sport). Consumer engagement in participant sports produces two consequences in the form of re-participation (Proposition 10) and word of mouth-giving (Proposition 11).

DISCUSSION

To this end, this conceptual study makes a *theoretical contribution* by proposing (i) comprehensive definitions for cognitive, affective, and behavioural aspects of consumer engagement with participant sports and (ii) a conceptual model of the antecedents and consequences of consumer engagement with participant sports. This study also makes a *practical contribution* by enabling public health and sports professionals to leverage on the factors that could encourage consumers to engage in participant sports, and in doing so, improve public health outcomes.

REFERENCES

- Appleton, J. J., Christenson, S. L., Kim, D., & Reschly, A. L. (2006). Measuring cognitive and psychological engagement: Validation of the student engagement instrument. *Journal of School Psychology, 44*, 427–445. <http://dx.doi.org/10.1016/j.jsp.2006.04.002>
- Barari, M., Ross, M., Thaichon, S., & Surachartkumtonkun, J. (2020). A meta-analysis of customer engagement behaviour. *International Journal of Consumer Studies, Special Issue*, 1–55. <http://dx.doi.org/10.1111/ijcs.12609>
- Behnam, M., Sato, M., & Baker, B. J. (2021). The role of consumer engagement in behavioral loyalty through value co-creation in fitness clubs. *Sport Management Review, 24*(4), 567–593. <https://doi.org/10.1080/14413523.2021.1880772>
- Ben-Eliyahu, A., Moore, D., Dorph, R., & Schunn, C. D. (2018). Investigating the multidimensionality of engagement: Affective, behavioral, and cognitive engagement across science activities and contexts. *Contemporary Educational Psychology, 53*, 87–105. <https://doi.org/10.1016/j.cedpsych.2018.01.002>

- Carvalho, A., & Fernandes, T. (2018). Understanding customer brand engagement with virtual social communities: A comprehensive model of drivers, outcomes and moderators. *Journal of Marketing Theory and Practice*, 26(1–2), 23–37. <https://doi.org/10.1080/10696679.2017.1389241>
- Cheval, B., Maltagliati, S., Sieber, S., Sander, D., & Boisgontier, M. P. (2022). Physical inactivity amplifies the negative association between sleep quality and depressive symptoms. *SportRxiv, Preprint*, Version 1. <https://doi.org/10.51224/SRXIV.133>
- Cohen, A., & Avrahami, A. (2005). Soccer fans' motivation as a predictor of participation in soccer-related activities: An empirical examination in Israel. *Social Behavior and Personality*, 33(5), 419–434. <https://doi.org/10.2224/sbp.2005.33.5.419>
- Ding, D., Lawson, K. D., Kolbe-Alexander, T. L., Finkelstein, E. A., Katzmarzyk, P. T., van Mechelen, W., & Pratt, M. (2016). The economic burden of physical inactivity: A global analysis of major non-communicable diseases. *The Lancet*, 388(10051), 1311–1324. [https://doi.org/10.1016/S0140-6736\(16\)30383-X](https://doi.org/10.1016/S0140-6736(16)30383-X)
- Ghozy, S., Abdelaal, A., Shah, J., Parker, K. E., & Islam, S. M. S. (2021). COVID-19 and physical inactivity: Teetering on the edge of a deadlier pandemic? *Journal of Global Health*, 11, 1–3. <https://doi.org/10.7189%2Fjogh.11.03031>
- Hollebeek, L. D. (2011). Demystifying customer brand engagement: Exploring the loyalty nexus. *Journal of Marketing Management*, 27(7–8), 785–807, DOI: 10.1080/0267257X.2010.500132
- Hollebeek, L. D., Sprott, D. E., & Brady, M. K. (2021). Rise of the machines? Customer engagement in automated service interactions. *Journal of Service Research*, 24(1), 3–8. <https://doi.org/10.1177/1094670520975110>
- Karpen, I. O., & Conduit, J. (2020). Engaging in times of COVID-19 and beyond: Theorizing customer engagement through different paradigmatic lenses. *Journal of Service Management*, 31(6), 1163–1174. <https://doi.org/10.1108/JOSM-05-2020-0156>
- Kazmi, T., Nagi, L. F., Iqbal, S. P., Razzak, S., Hassnain, S., Khan, S., & Shahid, N. (2022). Relationship between physical inactivity and obesity in the urban slums of Lahore. *Cureus*, 14(4), e23719. DOI 10.7759/cureus.23719
- Kohl, H. W., Craig, C. L., Lambert, E. V., Inoue, S., Alkandari, J. R., Leetongin, G., & Kahlmeier, S. (2012). The pandemic of physical inactivity: Global action for public health. *The Lancet*, 380(9838), 294–305. [https://doi.org/10.1016/s0140-6736\(12\)60898-8](https://doi.org/10.1016/s0140-6736(12)60898-8)
- Leckie, C., Nyadzayo, M. W., & Johnson, L. W. (2016). Antecedents of consumer brand engagement and brand loyalty. *Journal of Marketing Management*, 32(5–6), 558–578. <https://doi.org/10.1080/0267257X.2015.1131735>
- Lim, W. M., Rasul, T., Kumar, S., & Ala, M. (2022). Past, present, and future of customer engagement. *Journal of Business Research*, 140, 439–458. <https://doi.org/10.1016/j.jbusres.2021.11.014>
- Othman, M. S., Mat Ludin, A. F., Chen, L. L., Hossain, H., Abdul Halim, I. I., Sameeha, M. J., & Tahir, A. R. M. (2022). Motivations, barriers and exercise preferences among female undergraduates: A need assessment analysis. *PLoS ONE* 17(2), e0264158. <https://doi.org/10.1371/journal.pone.0264158>
- Patterson, P., Yu, T., & de Ruyter, K. (2006). *Understanding customer engagement in services*. Paper presented at the ANZMAC 2006 conference, Brisbane, Australia, pp. 4–6.
- Rauyruen, P., & Miller, K. E. (2007). Relationship quality as a predictor of B2B customer loyalty. *Journal of Business Research*, 60(1), 21–31. <https://doi.org/10.1016/j.jbusres.2005.11.006>
- Sashi, C. M., (2012). Customer engagement, buyer-seller relationships, and social media. *Management Decision*, 50(2), 253–272. <https://doi.org/10.1108/00251741211203551>
- Shamir, B., & Ruskin, H. (1984). Sport participation vs. sport spectatorship: Two modes of leisure behavior. *Journal of Leisure Research*, 16(1), 9–21. <https://doi.org/10.1080/00222216.1984.11969569>
- van Doorn, J., Lemon, K. N., Mittal, V., Nass, S., Pick, D., Pirner, P., & Verhoef, P. C. (2010). Customer engagement behavior: Theoretical foundations and research directions. *Journal of Service Research*, 13(3), 253–266. <https://doi.org/10.1177/1094670510375599>
- Vivek, S. D., Beatty, S. E., & Morgan, R. M. (2012). Customer engagement: Exploring customer relationships beyond purchase. *Journal of Marketing Theory and Practice*, 20(2), 122–146, DOI: 10.2753/MTP1069-6679200201

- Wicker, P., Hallmann, K., & Zhang, J. J. (2012). What is influencing consumer expenditure and intention to revisit? An investigation of marathon events. *Journal of Sport and Tourism, 17*(3), 165–182. <https://doi.org/10.1080/14775085.2012.734058>
- Yoshida, M., Gordon, B., Nakazawa, M., & Biscaia, R. (2014). Conceptualization and measurement of fan engagement: Empirical evidence from a professional sport context. *Journal of Sport Management, 28*(4), 399–417. <https://doi.org/10.1123/jsm.2013-0199>
- Yun, J. H., Rosenberger, P. J., & Sweeney, K. (2021). Drivers of soccer fan loyalty: Australian evidence on the influence of team brand image, fan engagement, satisfaction and enduring involvement. *Asia Pacific Journal of Marketing and Logistics, 33*(3), 755–782. <https://doi.org/10.1108/APJML-07-2019-0444>

THE IMPACT OF AR AND VR ADVERTISEMENTS ON CONSUMER BEHAVIOR

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ABSTRACT

Advertising can be defined as a method of communicating with a product's or service's users. Print ads, visual commercials, and internet display ads are the most popular sorts of advertisements. With emergence of new age technologies such as AR and VR marketers are experimenting on investing in these technologies. Technology induced advertisements are significantly more expensive than the traditional ones. It is important to generate maximum ROI when investing in such advertisements in the form of consumer engagement, which brings in sales. Data analysis techniques were used to analyze how technology-induced commercials compare to traditional advertisements. Age, gender, education, income, plays a significant role on type of advertisements that interests and are consumed by the consumer. Older generation prefer traditional advertisements while baby boomers are attracted to the new technology induced advertisements. AR and VR-based commercials have the ability to elicit a higher level of interest and desire in the minds of customers.

Keywords: Augmented reality, virtual reality, traditional advertisements, advertising.

INTRODUCTION

Advertising is a method of communicating with a product's or service's users. According to the Advertising Association of the United Kingdom, advertisements are messages that are paid for by those who send them and are meant to inform or influence those who receive them (What is Advertising? Definition of Advertising, Advertising Meaning - The Economic Times, 2022). The advertising world have been subjected to a huge overhaul in the past with the introduction of different technologies, first with the introduction of visual media and then with the emergence of digital media. Now advertisements are again subjected to such a situation with introduction of new technologies such as augmented reality, virtual reality etc.

Advertisement is a very important aspect of a products success throughout its product life cycle. Creating awareness is the primary marketing goal of advertisements during the introduction stage of a particular product (Smyth, 2021). And the role of advertisement can be explained in various stages of the products life cycle. Models such as AIDA, AIDCA etc can be used to explain the effectiveness of advertisements with respect to the stages a customer goes through while making a purchase decision. AIDA can be expanded to awareness, interest, desire and action. Advertisers are challenged to efficiently and effectively communicate the relevant messages and information to the target customer. The consumer is exposed to the product and learns about it through advertisements during the awareness stage. The customer then moves on to the Action stage, where the customer forms buy intentions and makes the purchase.

Marketers are experimenting on investing in new age technologies such as AR and VR. The investment for such advertisements is higher than traditional advertisements. There is always a question of return of investment in the form of consumer engagement. Traditional advertisements include print ads, visual ads and display ads on the internet.

LITERATURE REVIEW AND HYPOTHESIS

Advertising

Advertisements are very important in determining the sales or success of a product as it produces a significant amount of top of the mind recall for the product and according to industry standards 35% of

the total cost of the product is attributed to advertising (Singh, 2012). Advertisements are a very important part of market strategy and it plays an important role in the purchase decision of the consumer. A consumer's purchase decision is a process of different stages, which can be explained using different models such as attention, interest, desire, and action (AIDA), attention, interest, desire, conviction, and action (AIDCA), hierarchy of effects model, innovation adoption model and information processing model (Kotler, Keller, Koshy, & Jha, 2009). Advertisements are one of the major influencing factors on a customer's purchase decision. The medium used may vary according to area and demography like, even though in recent times marketers use social media and other forms of advertising. TV is the most powerful intermediary of advertisement for swaying rural consumer buying preferences (Siddiqui *et al.*, 2021).

Various Media and Technology Induced Advertisements

Marketers use different types of media and technology to reach out to their customers especially their target audience such as newspapers, magazines, radio, TV, and outdoor etc. (Ayanwale, Alimi, & Ayanbimipe, 2005). However, with the emergence of technology and internet marketers are investing in the new trends which includes billboards, banner advertisements, corporate websites, e-mail messages, interactive games, and so on (Ducoffe, 1995). But in the current scenario these mediums are taken over by mediums such as display ads, social media, search engine marketing etc.

There has been debates on what kinds of advertisements are more effective to have an impact on the customers among print and tv ads. The study by Chithra and Kothai (2014) found that consumers believe that television advertisement inform their viewers about the brands they need, updates with the products available in the market and keeps them in knowing about the changing fashions. The study also found that there is negative attitude towards the TV ads in case of frequent repetition. However, researchers have also posited that viral advertisements do not have a direct impact on the customers instead the impact is mediated by the customer's message process involvement and attitude towards the brand (Trivedi, 2017). Since the early studies in the research space, advertisers have been aware of the contextual character of human experience. However, contextual advertising, or the capacity to tailor material in real time depending on a customer's physical surroundings, has eluded practical applications so far (Mehra, 2012). Advertisers have not adapted mass marketing messaging to the physical environments of individual customers. The importance of the availability and processing of contextual information is often overlooked. But with the emergence of technologies such as Augmented reality, Virtual reality etc, the concept of viewing the physical environment is possible (Kumar & Gupta, 2016).

In the advertising world, augmented reality is the newest buzzword. Advertisers have discovered a novel and interactive approach to engage their audience with their brand through augmented reality. On the other hand, it puts consumers in control of the dialogue, allowing them to get the information they need, when and where they need it (Singh & Pandey, 2014). Augmented reality can play an important part in integrated marketing campaigns. Little is known about the practice and how to implement effective AR campaigns in the market. This paper discusses a framework that describes the active and passive ingredients of augmented reality, as well as the basic design decisions marketers must make. With the proper immersion of such technologies in marketing it is possible that the marketer can maximize customer engagement (Scholz & Smith, 2016). Augmented reality can be used to craft immersive brand experiences with interactive advertising. AR can play a significant role in integrated marketing programs. It can enhance various types of consumer engagement: user-brand engagement, user engagement, and user-bystander engagement etc. (Scholz & Smith, 2016).

There are researches that provide reasons why augmented reality advertising is one of the finest solutions for avoiding the clutter in traditional media when it comes to advertising (Singh & Pandey, 2014). Virtual reality (VR) in advertising and marketing has had a significant impact in customer engagement and on creating stimuli. The acceptance and use of such technologies have increased significantly and this paper takes this into account. It provides theoretical and practical implications and suggestions for further research and about the topic (Loureiro, Guerreiro, Eloy, Langaro, & Panchapakesan, 2019).

Virtual reality is used to give a more realistic experience to the customer about the product. The technology has the ability to bring experiential marketing to the people. There is a lot of promise for the future, and there are many commercial prospects for VR in the industry (Barnes, 2016). Academic research on AR and VR in retail is relatively fragmented, as are practical applications because of the interdisciplinary character of the issue and the various academic realms of inquiry, ranging from technology to marketing and management contexts (Bonetti, Warnaby, & Quinn, 2018).

The existing researches shows that advertising and the type of media used have its effects on consumer behavior and consumer engagement on various purchasing levels but they are focused on the general positive or negative impact of media (Sama, 2019). With the emergence of new technologies research needs to be conducted to measure the effectiveness of technology induced advertisements such as AR, VR etc over traditional media. Such research will help the advertisers to choose the right media to advertise for the particular product. The results of such research will also help them decide on the feasibility of investing in such advertisements.

Advertising Effectiveness

The effectiveness of an advertisement has been explained as the consumer liking the advertisements which would then result in purchase behavior (Rimoldi, 2008). According to researches media interaction has a significant impact on influencing the purchase intention and behavior of a consumer which can be considered as an impact on advertisement effectiveness (Calder, Malthouse, & Schaedel, 2009). and the success of an advertisement can be determined by taking various factors such as medium selection and consumer participation with the media into consideration (Mehta, 2000). These factors along with awareness and purchase intention have been observed to have impact on the purchase decision of the consumer (Siegel, & Ziff-Levine, 1990; Bendixen, 1993).

TV advertisement has a significant impact on Awareness, Interest and Conviction stages of consumer behavior. TV is considered as a go to medium for sending regular reminders to the consumers. At the same time print media such as Newspaper and magazine advertisements is observed to have a significant influence on awareness, interest and consideration (Sama, 2019). The rise of interactive advertising emphasises the importance of the consumer in determining the effects and efficacy of advertisements. New technologies such as the Internet have become more widely adopted. The consumer's active engagement has significant consequences for how advertising effects are assessed, as well as how different metrics are perceived (Pavlou & Stewart, 2000). For certain types of consumers, the classic linear structure of conventional ads is really superior to interactive advertising. But the effectiveness of these at engaging customers is yet to be proved (Bezjian-Avery, Calder, & Iacobucci, 1998). Researchers have yet to properly define the boundaries between virtual, augmented and mixed reality technologies and how they can support customer experiences. Technology is having a significant impact on consumer engagements and experiences but researchers are yet to fully understand what this means for businesses and consumers in the digital age (Flavián, Ibáñez-Sánchez, & Orús, 2019).

Sephora's mobile AR shopping app has been used to examine how augmented reality might strengthen customer-brand interactions. It is discovered that a close and intimate relationship may form as a result of how the branded AR software is merged into consumers' intimate environment and sense of self (Scholz, & Duffy, 2018).

The impact of online and traditional advertising on customer purchasing behavior for branded clothing have been illustrated in researches and according to it both types of marketing have no direct impact on consumer purchasing behavior, while traditional media has an indirect impact on consumer purchasing behavior. The absence of confidence and industry representation in this medium contributed to the lower impact of internet media (Afzal & Khan, 2015). Advertising on the internet has to do with the intention of the consumer. The user's usage ranges from extremely goal-directed to playful which will influence the types of ads that online users will notice and process. These characteristics are thought to have a negative impact on ad processing as in the case of low skill and high anxiety (Rodgers & Thorson, 2000).

The use of immersive technologies has changed the consumption environment in which retailers provide services. Widespread adoption of AI-enabled applied technology could change both business models and consumer behavior. When applied technology that enables immersive experiences is integrated into consumer engagement tactics, it effectively enhances consumer-brand engagement (Sung, Bae, Han, & Kwon, 2021).

Consumer Buying Stage

Consumer engagement is a multidimensional construct that consists of three main dimensions – cognitive, emotional and behavioral. Consumers who were formerly uninformed and inactive have evolved into consumers who are active, social and involved in corporate activities. This change has been studied in various research papers but still the dimensionality is one angle that has been left out (Kuvykaitė & Tarutė, 2015). Various models can be used to investigate the process of purchase decision by the consumer researchers have studied the process which the consumer undergoes during the buying behavior. Most of the studies depend on the leading models such as AIDA (Lewis, 1898), AIDCA (Kitson, 1921) and Steiner model (Lavidge & Steiner, 1961) and researches have indicated that the model is useful to measure the effectiveness of media advertisements on consumer behavior when considered from the perspective of modern day advertising.

Interest and Desire are the two stages in focus for this study. Interest can be generated in a consumer by projecting creative, relevant and quality advertisements. The advertisements that align with the viewers interest that is the degree of relevancy and interest of the customers towards the advertisement. (Sachdeva, 2015). The research by Tang and Chan (2017) indicated that generation Y pays more attention to the advertisements which aligned with their personal interests rather than according to the need of the product when it comes to online advertisements.

Desire is defined as an active component which is influenced by customer emotions and attitudes (Rajasekhar & Makesh, 2013). Desire can be generated in the customers with products which offers affordability and which caters to the customers' needs and such products convinces the customers in creating the desire make the purchase (Bradley, 2003). The purchase decision of the customer is the result of desire which then again can be explained as the consequence of accurate and satisfactory information (Callen-Marchione & Ownbey, 2008). Advertisements are the source to gather information about the product before making the purchase decision, but it has an impact of creating interest in the consumers especially among rural consumers (Sivanesan, 2014).

Research Gap

Marketers are looking for newer ways to catch the interest of customers. Technology-induced advertisements such as AR, VR and interactive ones are being used to create interest in customers. The advertisement space has expanded in the past few years with the boom of social media. Such technology induced advertisements are significantly more expensive than traditional ones.

Problem Statement

The research problem which the study seeks to understand is the effectiveness of AR and VR technology induced advertisements on interest and desire stages of consumer buying process when compared to traditional advertisements.

Research Objectives

1. To analyze the impact of both traditional and AR and VR advertisements on interest aspect of consumer buying behavior.
2. To analyze the impact of traditional and AR and VR advertisements on desire aspect of consumer buying behavior.
3. To analyze the impact of both traditional and AR and VR advertisements on different demographic variables.

4. To identify the factors contributing to interest and desire stages of consumer buying behavior in both traditional and AR and VR advertisements.
5. To understand the demographic group wise impact on interest and desire stages of consumer buying behavior for traditional and AR and VR advertisements.

Theoretical Background

The AIDA model traces the customer journey through awareness, interest, desire and action. awareness is the first stage for creating brand awareness or affiliation with the product in the customer. AIDA interest is the second stage where once the customer is aware of the product, the advertisement should generate sufficient interest to urge the consumer to begin additional research. Desire is the third stage which builds an emotional connection with the products and moves from 'liking' the product to 'wanting' it. Action is the fourth stage and the final goal of the marketer where once desire is generated in the customers mind, the customer is pushed into interacting with the company and making the purchase decision (Hanlon, 2021). The AIDA model is a hierarchy of effects model, that is to reach the final stage the customer should go through all the stages before it. Without being aware of the product and building desire and interest, a customer will not be able to make the purchase decision (Figure 1).

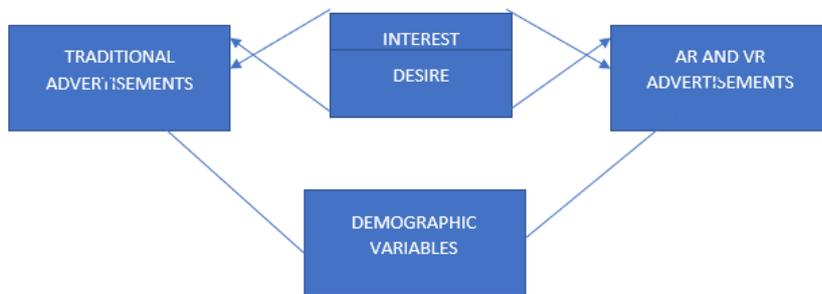


Figure 1. Conceptual framework

FINDINGS

Objective 1:

To analyze the impact of traditional advertisements and AR and VR advertisements on interest and desire stages of consumer buying behavior.

Table 1
Descriptive Statistics

Descriptive Statistics	N	Minimum	Maximum	Mean	Std. Deviation
AR and VR advertisements are very engaging.	300	1	4	1.88	0.801
AR and VR advertisements catches my attention.	300	1	4	1.90	0.809
AR and VR advertisements builds interest in me regarding the product.	300	1	4	1.92	0.763
Advertisements that use technologies like AR and VR are an important source of information regarding products.	300	1	4	1.94	0.806
AR and VR advertisements creates a positive impression about the product.	300	1	5	1.97	0.825
AR and VR advertisements educate me about the products.	300	1	5	1.97	0.850
AR and VR advertisements effectively convinces me about the benefits of the product.	300	1	4	2.03	0.805
AR and VR advertisements helps me in making up my mind for the purchase.	300	1	5	2.12	0.831
AR and VR advertisements change my perception about products.	300	1	4	2.14	0.796

Descriptive Statistics	N	Minimum	Maximum	Mean	Std. Deviation
AR and VR advertisements convinces me that the product is beneficial to me.	300	1	5	2.14	0.915
AR and VR advertisements helps me in differentiate between comparable products.	300	1	4	2.15	0.829
AR and VR advertisements communicates the advertisers' intentions effectively.	300	1	5	2.15	0.846
AR and VR advertisements prompts me to try the advertised product.	300	1	4	2.18	0.854
AR and VR advertisements prompt me to buy the advertised product.	300	1	5	2.21	0.961
I usually have a strong preference towards products advertised using AR and VR advertisements.	300	1	5	2.24	1.061
I trust products that use AR and VR advertisements.	300	1	5	2.27	1.004
Traditional advertisements communicate the advertisers' intentions effectively.	300	1	5	2.83	1.000
Traditional advertisements educate me about the products.	300	1	5	2.85	0.976
Traditional advertisements create a positive impression about the product.	300	1	5	2.86	0.977
Traditional format of advertisements is an important source of information regarding products. Ex: IKEA furniture.	300	1	5	2.87	1.087
Traditional advertisements effectively convince me about the benefits of the product.	300	1	5	2.90	1.002
Traditional advertisements build interest in me regarding the product.	300	1	5	2.91	0.919
Traditional advertisements help me in differentiate between comparable products.	300	1	5	2.93	1.006
Traditional advertisements change my perception about products.	300	1	5	2.96	1.029
Traditional advertisements help me in making my mind for the purchase.	300	1	5	2.98	1.001
Traditional advertisements catch my attention.	300	1	5	3.00	0.945
Traditional advertisements are very engaging.	300	1	5	3.00	0.957
I trust products that use traditional advertisements.	300	1	5	3.00	1.013
I usually have a strong preference towards products advertised using traditional advertisements.	300	1	5	3.09	0.969
Traditional advertisements convince me that the product is beneficial to me.	300	1	5	3.10	0.913
Traditional advertisements prompt me to try the advertised product.	300	1	5	3.10	0.981
Traditional advertisements prompt me to buy the advertised product.	300	1	5	3.11	0.937

Interpretation

Considering the data collected on the level of agreement on the statements measuring the interest and desire stages of consumer buying behavior and running descriptive statistics, the test result (Table 1) showed that the AR and VR advertisements had a mean score closer to agreement of the statements, when compared to traditional advertisements which indicates that impact of AR and VR advertisements on the customers buying behavior as it is more effective in creating desire and interest in the customers' mind comparatively.

Objective 2:

To analyze the impact of demographic variables on experience of using traditional and AR and VR advertisements

Hypothesis

- H₁*: Age variable have a significant association with the preference of the consumer between traditional and AR and VR advertisements.
- H₂*: Education variable have a significant association with the preference of the consumer between traditional and AR and VR advertisements.
- H₃*: Gender variable have a significant association with the preference of the consumer between traditional and AR and VR advertisements.
- H₄*: Region variable have a significant association with the preference of the consumer between traditional and AR and VR advertisements.

Analysis

Table 2
Cross Tab on Age and Experience with Traditional Advertisements

Age		1	2	3	4	5	Total
Age 18–30	Count	20	92	106	18	1	237
	% Within Age	8.4%	38.8%	44.7%	7.6%	0.4%	100.0%
31–40	Count	8	11	6	8	0	33
	% Within Age	24.2%	33.3%	18.2%	24.2%	0.0%	100.0%
41–50	Count	0	0	2	1	0	3
	% Within Age	0.0%	0.0%	66.7%	33.3%	0.0%	100.0%
51–60	Count	3	15	7	2	0	27
	% Within Age	11.1%	55.6%	25.9%	7.4%	0.0%	100.0%
Total	Count	31	118	121	29	1	300
	% Within Age	10.3%	39.3%	40.3%	9.7%	0.3%	100.0%

Table 3
Chi-Squared on Age and Experience with Traditional Advertisements

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.240 ^a	4	0.055
Likelihood Ratio	9.667	4	0.046
Linear-by-Linear Association	6.098	1	0.014
N of Valid Cases	300		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 0.48.

Table 4
Cross Tab on Age and Experience with AR and VR Advertisements

Age		1	2	3	4	5	Total
Age 18–30	Count	0	5	54	107	71	237
	% Within Age	0.0%	2.1%	22.8%	45.1%	30.0%	100.0%
31–40	Count	0	6	17	3	7	33
	% Within Age	0.0%	18.2%	51.5%	9.1%	21.2%	100.0%
41–50	Count	0	0	0	0	3	3
	% Within Age	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
51–60	Count	1	0	9	8	9	27
	% Within Age	3.7%	0.0%	33.3%	29.6%	33.3%	100.0%
Total	Count	1	11	80	118	90	300
	% Within Age	0.3%	3.7%	26.7%	39.3%	30.0%	100.0%

Table 5
Chi-Squared on Age and Experience with AR and VR Advertisements

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	59.357 ^a	12	0.000
Likelihood Ratio	48.166	12	0.000
Linear-by-Linear Association	2.024	1	0.155
N of Valid Cases	300		

a. 10 cells (50.0%) have expected count less than 5. The minimum expected count is 0.01.

Table 6
Cross Tab on Education and Experience with Traditional Advertisements

		Education	1	2	3	4	5	Total
Education	Up to 10th	Count	0	4	4	1	0	
		% Within Education	0.0%	44.4%	44.4%	11.1%	0.0%	100.0%
	Up to 12th	Count	0	5	7	3	0	15
		% Within Education	0.0%	33.3%	46.7%	20.0%	0.0%	100.0%
	Graduate	Count	21	59	39	9	1	129
		% Within Education	16.3%	45.7%	30.2%	7.0%	0.8%	100.0%
	Post Graduate	Count	10	50	71	16	0	147
		% Within Education	6.8%	34.0%	48.3%	10.9%	0.0%	100.0%
Total		Count	31	118	121	29	1	300
		% Within Education	10.3%	39.3%	40.3%	9.7%	0.3%	100.0%

Table 7
Chi-Squared on Education and Experience with Traditional Advertisements

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	21.222 ^a	12	0.047
Likelihood Ratio	23.500	12	0.024
Linear-by-Linear Association	1.085	1	0.298
N of Valid Cases	300		

a. 10 cells (50.0%) have expected count less than 5. The minimum expected count is 0.03.

Table 8
Cross Tab on Education and Experience with AR and VR Advertisements

		Education	1	2	3	4	5	Total
Education	Up to 10th	Count	0	0	6	0	3	9
		% Within Education	0.0%	0.0%	66.7%	0.0%	33.3%	100.0%
	Up to 12th	Count	0	2	3	5	5	15
		% Within Education	0.0%	13.3%	20.0%	33.3%	33.3%	100.0%
	Graduate	Count	0	6	39	51	33	129
		% Within Education	0.0%	4.7%	30.2%	39.5%	25.6%	100.0%
	Post Graduate	Count	1	3	32	62	49	147
		% Within Education	0.7%	2.0%	21.8%	42.2%	33.3%	100.0%
Total		Count	1	11	80	118	90	300
		% Within Education	0.3%	3.7%	26.7%	39.3%	30.0%	100.0%

Table 9
Chi-Squared on Education and Experience with AR and VR Advertisements

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	19.636 ^a	12	.074
Likelihood Ratio	21.016	12	.050
Linear-by-Linear Association	4.096	1	.043
N of Valid Cases	300		

a. 12 cells (60.0%) have expected count less than 5. The minimum expected count is 0.03.

Table 10
Cross Tab on Gender and Experience with Traditional Advertisements

Gender		1	2	3	4	5	Total
Gender Female	Count	13	46	68	16	1	144
	% Within Gender	9.0%	31.9%	47.2%	11.1%	0.7%	100.0%
Male	Count	18	72	53	13	0	156
	% Within Gender	11.5%	46.2%	34.0%	8.3%	0.0%	100.0%
Total	Count	31	118	121	29	1	300
	% Within Gender	10.3%	39.3%	40.3%	9.7%	0.3%	100.0%

Table 11
Chi-squared on Gender and Experience with Traditional Advertisements

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.240 ^a	4	0.055
Likelihood Ratio	9.667	4	0.046
Linear-by-Linear Association	6.098	1	0.014
N of Valid Cases	300		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 0.48.

Table 12
Cross Tab on Gender and Experience with AR and VR Advertisements

Gender	1	2	3	4	5	Total	
Female	Count	0	5	51	46	42	144
	% Within Gender	0.0%	3.5%	35.4%	31.9%	29.2%	100.0%
Male	Count	1	6	29	72	48	156
	% Within Gender	0.6%	3.8%	18.6%	46.2%	30.8%	100.0%
Total	Count	1	11	80	118	90	300
	% Within Gender	0.3%	3.7%	26.7%	39.3%	30.0%	100.0%

Table 13
Chi-squared on Gender and AR and VR Advertisements

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	12.810 ^a	4	0.012
Likelihood Ratio	13.302	4	0.010
Linear-by-Linear Association	2.502	1	0.114
N of Valid Cases	300		

a. 2 cells (20.0%) have expected count less than 5. The minimum expected count is 0.48.

Table 14
Cross tab on Region and Experience with Traditional Advertisements

Region		1	2	3	4	5	Total
East	Count	4	12	16	1	0	33
	% Within Region	12.1%	36.4%	48.5%	3.0%	0.0%	100.0%
North	Count	8	27	22	9	0	66
	% Within Region	12.1%	40.9%	33.3%	13.6%	0.0%	100.0%
South	Count	15	68	70	14	1	168
	% Within Region	8.9%	40.5%	41.7%	8.3%	0.6%	100.0%
West	Count	4	11	13	5	0	33
	% Within Region	12.1%	33.3%	39.4%	15.2%	0.0%	100.0%
Total	Count	31	118	121	29	1	300
	% Within Region	10.3%	39.3%	40.3%	9.7%	0.3%	100.0%

Table 15
Chi-Squared on Region and Experience with Traditional Advertisements

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7.330 ^a	12	0.835
Likelihood Ratio	8.029	12	0.783
Linear-by-Linear Association	.585	1	0.444
N of Valid Cases	300		

a. 8 cells (40.0%) have expected count less than 5. The minimum expected count is 0.11.

Table 16
Cross Tab On Region And Experience With AR And VR Advertisements

Region		1	2	3	4	5	Total
East	Count	0	0	7	12	14	33
	% Within Region	0.0%	0.0%	21.2%	36.4%	42.4%	100.0%
North	Count	0	7	12	21	26	66
	% Within Region	0.0%	10.6%	18.2%	31.8%	39.4%	100.0%
South	Count	0	4	61	71	32	168
	% Within Region	0.0%	2.4%	36.3%	42.3%	19.0%	100.0%
West	Count	1	0	0	14	18	33
	% Within Region	3.0%	0.0%	0.0%	42.4%	54.5%	100.0%
Total	Count	1	11	80	118	90	300
	% Within Region	0.3%	3.7%	26.7%	39.3%	30.0%	100.0%

Table 17
Chi-Squared on Region and Experience with AR and VR Advertisements

Chi-Square Tests	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	55.197 ^a	12	0.000
Likelihood Ratio	58.936	12	0.000
Linear-by-Linear Association	0.106	1	0.745
N of Valid Cases	300		

a. 7 cells (35.0%) have expected count less than 5. The minimum expected count is 0.11.

Findings

Considering the Age of the respondents, the rating was recorded higher for traditional advertisements with increase in age of the respondents. 75.1% of the respondents in the age group 18–30 scored 4 and 5 with respect to their experience with AR and VR advertisements and only 8% of the respondents in the same age group rated traditional advertisements in the same area. At the same time the age group between 51–60 years gave almost equal rating of 4 and 5 for both traditional and AR and VR advertisement's

- Considering the educational qualifications of the respondents, the respondents preferred AR and VR advertisements over traditional advertisements.

- Considering the gender of the respondents, both male and female respondents preferred AR and VR advertisements over traditional advertisements
- Considering the region variable as well, all regions preferred AR and VR advertisements over traditional advertisements.

Interpretation

The age variable and gender variable have a significant association with respondents selecting between traditional and AR and VR advertisements, hence we reject null hypothesis H_1 and H_3 and accept the alternate hypothesis that there is a significant association with the preference of the consumer between traditional and AR and VR advertisements. At the same time the region variable and education variable does not have a significant association with respondents selecting between traditional and AR and VR advertisements, hence we reject alternate hypothesis H_2 and H_4 and accept the null hypothesis that there is a significant association with the preference of the consumer between traditional and AR and VR advertisements.

Objective 3

To analyze the correlation between demographic variables of age, income, and education with experience with traditional and AR and VR advertisements.

Hypothesis

H_1 : There is a significant relation between demographic age variables with experience of traditional and AR and VR advertisements.

H_2 : There is a significant relation between demographic income variables with experience of traditional and AR and VR advertisements.

H_3 : There is a significant relation between demographic education variables with experience of traditional and AR and VR advertisements.

Table 18
Correlation Analysis

Correlations			How would you rate your experience with traditional advertisements?	How would you rate your experience with AR and VR advertisements?
Spearman's rho	Age	Correlation Coefficient	-0.071	-0.137*
		Sig. (2-tailed)	0.220	0.018
		<i>N</i>	300	300
	Education	Correlation Coefficient	0.123*	0.122*
		Sig. (2-tailed)	0.033	0.035
		<i>N</i>	300	300
	Income	Correlation Coefficient	-0.139*	0.023
		Sig. (2-tailed)	0.016	0.693
		<i>N</i>	300	300

Findings

- A slight negative correlation exists between age and experience with AR and VR advertisements.
- A slight positive correlation exists between education and with both the experience with AR and VR advertisements and with traditional advertisements.
- A slight negative correlation exists between income variable and experience with traditional advertisements.

Interpretation

From the analysis it is clear that the experience with newer technology induced advertisements that are AR and VR advertisements is inversely proportional to age and as age increases the experience rating decreases. So, it can reject null hypothesis and accept alternate hypothesis H_1 . Similarly, the experience with traditional advertisements is inversely correlated to income and as income increases the experience rating decreases. So, it can reject null hypothesis and accept alternate hypothesis H_3 . Considering the education variable, that the experience with newer technology induced advertisements that are AR and VR advertisements is positively correlated to education. That is, with higher education the experience rating with AR and VR advertisements increases.

Objective 4

To analyze the experience of gender variable groups with traditional and AR and VR advertisements.

Hypothesis

H_1 : There exists significant difference between the group (gender) and experience of using traditional advertisement.

H_2 : There exists significant difference between the group (gender) and experience of using new age media.

Findings

When considering the traditional advertisements, females have a higher mean score of 163.27 than males which is 138.71 and considering AR and VR advertisements males have a higher mean score of 158.57 than females which is 141.75 (Table 19).

Table 19
Mann-Whitney Test – Mean Score

	Gender	N	Mean Rank	Sum of Ranks
How would you rate your experience with traditional advertisements?	Female	144	163.27	23511.00
	Male	156	138.71	21639.00
	Total	300		
How would you rate your experience with AR and VR advertisements?	Female	144	141.75	20412.50
	Male	156	158.57	24737.50
	Total	300		

Table 20
Mann-Whitney U Test with Gender

Test Statistics	How would you rate your experience with traditional advertisements?	How would you rate your experience with AR and VR advertisements?
Mann-Whitney U	9393.000	9972.500
Wilcoxon W	21639.000	20412.500
Z	-2.624	-1.775
Asymp. Sig. (2-tailed)	0.009	0.076

a. Grouping Variable: Gender

Interpretation

As shown in Table 20, there is a significant difference between the group (gender) and experience of using traditional advertisements with a significant value of 0.009. So, we can reject the null hypothesis and accept alternate hypothesis H_1 that there exists significant difference between the group (gender) and experience of using traditional media. On the contrary the significance value for AR and VR advertisements is 0.076 so we can accept the null hypothesis H_2 that there exists no significant difference between the group (gender) and experience of using AR and VR advertisements and reject alternate hypothesis H_2 .

Objective 5

To analyze the demographic group wise impact on interest and desire stages of consumer behavior for traditional and AR and VR advertisements.

H_1 : There is a significant impact of age groups on interest variables of traditional advertisement.

H_2 : There is a significant impact of age groups on desire variables of traditional advertisement.

H_3 : There is a significant impact of age groups on interest variables of AR and VR advertisements.

H_4 : There is a significant impact of age groups on desire variables of new age media.

Analysis

1. Age vs Interest for traditional advertisements

Table 21
Mann-Whitney U TEST – Age vs Interest in Traditional Advertisement’s

	Group 1 (18–30, 31–40)	Group 2 (18–30, 41–50)	Group 3 (18–30, 51–60)
	Asymp. Sig. (2-tailed)	Asymp. Sig. (2-tailed)	Asymp. Sig. (2-tailed)
Traditional format of advertisements is an important source of information regarding products. Ex: IKEA furniture.	0.086	0.886	0.163
Traditional advertisements catch my attention.	0.256	0.039	0.328
Traditional advertisements are very engaging.	0.069	0.037	0.446
Traditional advertisements educate me about the products.	0.253	0.803	0.948
Traditional advertisements communicate the advertisers’ intentions effectively.	0.132	0.078	0.005

Findings

Considering the groups, statement 1 is significant for group 1, statements 2 and 3 are significant for group 2 and statements 5 is significant for group 3. Hence, it can reject the null hypothesis and accept the alternate hypothesis H_1 (Table 21).

Interpretation

Traditional advertisements create more interest in the 40 years and above older generation rather than the younger generation.

2. Age vs Desire Traditional Advertisements

Table 22
Mann-Whitney U TEST – Age vs Desire in Traditional Advertisement’s

	Group 1 (18–30, 31–40)	Group 2 (18–30, 41–50)	Group 3 (18–30, 51–60)
	Asymp. Sig. (2-tailed)	Asymp. Sig. (2-tailed)	Asymp. Sig. (2-tailed)
Traditional advertisements builds interest in me regarding the product.	0.857	0.771	0.073
Traditional advertisements creates a positive impression about the product.	0.144	0.664	0.014
Traditional advertisements change my perception about products.	0.979	0.056	0.601
Traditional advertisements effectively convince me about the benefits of the product.	0.419	0.771	0.232
I usually have a strong preference towards products advertised using traditional advertisements.	0.376	0.818	0.001
Traditional advertisements helps me in differentiate between comparable products.	0.887	0.781	0.271

	Group 1 (18–30, 31–40) Asymp. Sig. (2-tailed)	Group 2 (18–30, 41–50) Asymp. Sig. (2-tailed)	Group 3 (18–30, 51–60) Asymp. Sig. (2-tailed)
I trust products that use traditional advertisements.	0.282	0.029	0.000
Traditional advertisements convinces me that the product is beneficial to me.	0.539	0.013	0.191
Traditional advertisements prompts me to try the advertised product.	0.457	0.039	0.086
Traditional advertisements prompt me to buy the advertised product.	0.998	0.040	0.330
Traditional advertisements helps me in making my mind for the purchase.	0.673	0.050	0.037

Findings

Considering the groups, statement 3,7,8,9,10 and 11 are significant for group 2 and statements 1,2,5,7,9 and 11 are significant for group 3. Hence, it can reject the null hypothesis and accept the alternate hypothesis H_2 (Table 22).

Interpretation

Traditional advertisements create more desire in older generation rather than the younger generation.

3. Age vs Interest for AR and VR advertisements

Findings

Considering the groups, statement 2 and 3 are significant for group 1, statements 1, 4, 5, 6, and 7 are significant for group 2 and statements 3, 5, 6, and 7 are significant for group 3. Hence, we can reject the null hypothesis and accept the alternate hypothesis H_3 (Table 23).

Interpretation

AR and VR advertisements create more Interest in younger generation rather than the older generation.

Table 23

Mann-Whitney U TEST – Age vs Interest in AR and VR advertisement's

AR and VR advertisements	Group 1 (18–30, 31–40) Asymp. Sig. (2-tailed)	Group 2 (18–30, 41–50) Asymp. Sig. (2-tailed)	Group 3 (18–30, 51–60) Asymp. Sig. (2-tailed)
Advertisements that use technologies like AR and VR are an important source of information regarding products.	0.792	0.032	0.131
AR and VR advertisements catches my attention.	0.008	0.516	0.177
AR and VR advertisements are very engaging.	0.001	0.454	0.067
AR and VR advertisements educate me about the products.	0.318	0.033	0.899
AR and VR advertisements builds interest in me regarding the product.	0.412	0.021	0.001
AR and VR advertisements creates a positive impression about the product.	0.675	0.024	0.074
AR and VR advertisements prompts me to try the advertised product.	0.945	0.012	0.038

4. Age vs Desire for AR and VR advertisements

Findings

Considering the groups, statement 1, 2, 4, 6, 7, and 8 are significant for group 1, statements 3, 4, 8, and 9 are significant for group 2. Hence, we can reject the null hypothesis and accept the alternate hypothesis H_3 (Table 24).

Table 24
Mann-Whitney U TEST – Age vs Desire in AR and VR Advertisement’s

AR and VR advertisements	Group 1 (18–30, 31–40)	Group 2 (18–30, 41–50)	Group 3 (18–30, 51–60)
AR and VR advertisements change my perception about products.	0.003	0.866	0.313
AR and VR advertisements communicates the advertisers’ intentions effectively.	0.000	0.841	0.631
AR and VR advertisements effectively convinces me about the benefits of the product.	0.319	0.012	0.370
I usually have a strong preference towards products advertised using AR and VR advertisements.	0.043	0.029	0.115
AR and VR advertisements helps me in differentiate between comparable products.	0.082	0.798	0.514
I trust products that use AR and VR advertisements.	0.030	0.723	0.664
AR and VR advertisements convinces me that the product is beneficial to me.	0.032	0.979	0.134
AR and VR advertisements prompt me to buy the advertised product.	0.025	0.020	0.887
AR and VR advertisements helps me in making up my mind for the purchase.	0.055	0.016	0.847

Interpretation

AR and VR advertisements create more desire in younger generation rather than the older generation.

CONCLUSION

This study examined the impact of technology induced advertisements over traditional advertisements on creating interest and desire in the consumer’s mind. It also gives an idea to the managers as to which factors to be kept in mind when deploying advertisements and the return of investment expected. AR and VR based advertisements are entirely different from traditional advertisements and it has the power to create a higher level of interest and desire in the customers mind, but it is important for marketers to understand whom to cater what kind of advertisement for maximum returns.

The significance of technology induced advertisements such as AR and VR advertisements over traditional advertisements is a topic that marketers should examine and analyze before deciding whether or not to invest in AR and VR advertisements and what the return on investment will be. With the above study, it was found that:

- AR and VR advertisements are more effective than traditional advertisements in terms of generating consumer interest and desire, particularly among the younger population. In marketing terms, the ROI will be higher If AR and VR commercials are used instead of traditional advertisements.
- The older generation prefers traditional advertisements even though they are attracted to the new technology induced advertisements.
- When it comes to the age variable, there is a significant difference in the impact of traditional and AR and VR advertisements on consumer behavior among various age groups, with the younger demographic (18–30) preferring AR and VR advertisements over traditional advertisements and the older demographic preferring traditional advertisements.
- The younger generation is more accepting and are attracted towards new types advertisements.
- When it comes to gender variable, females prefer traditional advertisements over AR and VR advertisements and Males prefer AR and VR advertisements over traditional advertisements.

RECOMMENDATIONS

- Companies should invest on AR and VR and other technology induced advertisements as it is the future and will help creating better ROI for the company.
- For the time being marketers should focus on catering AR and VR induced advertisements to the younger population and expose the older generation to traditional advertisements.

- The types of advertisements should be catered to the specific demographics according to the acceptance and preference of the type of advertisement.
- There is a significant difference in impact of the type of advertisements, so according to that companies should use traditional advertisements for products targeting women and AR and VR advertisements for products targeting men.

REFERENCES

- Afzal, S., & Khan, J. R. (2015). Impact of online and conventional advertisement on consumer buying behavior of branded garments. *Asian Journal of Management Sciences & Education*, 4(1), 125–135.
- Ayanwale, A. B., Alimi, T., & Ayanbimipe, M. A. (2005). The influence of advertising on consumer brand preference. *Journal of Social Sciences*, 10(1), 9–16. <https://doi.org/10.1080/09718923.2005.11892453>
- Barnes, S. J. (2016). Understanding virtual reality in marketing: Nature, implication and potential. *SSRN Electronic Journal*. <https://dx.doi.org/10.2139/ssrn.2909100>
- Bendixen, M. (1993). Advertising effects and effectiveness. *European Journal of Marketing*, 27(10), 19–32. <https://doi.org/10.1108/03090569310045861>
- Bezjian-Avery, A., Calder, B., & Iacobucci, D. (1998). New media interactive advertising vs. traditional advertising. *Journal of Advertising Research*, 38(4), 23–32.
- Bonetti, F., Warnaby, G., & Quinn, L. (2018). Augmented reality and virtual reality in physical and online retailing: A review, synthesis, and research agenda. In T. Jung, & M. T. Dieck (Eds.). *Augmented reality and virtual reality: Empowering human, place and business* (pp. 119–132). Switzerland: Springer-Verlag London Ltd.
- Bradley, J. (2003). *The marketing hierarchy of effects*. Retrieved from <https://smallbusiness.chron.com/marketing-hierarchy-affects-59713.html>
- Calder, B. J., Malthouse, E. C., & Schaedel, U. (2009). An experimental study of the relationship between online engagement and advertising effectiveness. *Journal of Interactive Marketing*, 23(4), 321–331. <https://doi.org/10.1016/j.intmar.2009.07.002>
- Callen-Marchione, K. S., & Ownbey, S. F. (2008). Associations of unethical consumer behavior and social attitudes. *Journal of Fashion Marketing and Management*, 12(3), 365–383. <http://dx.doi.org/10.1108/13612020810889317>
- Chithra, T. V., & Kothai, S. (2014). Consumers attitude on television advertisement. *International Journal of Commerce, Business, and Management*, 3 (6), 819–823.
- Ducoffe, R. H. (1995). How consumers assess the value of advertising. *Journal of Current Issues and Research in Advertising*, 17(1), 1–18. <https://doi.org/10.1080/10641734.1995.10505022>
- Flavián, C., Ibáñez-Sánchez, S., & Orús, C. (2019). The impact of virtual, augmented and mixed reality technologies on the customer experience. *Journal of Business Research*, 100, 547–560. <https://doi.org/10.1016/j.jbusres.2018.10.050>
- Hanlon, A. (2021, December 09). *The AIDA model*. Retrieved from www.smartinsights.com/traffic-building-strategy/offer-and-message-development/aida-model/
- Kitson, H. D. (1921). *The mind of the buyer: A psychology of selling*. New York: NY: The Macmillan Company.
- Kotler, P., Keller, K. L., Koshy, A., & Jha, M. (2009). *Marketing management: A South Asian perspective, 13th Edition*. London, UK: Pearson Prentice Hall.
- Kumar, V., & Gupta, S. (2016). Conceptualizing the evolution and future of advertising. *Journal of Advertising*, 45(3), 302–317. <https://doi.org/10.1080/00913367.2016.1199335>
- Kuvykaitė, R., & Tarutė, A. (2015). A critical analysis of consumer engagement dimensionality. *Procedia - Social and Behavioral Sciences*, 213, 654–658. DOI:10.1016/j.sbspro.2015.11.468
- Lavidge, R. J., & Steiner, G. A. (1961). A model for predictive measurements of advertising effectiveness. *Journal of Marketing*, 25(6), 59–62. <https://doi.org/10.2307/1248516>
- Lewis, E. S. E. (1898). *AIDA sales funnel*. retrieved from <https://www.provenmodels.com/547/aida-sales-funnel/elias-st.-elmo-lewis>

- Loureiro, S. M. C., Guerreiro, J., Eloy, S., Langaro, D., & Panchapakesan, P. (2019). Understanding the use of virtual reality in marketing. *Journal of Business Research*, *100*, 514–530. <https://doi.org/10.1016/j.jbusres.2018.10.055>
- Mehra, P. (2012). Context-aware computing: Beyond search and location-based services. *IEEE Internet Computing*, *16*(2), 12–16. <https://doi.org/10.1109/MIC.2012.31>
- Mehta, A. (2000). Advertising attitudes and advertising effectiveness. *Journal of Advertising Research*, *40*(3), 67–72. <https://doi.org/10.2501/JAR-40-3-67-72>
- Pavlou, P. A., & Stewart, D. W. (2000). Measuring the effects and effectiveness of interactive advertising: A research agenda. *Journal of Interactive Advertising*, *1*(1), 62–78.
- Rajasekhar, S., & Makesh, D. (2013). Impact of advertising on brand preference of high involvement products. *International Journal of Commerce, Business, and Management*, *2*(4), 202–211.
- Rimoldi, O. (2008). *The impact of 'likeability' on advertising effectiveness: To what extent does liking an advert have a persuasive influence on consumer behavior?* Thesis. Retrieved from https://psychology.nottingham.ac.uk/staff/ddc/c8cxpa/further/Dissertation_examples/Rimoldi_08.pdf
- Rodgers, S., & Thorson, E. (2000). The interactive advertising model: How people perceive and process interactive ads. *Journal of Interactive Advertising*, *1*(1), 42–61. <http://dx.doi.org/10.1080/15252019.2000.10722043>
- Sachdeva, R. (2015). Assessment of advertising effectiveness: A scale validation exercise. *SAMVAD: International Journal of Management*, *IX*, 15–25. <http://dx.doi.org/10.53739/samvad%2F2015%2Fv9%2F98339>
- Sama, R. (2019). Impact of media advertisements on consumer behavior. *Journal of Creative Communications*, *14* (1), 54–68. <https://doi.org/10.1177%2F0973258618822624>
- Scholz, J., & Duffy, K. (2018). We ARE at home: How augmented reality reshapes mobile marketing and consumer-brand relationships. *Journal of Retailing and Consumer Services*, *44*, 1–59. <http://dx.doi.org/10.1016/j.jretconser.2018.05.004>
- Scholz, J., & Smith, A. N. (2016). Augmented reality: Designing immersive experiences that maximize consumer engagement. *Business Horizons*, *59*(2), 149–161. <http://dx.doi.org/10.1016/j.bushor.2015.10.003>
- Siddiqui, M. S., Johri, A., Shoeb, A., Saxena, A. K., Siddiqui, J. H., & Usmani, K. (2021). A study on the influence and impact of advertising to consumer purchase behavior in rural areas of India. *Academy of Strategic Management Journal*, *20*(5), 1–22.
- Siegel, W., & Ziff-Levine, W. (1990). Evaluating tourism advertising campaigns: Conversion vs. advertising tracking studies. *Journal of Travel Research*, *28*(3), 1–55. <https://doi.org/10.1177%2F004728759002800312>
- Singh, B. (2012). Impact of advertisement on the brand preference. *Asia Pacific Journal of Marketing & Management Review*, *2*(2), 147–160.
- Singh, P., & Pandey, M. (2014). Augmented reality advertising: An impactful platform for new age consumer engagement. *Journal of Business and Management*, *16*(2), 24–28.
- Sivanesan, D. (2014). Impact of brand image and advertisement on consumer buying behavior – Comparative study on rural and urban consumers. *International Journal of Research in Management & Business Studies*, *1*(2), 73–80.
- Smyth, D. (2021, December 21). *Advertising life cycle of a product*. Retrieved from <https://smallbusiness.chron.com/advertising-life-cycle-product-1510.html>
- Sung, E. C., Bae, S., Han, D. I. D., & Kwon, O. (2021). Consumer engagement via interactive artificial intelligence and mixed reality. *International Journal of Information Management*, *60*, 102382. <https://doi.org/10.1016/j.ijinfomgt.2021.102382>
- Tang, M. J., & Chan, E. T. (2017). The impact of online advertising on generation Y's purchase decision in Malaysia. *World Academy of Science, Engineering and Technology, International Journal of Humanities and Social Sciences*, *11*(4), 973–981. <https://doi.org/10.5281/zenodo.1130451>
- Trivedi, J. P. (2017). The effect of viral marketing messages on consumer behavior. *Journal of Management Research*, *17*(92), 84–98.
- What is advertising? Definition of advertising, advertising meaning (2022, February). *The Economic Times*. Retrieved from The Economic Times.: <https://economictimes.indiatimes.com/definition/advertising>

RELATIONSHIP BETWEEN EMOTIONAL INTELLIGENCE AND SPIRITUAL INTELLIGENCE IN ENHANCING JOB SATISFACTION AMONGST ACADEMICIANS: A CONCEPTUAL FRAMEWORK

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ABSTRACT

There have been many studies conducted to identify the factors to create successful and efficient academicians. Not only on resource factors but the behavioral aspects of individual can also be an ideal contributor for the same. Positive emotions and thoughts can do wonders in one's career. It can possibly enhance creativity and innovations. Successful academicians should not only master in the respective discipline but also has to be passionate about it and should be a pioneer to deal with changing scenarios being dynamic. They should know to deal with the people surrounding them, viz, students and other related stakeholders. Emotions affect the behavior and attitude of individuals. Intelligence and spiritual intelligence are two factors can impact the behavior of a person which in turn can affect their job satisfaction. The purpose of the study is to construct a conceptual framework to relate Relationship between emotional intelligence and spiritual intelligence in enhancing job satisfaction amongst academicians.

Keywords: *Emotional intelligence, spiritual intelligence, job satisfaction, academicians.*

INTRODUCTION

The performance of academicians has been undergoing changes due to the implementation technology of and other factors. The psychological well-being is one major factor for their larger performance and service. Many studies have revealed the relevance of spiritual intelligence and emotional intelligence on the performance and job satisfaction of the academicians. The fact that the contribution of academicians towards the society cannot be ignored. Thus, studies are conducted to identify the factors that helps them to gain job satisfaction.

Emotional intelligence (EQ) is the ability to recognize, understand, and regulate our emotions and to respond to those emotions in constructive ways that allow us to communicate, empathize with others, and overcome challenges. It is the ability to regulate our emotions according to the existing situations. In other words, it is the ability to manage our emotions before our emotions manage us. The five components of EQ are:

1. Self-awareness - The ability to recognize and understand our own emotions.
2. Self-regulation - The ability to regulate and manage our emotions.
3. Social skills - The ability to interact well with others.
4. Empathy - The ability to understand how others are feeling.
5. Motivation - The ability to get motivated through internal rewards and not just from material benefits.

Emotional management comprises of managing our emotions according to the situations existing in our surrounding. It involves the strategic analysis of the existing conditions and making your emotions adapt to the same. It is relevant for the workforce to have an effective emotional management process to be successfully productive and efficient in their respective job profiles. The proper realization of all the five components of EQ can facilitate a better emotional management.

Spiritual intelligence is defined as the human capacity to ask questions about the ultimate meaning of life and the integrated relationship between us and the world in which we live. It results in an increase

in psychological well-being of individuals as well as having a goal in their life (Sahebalzamani, Faha-rani, Abasi, & Talebi, 2013).

Emotional intelligence (EI) is defined as an ability to identify, understand, experience and express human emotions in a healthy productive way. The benefits of demonstrating high frequency of emotional intelligence in the workplace is vast especially in service-based professions like teaching (Kumar & Muniandy, 2012).

Five domains of emotional intelligence of Goleman domain are description knowing one's emotion (self-awareness) the ability of a person to monitor their feelings and moods as it happens, managing emotions, the ability of person to handle their feelings so that they are appropriate in that situation. It helps a person to control anger, sadness and anxiety, motivating oneself (motivation) the ability of a person to use their emotions in the service of a goal. It is essential for paying attention, self – motivation and mastery and creativity, recognizing emotions (empathy) the ability to understand how others feel. It is the fundamental, people, skill. People who are empathetic are more attuned to need of others making them great for the caring professions such as teaching, sales and management, handling relationship the ability to manage others emotion. It is sometimes referred as social skills as it deals with social competence. These skills that determines popularity, leadership and interpersonal effectiveness. Note: Summary of emotional domains from emotional intelligence (Goleman, 1995).

LITERATURE REVIEW

Emotional Intelligence and Spiritual Intelligence

Chin, Anantharaman, and Tong (2011) have ascertained that with high levels of SI and EI employee could be the most important assets of the organization. Both these complement each other. Lie, Simatupang, Harini, Dharma, and Sudirman (2021) stated that the spiritual intelligence variable had a significant effect on teacher performance. SQ is defined by Wigglesworth as, “the ability to behave with wisdom and compassion, while maintaining inner and outer peace regardless of the situation.”

Emotional Intelligence and Job Satisfaction

There is a positive significant relationship between emotional intelligence and job satisfaction, between emotional intelligence and organizational commitment, and between job satisfaction and organizational commitment. It is also found there is no significant difference among high-school English teachers of different genders and ages concerning their job satisfaction and organizational commitment. But concerning emotional intelligence, the findings in this study provide support for gender differences, with females reporting higher emotional intelligence, but the results show no age differences among the participants (Anari, 2012). There is high correlation amongst different variables of job satisfaction and its component explains the reason of emotional intelligence (Bansal, Chaturvedi, Singhi, & Dhillon, 2020).

Spiritual Intelligence and Job Satisfaction

Honesty, creativity, reactivity, kindness, dependability, confidence and courage, these internal values are interconnected to factors such as - sense of purpose, high ethical standards, acceptance, peace, trust, respect, understanding, appreciation, care, involvement, helpfulness. All the factors build team spirit and enhance performance which in turn fosters self-esteem of the employee and leads to job satisfaction. People generally prefer to see a meaning and value in their life and work as well as are willing to make a difference to the life of others. Thus, spirituality is the core that leads to ultimate level of intelligence without any religious bias and also helps to understand self in a better way (Kulshrestha & Singhal, 2017).

Emotional Intelligence and Academicians

Emotional intelligence is a type of social intelligence that involves the ability to monitor one's own and others' emotions, to discriminate among them, and to use the information to guide one's thinking and actions (Salovey & Mayer, 1990). Emotional intelligence is accountable for and could predict job performance (Chong, Falahat, & Lee, 2020). Female academicians have higher emotional intelligence than male academicians (Krishnan *et al.*, 2017).

Spiritual Intelligence and Academicians

Amram (2007) stated that seven major themes of SI emerged as nearly universal across the traditions and participants. They are: (a) Consciousness: Developed refined awareness and self-knowledge; (b) Grace: Living in alignment with the sacred manifesting love for and trust in life; (c) Meaning: Experiencing significance in daily activities through a sense of purpose and a call for service, including in the face of pain and suffering; (d) Transcendence: Going beyond the separate egoic self into an interconnected wholeness; (e) Truth: Living in open acceptance, curiosity, and love for all creation (all that is); (f) Peaceful surrender to Self (truth, God, absolute, true nature); and (g) Inner-Directedness: inner-freedom aligned in responsible wise action.

Spiritual intelligence makes an important role in the human behavior. The various studies have suggested that the SI have positive impact on the psychology of an individual and it makes lot of transformation in the personality of follower. The various variable identified were spiritual awareness helps to tackle stress, spiritual well-being is an indicator of mental well-being as it induces awareness of being healthy both physically and mentally, males to be more spiritually strong than females SI is directly proportional with psychological stability, SI helps in inner peace i.e. calm, self-control as well perspective, higher education students higher level human maturity and behavior, SI some influence upon students achievements, the inner life of mind and spirit and its relationship to being in the world adaptive use of spiritual information to facilitate everyday problem solving and goal attainment spiritual awareness and practice create a “model person”, is religion and the religion specific practices do have significant influence on students, purpose and connection are positively influenced through better mental health in students, higher spiritual values have spiritual practices embedded into them through family and their similar social associations, SI has a very profound effect on the holistic development of individuals, directly proportional relation between level of parent’s spiritual intelligence and education with mental health of children, persons who have spiritual bent of mind are less likely to commit suicide, faith enhances and create a healthy mind mental health as one the factors of quality of life having positive influence on spiritual awareness etc. (Satpathy & Samanta, 2020). The levels of emotional intelligence among the lecturers improved with age, teaching experience, grade and education where else gender and prior working were not contributing factors (Kumar & Muniandy, 2012).

Theoretical Framework

From the review of literature, it is very evident that both spiritual intelligence and emotional intelligence enhances the level of job satisfaction of the academicians. It is noted that higher the level of SI and EI higher is the level of job satisfaction among the academicians that can in turn improve their performance, productivity and efficiency. Both spiritual intelligence and emotional intelligence advocates each other and can definitely have a positive impact on job satisfaction. For the academicians to be successful in their job they need the maximum job satisfaction which shall make them innovative and highly productive. The theoretical framework can be depicted in Figure 1.

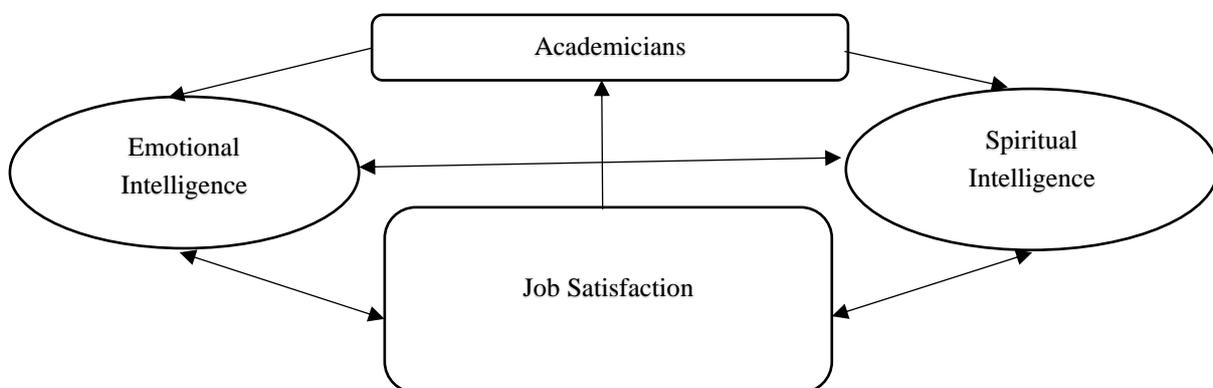


Figure 1. Theoretical framework

Emotional intelligence and spiritual intelligence tend to enhance the job satisfaction amongst the academicians. Interview technique was used to know about the levels of spiritual intelligence and emotional intelligence. It was observed that with the increase in number of years of experience, academicians tend to have higher levels of spiritual intelligence and emotional intelligence. They act two sides of the same coin when it comes to job satisfaction. Higher levels of SI and EI, employees are motivated and achieve maximum level of job satisfaction and hence improvement in their performance and productivity.

CONCLUSION

The conceptual framework suggests that both the emotional intelligence and spiritual intelligence plays an important role in enhancing job satisfaction amongst academicians. Academicians must be able to route their emotions in the right way. High level of spiritual intelligence amongst academicians makes them stand out from the others. As it was said by Daniel Goleman author of working with emotional intelligence who claims that the growth of emotional intelligence increases with maturity (Goleman, 1998). It has been proven that emotional intelligence is the one among the best tool for the better understanding of teachers. When teachers are in the situation to solve problems and make key decisions, emotional quotient supports intelligence quotient and enables better decision making, better job satisfaction. And the blessing is, this emotional quotient can be developed by practice even at adulthood, even it is influenced by family structure and the educational qualification of the parents (Gopinath, 2020). As a teacher plays an important role in shaping the student's behavior, an emotionally balanced academician is the need of the day. By improving emotional intelligence, the academicians' ability to think independently is increased, which paves the way for self-actualization (Panda, 2015).

REFERENCES

- Amram, Y. (2007). *The seven dimensions of spiritual intelligence: An ecumenical, grounded theory*. Retrieved from https://www.yosiamram.net/docs/7_Dimensions_of_SI_APA_confr_paper_Yosi_Amram.pdf
- Anari, N. N. (2012). Teachers: Emotional intelligence, job satisfaction, and organizational commitment. *Journal of Workplace Learning*, 24(4), 256–269. <https://doi.org/10.1108/13665621211223379>
- Bansal, S., Chaturvedi, V., Singhi, R., & Dhillon, L. (2020). Understanding the role of different aspects of job satisfaction on emotional intelligence of academicians: An exploratory outlook. *International Conference on Business Management, Innovation, & Sustainability (ICBMIS) 2020*. <https://dx.doi.org/10.2139/ssrn.3713831>
- Chin, S. T. S., Anantharaman, R. N., & Tong, D. Y. K. (2011). The roles of emotional intelligence and spiritual intelligence at the workplace. *Journal of Human Resources Management Research*, 2011, 582992, 1–9. DOI: 10.5171/2011.582992
- Chong, S. C., Falahat, M., & Lee, Y. S. (2020). Emotional intelligence and job performance of academicians in Malaysia. *International Journal of Higher Education*, 9(1), 69–80. <https://doi.org/10.5430/ijhe.v9n1p69>
- Goleman, D. (1995). *Emotional intelligence*. Bantam Books, Inc.
- Goleman, D. (1998). *Working with emotional intelligence*. Bantam Books, Inc.
- Gopinath, R. (2020). Employees' emotions workplace. *Research Journal of Business Management*, 5(1), 1–15. <http://dx.doi.org/10.3923/rjbm.2011>
- Krishnan, C., Goel, R., Singh, G., Bajpai, C., Malik, P., & Sahai, S. (2017). Emotional intelligence: A study on academic professionals. *Pertanika Journal of Social Sciences & Humanities*, 25 (4), 1555–1568.
- Kulshrestha, S., & Singhal, T. K. (2017). Impact of spiritual intelligence on performance and job satisfaction: A study on school teachers. *International Journal of Human Resource & Industrial Research*, 4(2), 01–06. <http://doi.org/10.5281/zenodo.343742>
- Kumar, J. A., & Muniandy, B. (2012). The influence of demographic profiles on emotional intelligence: A study on polytechnic lecturers in Malaysia. *International Online Journal of Educational Sciences*, 4(1), 62–70.

- Lie, D., Simatupang, S., Harini, S., Dharma, E., & Sudirman, A. (2021). Teacher performance in terms of the aspects of intellectual intelligence, emotional intelligence, and spiritual intelligence. *Jurnal Pendidikan Indonesia*, 10(2), 224–233. <https://doi.org/10.23887/jpi-undiksha.v10i2.32061>
- Panda, M. (2015). Emotional intelligence as a correlate of self-actualization among teachers at secondary teachers training college. *International Journal of Multidisciplinary Research*, 2 (12), 158–168.
- Sahebalzamani, M., Faharani, H., Abasi, R., & Talebi, M. (2013). The relationship between spiritual intelligence with psychological well-being and purpose in life of nurses. *Iranian Journal of Nursing Midwifery Research*, 18(1), 38–41.
- Salovey, P., & Mayer, J. D. (1990). Emotional intelligence. *Imagination, Cognition and Personality*, 9(3), 185–211. <https://doi.org/10.2190/DUGG-P24E-52WK-6CDG>
- Satpathy, T. K., & Samanta, S. (2020). Influence of spiritual intelligence on human psychology – A review. *Wutan Huatan Jisuan Jishu*, 16(10), 665– 676.

SUPPLY CHAIN PRACTICES IN INDIAN HEALTHCARE SECTOR: AN OVERVIEW OF TEN YEARS

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ABSTRACT

The integration of technology has transformed the healthcare supply chain practices (HSCP); this study aims to analyze the association between technology integrated supply chain practices, and organization performance. A systematic literature review was done to conceptualize the HSCP over the last ten years (2011–2021), VOSviewer, is used to map extensive literature from the various publishers or journals; some of the keywords (Supply chain management, supply chain practices, healthcare supply chain management, transformation in supply chain management, digital or analytical supply chain) were inserted in the software mentioned above to link research papers related to our study. From the literature review, this study attempts to introduce a conceptual framework to investigate the role of big data analytics capabilities in healthcare supply chain management (HSCM) and its influence on the organization's performance. This study contributes to give arguments on the theories implemented in the healthcare supply chain and identifying the most prevalent theory to develop the research framework which will help in the improvement in organization's performance. The study will help the managers to understand the need for effective supply chain practices for better organization performance

Keywords: *Healthcare, supply chain management, supply chain practices.*

INTRODUCTION

The world's second-largest populated country, India, has experienced a boost in the economy in the past decade but the development of specific sectors is still a challenge, specifically healthcare which is becoming one of the largest sectors of the country.

As per the data for the year 2020–2021 (world bank), the country's total healthcare expenditure is 3.6% of its GDP, where the public expense is just 1.8% of the rest is the out-of-pocket expenditure (OPE) of patients and families. Data showed that there are only 1.4 beds available per 1000 patients, one doctor per 1445 patients, and 1.7 nurses per 1000 patients; public institutions don't have the basic infrastructure to provide quality care to patients, according to the World Health Organization (World Health Organization, 2019) (WHO) India stands at 184 out of 191 countries in healthcare spending. Several national programs, schemes, and insurance plans were announced and administered by the government to strengthen National Health Mission (NHM), but as health is a state subject, the state government can't run the programs with expenses associated with it; therefore, the burden falls on the private healthcare sector, 75-80% of the healthcare services are provided by the private sector which is only affordable by the middle class or upper class.

It is expected that healthcare organizations ensure to deliver quality services to their patients at the lowest cost. In the past few decades, the healthcare system was lacking on multiple fronts like public expenditure, issues related to demand and supply, and shortages, but the pandemic has stretched the capacity of the healthcare system to its limit with the lack of beds, manpower, life-saving and essential drugs, ventilators and even oxygen cylinders, the healthcare industry is currently struggling with the sky-touching cost, low quality, shortage of medical and paramedical staff, shortage of necessary equipment; all of these have created problems within the system. Despite high expenses and challenges, healthcare companies are required to provide good quality services at the lowest cost.

Most of the operating costs of hospitals are associated with the supply chain including resources, consumables, surgical and medical equipment, also at the time of the pandemic, our healthcare supply chains were majorly affected, which has created a pressing need to optimize supply chain activity in a manner so that high-quality services can be provided effectively at a lower cost.

An article “Emerging Technology trends in medical supply chain” published in Economics Times in the Healthworld section stated that ‘the pandemic has made us realized that how technology adoption has become very important to find out cost-effective, innovative and tech-enabled solutions for critical problems, the article listed five trending technologies in medical supply chain in the country to shape the healthcare industry in the near future; Big Data, Blockchain, Drone Deliveries, AI, Robotics and Internet of Things (IOT) and Cloud Computing (Katagara, 2021).

The paper review different technologies practiced in the healthcare supply chain by the researchers in their research work from 2011 to 2021. The purpose of this study is to identify the technologies practiced in the healthcare supply chain and the impact of IT integrated HSCP on an organization’s performance.

The structure of the paper is arranged as the next section of the paper discusses the literature review and then the research methodology, after identifying the prevalent technology used in the healthcare industry, we introduce a conceptual framework to investigate the role of big data analytics capabilities in healthcare supply chain management (HSCM) and its influence on the organization’s performance.

LITERATURE REVIEW

Supply chain management is the process of integrating demand and supply management, not only within the organization but also across the other industries and disciplinaries who is part of the supply chain to work efficiently and effectively; five main components of the supply chain are Raw material, supplier, manufacture, distribution, and customer, “The objective of managing the supply chain is to synchronize the requirements of the customer with the flow of materials from suppliers to effect a balance between what are often seen as conflicting goals of high customer service, low inventory management, and low unit cost.” (Stevens, 1989).

Singh (2006) argue that it is very ironic that the healthcare supply chain itself is sick and needs treatment, “Healthcare supply chain processes have three types of flows—physical product flow, informational flow, and financial flow.” Managing these processes effectively is very important. The Physical product flow indicates the utilization of products, which will vary from hospital to hospital as per their specialization. Information flows describe the flow of inventory information from all hospitals to their respective suppliers for reordering automatically. The team of healthcare professionals will consist of doctors of each specialization, nurses, para-medical staff, and medical administrators who all work together to treat and well-being of the patients. The significance of information flow amongst healthcare staff is obvious. Each healthcare staff member who comes in contact with patients should have present-day and accurate data on such patients' medical conditions. Financial flows talk to items consisting of supplier bills for price and patient collection payments (Singh, 2006).

So many organizations are practicing technology integrated supply chain management for better performance, the healthcare supply chain is an important area that needs to get improved, both practitioners and researchers are focusing on the continuous changing environment and to identify the transformation in supply chain management with Information Technology (IT) integration, therefore there is need to have a comprehensive literature review to reflect various technology integration in healthcare supply chain management.

RESEARCH METHOD

A Systematic Literature Review (SLR) is performed to identify the impact of technology integration in healthcare supply chain and also finding the emerging technologies in the industry. PRISMA (Preferred Reporting Items for Systematic reviews and Meta-Analysis and network meta-analysis) guidelines were used throughout the paper shown in Figure 1, From Figure I it can be observed that the articles published from 2011–2021 were searched from various database such as Taylor & Francis, Emerald Insight,

ScienceDirect, PubMed, etc. Some keywords and sentence fragments; Healthcare SCM, SCM, Medical equipment supply chain, etc. were used to filter the search with our research objective, plethora of paper were published on supply chain but when it comes to healthcare supply chain it is still untouched, plenty of work is still required in this area, After the rigorous screening based on the keywords mentioned in Figure 1, 59 articles were selected and finally after abstract screen we reviewed 45 articles on full text.



Figure 1. Research methodology explained through the PRISMA model

Journal and Conference proceeding

Table 1 clearly shows that 45 articles were reviewed from 40 esteemed journals and five reputed conference proceedings, the maximum number of papers were reviewed from ‘Supply Chain Forum: An International Journal holding 10%’ followed by ‘Technological Forecasting & Social Change holding 7.5%, Further there were three journals having two papers and 35 journals with one paper each. The

classification clearly identifies that the mentioned journals are contributing towards the research on healthcare industry, supply chain and also with special reference to Indian scenario.

Table 1
Journal-Wise Classification of Reviewed Papers

Journals	Number of Papers	%
Supply Chain Forum: An International Journal	4	10.00
Technological Forecasting & Social Change	3	7.50
Health Systems & Reform	2	5.00
Journal of Health Management	2	5.00
Supply Chain Management: An International Journal	2	5.00
Business Process Management Journal	1	2.50
Cogent Business & Management	1	2.50
Computers & Industrial Engineering	1	2.50
Global Health Action	1	2.50
Health Care Manage Review	1	2.50
Indian Journal Public Health	1	2.50
International Journal of Global Business and Competitiveness	1	2.50
International Journal of Logistics: Research and Applications,	1	2.50
International Journal of Management	1	2.50
International Journal of Operations & Production Management	1	2.50
International Journal of Pharmaceutical and Healthcare Marketing	1	2.50
International Journal of Production Economics	1	2.50
International Journal of Production Research	1	2.50
International Journal of Recent Technology and Engineering (IJRTE)	1	2.50
Journal of Global Business Advancement	1	2.50
Journal of Advances in Management Research	1	2.50
Journal of Big Data	1	2.50
Journal of Global Operations and Strategic Sourcing	1	2.50
Journal of Health Organization and Management	1	2.50
Journal of Marketing Management	1	2.50
Journal of Operations Management	1	2.50
Medical Care Research and Review	1	2.50
Perspectives in Health Information Management	1	2.50
Production & Manufacturing Research	1	2.50
Resources, Conservation & Recycling	1	2.50
Social Science & Medicine	1	2.50
The International Journal of Logistics Management	1	2.50
Total Journals referred	40	100.0
Proceeding	5	
	45	

Publishers

The reviewed papers were published by the eight major publishers shown in Table 2, Taylor & Francis had published maximum number of paper (13), followed by Emerald Insight and ScienceDirect who published nine papers each, from literature review. Table 2 clearly reflects that these publishers are actively contributing to publish research papers which focuses on healthcare supply chain.

Table 2
Publisher-Wise Classification of Reviewed Papers

Publisher	Number of Papers	%
Taylor & Francis	13	28.889
Emerald Insight	9	20
Science Direct	9	20
Google Scholar	4	8.8889
Pubmed	3	6.6667
SAGE	3	6.6667
Elsevier	2	4.4444
Springer	2	4.4444

Year-Wise Classification

From the 45 research papers which were studied for current study it was found that major studies on the same research objective was conducted post-pandemic shown in Figure 2, the maximum number of studies were conducted in the year 2021. In 2020, five papers were published as per the literature review and six papers were published in the year 2019, before those four papers were published in the year 2018 and 2017, in 2016 and 2015, five papers were published in both the years. More than 70% of the research was conducted after the pandemic.

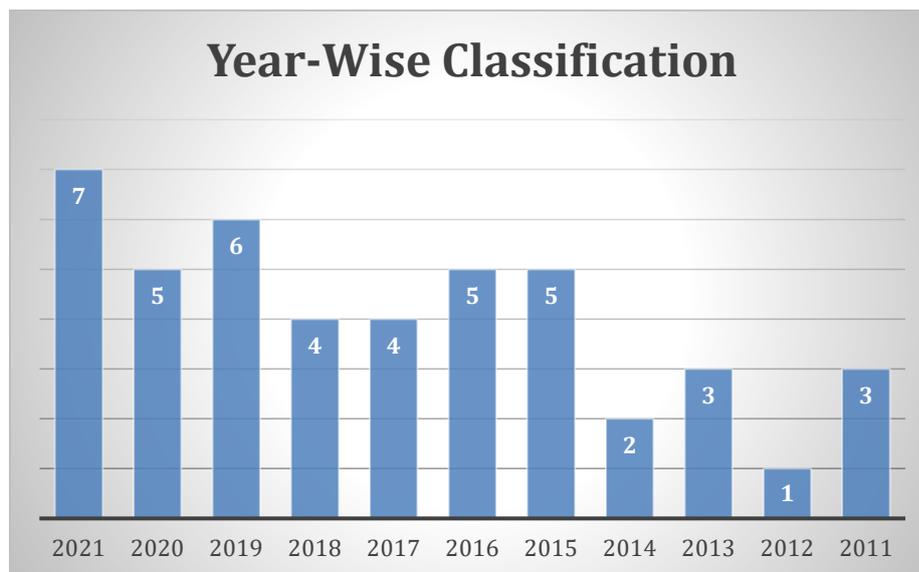


Figure 2. Year-wise classification of reviewed paper

Paper Type

One of the inclusion criteria for the SLR is paper type, the type of paper which was included in the study are empirical, case study, literature review & conference proceedings. Figure 3 shows that 58% of researchers conducted Empirical study, in addition to this 16% conducted literature review and 15% paper based on case study and remaining 11% were conference proceeding.

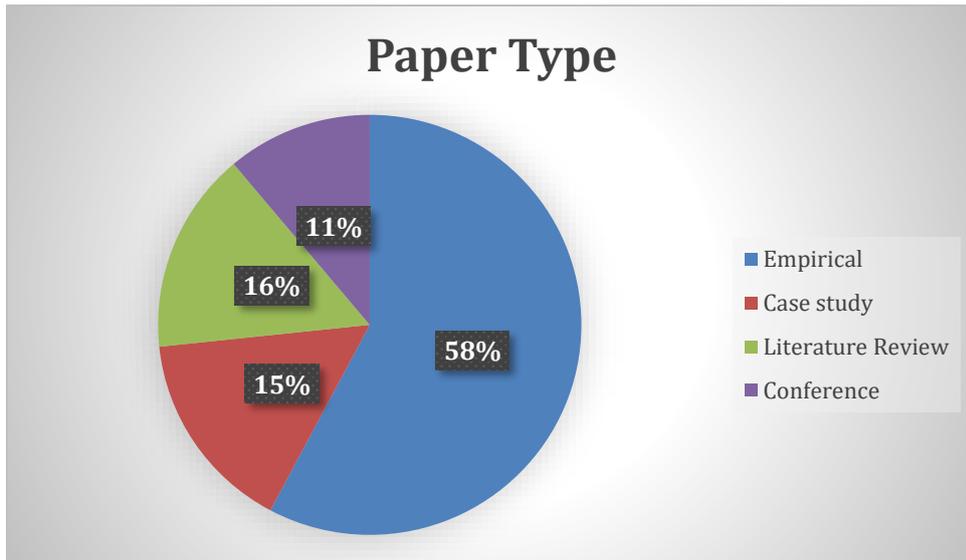


Figure 3. Research paper classified based on type of study

Keywords

Keywords used for article selection were mapped using VOS viewer version 1.6.18 demonstrating the density of cooccurrence of keywords shown in Figure 4.

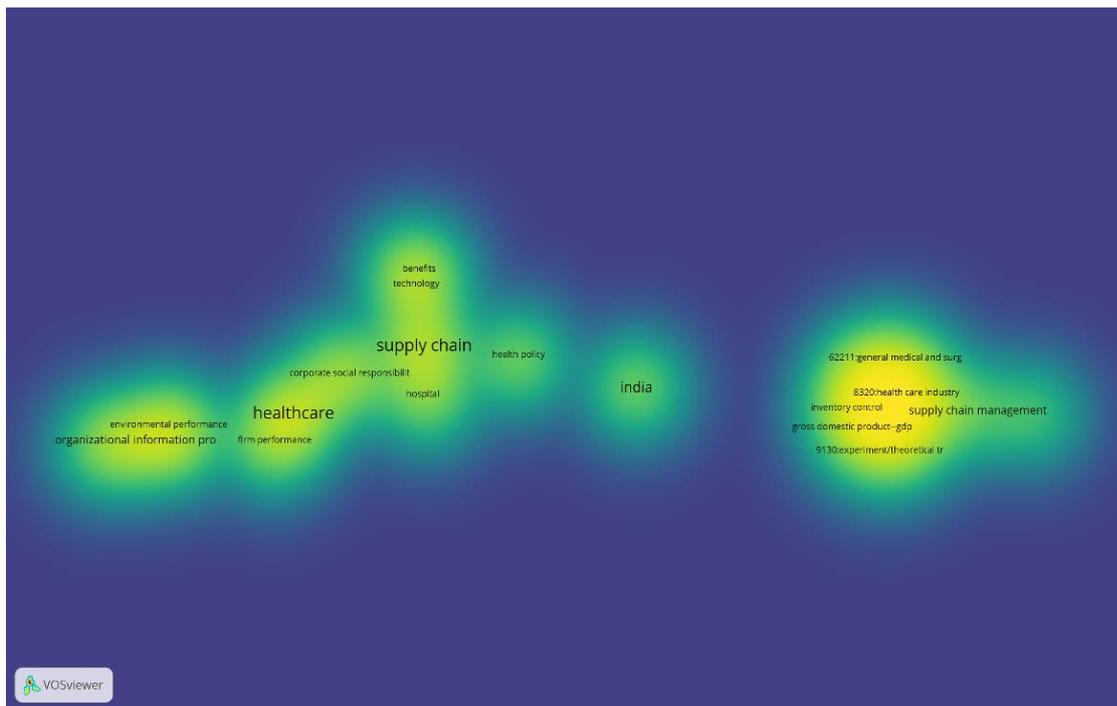


Figure 4. VOS viewer mapping co-occurrence of keywords

Adopted Technology

As we are in the modern era, every industry is adopting technologies for providing better services on Table 3 shows the references and adopted technology in the healthcare supply chain by the researchers and practitioners. In Table 3 it can be clearly observed that Big Data Analytics (BDA) has created so many opportunities in the healthcare supply chain, recently many researchers are focusing in integrating BDA in healthcare supply chain.

Table 3
Technology Adopted in Research Papers

Adopted Technology	References
Interpretative System Modelling (ISM) & Fuzzy Logic	(Gupta & Ramesh, 2015; Chakraborty, 2018; Dixit, Routroy, & Dubey, 2020)
Lean & Agile	(Nabelsi & Gagnon, 2017; Gupta, Sami, Habib, & Rahman, 2020)
IT Integration	(Meijboom, Schmidt-Bakx, & Westert, 2011; Chen, Preston, & Xia, 2013; Afshan & Sindhuja, 2015; Kokilam, Joshi, & Kamath, 2016)
Big Data Analytics	(Kritchanchai, Hoer, & Engelseth, 2018; Seyedan & Mafakheri, 2020; Benzidia, Makaoui, & Bentahar, 2021; Yu, Zhao, Liu, & Song, 2021; Singh & Parida, 2022)
Value Chain	(Acharyulu & Shekhar, 2012; Chakraborty, Bhattacharya, & Dobrzykowski, 2014)
Logistics System Assessment Tool (LSAT), Pharmacy Computerized Inventory Program (PCIP)	(Behera & Kannan, 2018; Holm, Rudis, & Wilson, 2015)
Visibility for Sensing (VFS) Mobile-Based Effective Vaccine Management (EVM) System	(Negandhi <i>et al.</i> , 2016; Mandal, 2017)
Block Chain Technology	(Elhidaoui, Benhida, El Fezazi, Kota, & Lamalem, 2022)
Cloud Computing	(Kochan, Nowicki, Sauser, & Randall, 2018)
RFID	(Coustasse, Tomblin, & Slack, 2013)

Big Data Analytics Capabilities

The manufacturing, service, operations, and supply chain management literature have provided several definitions of BDAC (Shrinivasan & Swink, 2018). In general, BDAC refers to “organizational facility with tools, techniques, and processes that enable a firm to process, organize, visualize, and analyze data, thereby producing insights that enable data-driven operational planning, decision-making, and execution” (Shrinivasan & Swink, 2018). “From the last decade BDAC is functioning as hospital’s capability in the healthcare industry which allows it to collect, store, analyze, and process extensive volume, velocity and variety of data which is obtained from various and extensive healthcare network that enables to enhance and improve data-driven decision-making process and identify different business perspectives, values and insights in a timely manner” (Alexander & Wang, 2018). “Hospitals can implement various data visualization tools for example responsive and interactive dashboards or panels along with a proper system to obtain the appropriate meaning from External health data and display the information on the interactive system or panel, this all is possible by just developing BDAC for their organization through OIPT perspective. Various analytical techniques are used to process huge amount of health data from various sources like e-medical records, physician's notes and prescriptions, and medical imaging to enhance business insights. The visualization reports obtained from the real-time data will be displayed on the dashboard or panel, which will help in the smooth flow of day-to-day activities of the healthcare providers; hospital administrators, medical and para-medical staff, enabling them in becoming smarter and faster data-driven decision makers” (Wang & Hajli, 2017).

Big Data Analytics in Healthcare Supply Chain

“Healthcare Supply chain is very particular and quite different from the other industries in various aspects. The process of the healthcare supply chain is very complex and integrated of functions and activities that involve the flow of products and services to support the service providers” (Mathur, Gupta, Meena, & Dangayach, 2018) It has been found that big data analytics has created various opportunities in the healthcare supply chain as if the field has got new beginning. Alotaibi and Mahmood (2017) have summarized the opportunities of using big data analytics in healthcare supply chain management in three

categories, first is ‘demand forecasting’, second ‘improving safety and quality assurance in the pharmaceutical supply chain’ and the third is ‘indoor monitoring’ as healthcare industry is very critical to handle it may be difficult to operate a tool like big data analytics clarifying this. Alotaibi and Mahmood (2017) have also discussed the challenges which will contend when big data is enabled in healthcare supply chain, mainly the challenges are ‘data related issues’, ‘healthcare related issues’, and ‘knowledge related issues’

Development of Conceptual Framework

Based on the research gaps found in the literature review a conceptual framework is constructed for assessing the association between technology integrated healthcare supply chain and organization’s performance as shown in Figure 5. The conceptual framework is developed on the basis of resource-based view theory, operational information processing theory and dynamic capability view theory.

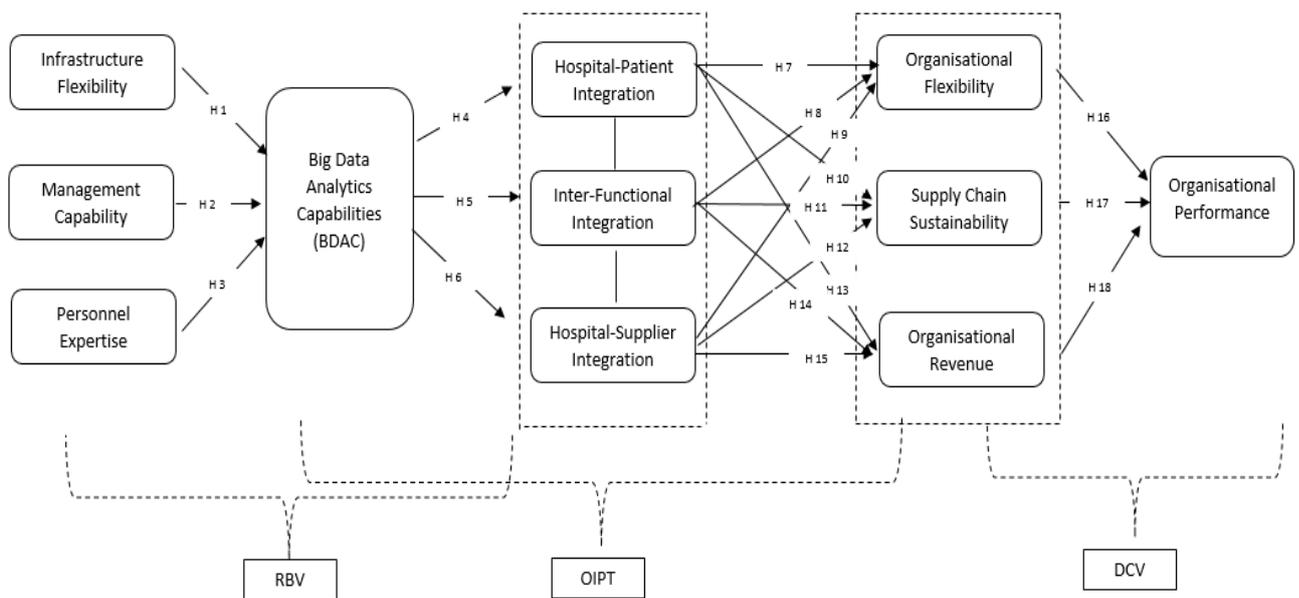


Figure 5. Proposed conceptual framework

CONCLUSION

The main objective of this paper is to find out the integrated technologies in healthcare supply chain adopted by the Indian organization. Even though many researchers were worked on the supply chain management or practices, very few research were published about the Indian hospital or healthcare supply chain. the rate of technology advancement is increasing day by day which creates a pressing need to integrate technology in the healthcare industry as well. The role of supply chain in the healthcare industry is very crucial but went unnoticed from several years, the pandemic reflected that how sick is our healthcare supply chain.

Many researchers have compared the technology adoption or supply chain practices in the manufacturing industry, but in the present work we have identified that how big data analytics is helping the healthcare industry and how it can help in the transformation of the industry. In the present study we have proposed a conceptual framework which will help in studying the capabilities and relationship between the different aspects and operations of the hospital with the integration of big data analytics. The analysis for the present study is done on the basis of research aim, objective, findings, and adopted technology which was derived from the 45 research papers screened for the period 2011–2021. The result from the study explained that the issues which was submerged in the Indian healthcare industry from so many years, flooded at the time of pandemic, literature review clearly reflects that there were very few studies when it comes to healthcare supply chain, most of the published paper were post pandemic. The pandemic has majorly affected the healthcare supply chain management, after knowing that change is unpredictable in our day-to-day life now, there is a pressing need to prepare for future. Healthcare industry has to be prepared because at the end patients’ life is on stake, SC managers being

key players in this should be ready for upcoming challenges. Technologies adopted by the healthcare sector were also mentioned in the present study which shows how important it is now for the healthcare industry to integrate some of technologies into their system for patient satisfaction, and for delivering quality services. The outcome of the study showed that big data analytics can be solution for the current problems, supply chain managers must understand the necessity of it and try to integrate in their hospital system.

REFERENCES

- Acharyulu, G. V. R. K., & Shekhar, B. R. (2012). Role of value chain strategy in healthcare supply chain management: An empirical study in India. *International Journal of Management*, 29(1), 91–97. <http://search.ebscohost.com/login.aspx?direct=true&db=bth&AN=71520164&site=ehost-live>
- Afshan, N., & Sindhuja, P. N. (2015). Supply chain integration in healthcare industry in India: Challenges and opportunities. *Journal for Global Business Advancement*, 8(4), 469–478. <https://doi.org/10.1504/JGBA.2015.074029>
- Alexander, C. A., & Wang, L. (2018). Big data and data-driven healthcare systems. *Journal of Business and Management Sciences*, 6(3), 104–111. DOI: 10.12691/jbms-6-3-7
- Alotaibi, M., & Mahmood, A. (2017). Improved gait recognition based on specialized deep convolutional neural network. *Computer Vision and Image Understanding*, 164, 103–110. DOI: 10.1016/j.cviu.2017.10.004
- Behera, S. K., & Kannan, S. (2018). Assessing the performance of multiple drug supply chain management in Odisha health services using LSAT score and stock-out situation. *Cogent Business and Management*, 5(1), 1–19. <https://doi.org/10.1080/23311975.2018.1534578>
- Benzidia, S., Makaoui, N., & Bentahar, O. (2021). The impact of big data analytics and artificial intelligence on green supply chain process integration and hospital environmental performance. *Technological Forecasting and Social Change*, 165, 120557. <https://doi.org/10.1016/j.techfore.2020.120557>
- Chakraborty, S. (2018). Enablers of co-creation in hospital-supplier relationships: Empirical study in Indian healthcare context. *Supply Chain Forum*, 19(4), 331–352. <https://doi.org/10.1080/16258312.2018.1503921>
- Chakraborty, S., Bhattacharya, S., & Dobrzykowski, D. D. (2014). Impact of supply chain collaboration on value co-creation and firm performance: A healthcare service sector perspective. *Procedia Economics and Finance*, 11(14), 676–694. [https://doi.org/10.1016/s2212-5671\(14\)00233-0](https://doi.org/10.1016/s2212-5671(14)00233-0)
- Chen, D. Q., Preston, D. S., & Xia, W. (2013). Enhancing hospital supply chain performance: A relational view and empirical test. *Journal of Operations Management*, 31(6), 391–408. <https://doi.org/10.1016/j.jom.2013.07.012>
- Coustasse, A., Tomblin, S., & Slack, C. (2013). Impact of radio-frequency identification (RFID) technologies on the hospital supply chain: A literature review. *Perspectives in Health Information Management / AHIMA, American Health Information Management Association*, 10.
- Dixit, A., Routroy, S., & Dubey, S. K. (2020). Analysis of government-supported health-care supply chain enablers: A case study. *Journal of Global Operations and Strategic Sourcing*, 13(1), 1–16. <https://doi.org/10.1108/JGOSS-02-2019-0011>
- Elhidaoui, S., Benhida, K., El Fezazi, S., Kota, S., & Lamalem, A. (2022). Critical success factors of blockchain adoption in green supply chain management: Contribution through an interpretive structural model. *Production and Manufacturing Research*, 10(1), 1–23. <https://doi.org/10.1080/21693277.2021.1990155>
- Gupta, H. S., Sami, A. S., Habib, M. I., & Rahman, H. U. (2020). Adaptation of hybrid strategy in healthcare supply chain. *Proceedings of the International Conference on Industrial Engineering and Operations Management*, 59(May 2021), 973–981.
- Gupta, U., & Ramesh, A. (2015). Analyzing the barriers of health care supply chain in India: The contribution and interaction of factors. *Procedia - Social and Behavioral Sciences*, 189, 217–228. <https://doi.org/10.1016/j.sbspro.2015.03.217>
- Holm, M. R., Rudis, M. I., & Wilson, J. W. (2015). Medication supply chain management through implementation of a hospital pharmacy computerized inventory program in Haiti. *Global Health Action*, 8(1), 26546. <https://doi.org/10.3402/gha.v8.26546>
- Katagara, C. (2021). *Emerging technology trends in medical supply chain*. ETHealthWorld.

- Kochan, C. G., Nowicki, D. R., Sauser, B., & Randall, W. S. (2018). Impact of cloud-based information sharing on hospital supply chain performance: A system dynamics framework. *International Journal of Production Economics*, 195, 168–185. <https://doi.org/10.1016/j.ijpe.2017.10.008>
- Kokilam, M. B., Joshi, H. G., & Kamath, V. G. (2016). Strengthening the pharmaceutical supply chain management with information communication technology intervention: A windfall to the Indian rural public healthcare system. *Journal of Health Management*, 18(2), 274–289. <https://doi.org/10.1177/0972063416637719>
- Kritchanchai, D., Hoer, S., & Engseth, P. (2018). Develop a strategy for improving healthcare logistics performance. *Supply Chain Forum*, 19(1), 55–69. <https://doi.org/10.1080/16258312.2017.1416876>
- Mandal, S. (2017). The influence of dynamic capabilities on hospital-supplier collaboration and hospital supply chain performance. *International Journal of Operations and Production Management*, 37(5), 664–684. <https://doi.org/10.1108/IJOPM-05-2016-0249>
- Mathur, B., Gupta, S., Meena, M. L., & Dangayach, G. S. (2018). Healthcare supply chain management: Literature review and some issues. *Journal of Advances in Management Research*, 15(3), 265–287. <https://doi.org/10.1108/JAMR-09-2017-0090>
- Meijboom, B., Schmidt-Bakx, S., & Westert, G. (2011). Supply chain management practices for improving patient-oriented care. *Supply Chain Management*, 16(3), 166–175. <https://doi.org/10.1108/13598541111127155>
- Nabelsi, V., & Gagnon, S. (2017). Information technology strategy for a patient-oriented, lean, and agile integration of hospital pharmacy and medical equipment supply chains. *International Journal of Production Research*, 55(14), 3929–3945. <https://doi.org/10.1080/00207543.2016.1218082>
- Negandhi, P., Chauhan, M., Das, A. M., Neogi, S. B., Sharma, J., & Sethy, G. (2016). Mobile-based effective vaccine management tool: An m-health initiative implemented by UNICEF in Bihar. *Indian Journal of Public Health*, 60(4), 334–335. <https://doi.org/10.4103/0019-557X.195869>
- Seyedan, M., & Mafakheri, F. (2020). Predictive big data analytics for supply chain demand forecasting: Methods, applications, and research opportunities. *Journal of Big Data*, 7(53), 1–22. <https://doi.org/10.1186/s40537-020-00329-2>
- Shrinivasan, R., & Swink, M. (2018). An investigation of visibility and flexibility as complements to supply chain analytics: An organizational information processing theory perspective. *Production and Operations Management*, 27(10), 1849–1867. <https://doi.org/10.1111/poms.12746>
- Singh, M. (2006). *Transforming the global health care supply chain*. MIT Center for Transportation and Logistics.
- Singh, A., & Parida, R. (2022). Decision-making models for healthcare supply chain disruptions: Review and insights for post-pandemic era. *International Journal of Global Business and Competitiveness*, 0123456789. <https://doi.org/10.1007/s42943-021-00045-5>
- Wang, Y., & Hajli, N. (2017). Exploring the path to big data analytics success in healthcare. *Journal of Business Research*, 70, 287–299. <https://doi.org/10.1016/j.jbusres.2016.08.002>
- Yu, W., Zhao, G., Liu, Q., & Song, Y. (2021). Role of big data analytics capability in developing integrated hospital supply chains and operational flexibility: An organizational information processing theory perspective. *Technological Forecasting and Social Change*, 163, 120417. <https://doi.org/10.1016/j.techfore.2020.120417>

BIBLIOMETRIC ANALYSIS OF THE TERM ENTREPRENEURIAL CHARACTERISTICS AND COMPETENCIES

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ABSTRACT

The purposes of the research are: (1) Describe the publications related to entrepreneurial characteristics and competencies; (2) Predicting future research on entrepreneurial characteristics and competencies with co-word analysis. The author uses the bibliometric methods of citation analysis, co-author analysis, and co-word analysis. The results show that Entrepreneurial characteristics, Entrepreneurial competencies connected with Entrepreneurship education. Future research can be directed towards researching topics such as knowledge management, strategic flexibility, entrepreneurial motivation, risk tolerance, need for achievement, risk taking, trust, entrepreneurial success in the area of entrepreneurship or small and medium enterprises.

Keywords: *Bibliometric analysis, entrepreneurial competencies, entrepreneurial characteristic.*

INTRODUCTION

Entrepreneurship is a strategic concern for the country's economic development since it is the cornerstone of economic development and has an impact on regional economic growth (Ruskov, Haralampiev, & Georgiev, 2012; Nikraftar, 2016; Tresna, 2017; Rankhumise & Letsoalo, 2019) because of its ability to generate employment (Gakure, Ngugi, Waititu, & Keraro, 2013; Zaridis, 2016; Ndoen, Bunga, & Faggidae, 2019; Hien, Nhu, Trung, Trang, & Tam, 2019; Vodă & Florea, 2019). Entrepreneurship is a philosophy that promotes economic development (Afolabi, 2015) and new technologies, as well as the introduction of new goods and opportunities, allowing people to discover their creativity and put their new ideas into reality (Tagraf & Akin, 2009; Arasteh, Enayati, Zamani, & Khademloo, 2012; Rico & Cabrer-Borrás, 2019), with the entrepreneur as its heart (Musluhittinoglu & Adiguzel, 2019). Due to the relevance of entrepreneurship for the country's economic development, it has gotten a lot of support from various parties. Supporting the growth and creation of small and medium businesses as a mode of entrepreneurship that can be carried out by the society is one of several trends in creating entrepreneurship in different environments.

Small and medium-sized businesses (SMEs) are one of the major drivers of national economic development and creativity (Ruskov *et al.*, 2012; Vodă & Florea, 2019) and its presence is necessary for economic development (Haseeb, Hussain, Kot, Androniceanu, & Jermisittiparsert, 2019), is critical for making a profit, growing profits, and giving the investor a return on investment (Bosire & Nzaramba, 2013). SMEs have the following characteristics: a lack of budget, narrow customer base, low profit margins, less focus on strategy, low bargaining power (Krajnakova, Navikaite, & Navickas, 2015; Ankrah & Collins, 2015), a scarcity of funds to invest in infrastructure and human capital.

SMEs are able to endure in the middle of the economic crisis as a driving force for economic development, job creation, and human development, demonstrating their remarkable strength. SMEs face a variety of issues, challenges, and threats, including a limited marketing area, a lack of innovation and creativity, a lack of their own brand, low product quality, a plethora of similar products, and other issues. The problems, challenges, and threats that SMEs face have resulted in stagnant growth, making them unable to compete even with businesses in similar industries (Bismala, 2016). Sustainability for small and medium enterprises (SMEs) is achieving a balance on the aspects of financial, human and material

resources, and on the other hand on the aspects of the social and economic environment in which it operates. Lack of financial and human capital is often cited as a barrier to SMEs implementing long-term plans that give them a competitive edge (Burlea-Schiopoiu & Mihai, 2019).

Internal and external forces must benefit SMEs' actors in order for them to succeed in running a company (Zaridis, 2016). Internal factors that shape business success are entrepreneurial characteristics (Zaridis, 2016; Idowu, Olusola, & Olawale, 2017) and entrepreneurial competencies. Entrepreneurial competence is defined as knowledge, skills and attitudes that affect the willingness and ability to perform entrepreneurial work to create new value (Bikse & Riemere, 2013; Lackéus, 2015; Al Mamun, Muniady, Ibrahim, Bin, & Nawi, 2018; Wirda, Herri, Elfindri, Rivai, & Herizon, 2019), where companies implement value creation strategies based on their competencies that existing or future competitors do not have (Al Mamun *et al.*, 2018; Wirda *et al.*, 2019). SMEs have inherent entrepreneurial characteristics that enable them to succeed in a competitive environment, face challenges and obstacles, build and sustain competitive advantages, and enhance results. Creativity and improvement are intertwined components of a central definition as determinants of societal growth, which can be interpreted as the traits of people that create improvements. SME actors can manage their businesses successfully by having a strong entrepreneurial characteristics, and they can portray how SME entrepreneurs behave in operating their businesses. Entrepreneurial competencies have been characterized as a distinct set of abilities, are important for successful entrepreneurship (Mitchelmore & Rowley, 2010). Competence is not seen as a job, but rather as things that enable people to perform tasks, which are related to the personal traits, skills, knowledge, and motives of employees leading to managerial performance (Mitchelmore & Rowley, 2010). Competencies refer to an entrepreneur's and his or her collaborators' capacity to successfully acquire, use, and create resources for their business goal in the unique setting in which the organization works and entrepreneurs need both entrepreneurial and managerial competencies to support successful business growth (Man & Lau, 2005; Mitchelmore & Rowley, 2010). More importantly, the competency approach contributes to training and development practices and potential entrepreneurs as it highlights the importance of not only enhancing the skills and knowledge required for entrepreneurial success in different settings, but also cultivating the right attitude towards goals (Man & Lau, 2005). Entrepreneurial competence is related to the effective performance of an entrepreneur's job, which further leads to the effective management of his business, survival, and growth (Man, 2019). Furthermore, it is said that entrepreneurial competence can be obtained through a learning process in a structured learning context in addition to being acquired through the everyday experiences of entrepreneurs.

In this study, we conducted a systematic literature review on entrepreneurial characteristics and competencies, using VosViewer. While several researchers have performed comprehensive surveys on entrepreneurial intentions, entrepreneurship education, and social entrepreneurship, few have directly addressed entrepreneurial characteristics and competencies.

The research questions posed include:

1. How is the publication map related to entrepreneurial characteristics and competencies?
2. What is the future research road map related to entrepreneurial characteristics and competencies?

The purposes of the research are:

1. Describe the publications related to entrepreneurial characteristics and competencies;
2. Predicting future research on entrepreneurial characteristics and competencies with co-word analysis.

LITERATURE REVIEW

Entrepreneurial Characteristics

The ability of a manager to run a small business is critical to its development. Since the number of SMEs is so broad and varied, they prefer to work on similar goods and services, making it difficult for them to adjust to their surroundings and react to the negative effects of growth. This puts a lot of pressure on managers to be flexible in their management and administration, to think beyond the box, to be bold in their actions, and to take risks (Islam, Khan, Obaidullah, & Alam, 2011). Managers as decision makers must be able to make the right decisions (Islam *et al.*, 2011). The important thing that needs to be owned

by SMEs is entrepreneurial characteristics, which reflect how the attitudes and behavior of SMEs in conducting business management (Bismala & Handayani, 2021).

Entrepreneurial qualities are required of SMEs managers in order for them to be able to establish a competitive edge for SMEs and, as a result, have good company results (Islam *et al.*, 2011; Abdulwahab & Al-damen, 2015; Zaridis, 2016). Meanwhile, Chandrayanti, Nidar, Mulyana, and Anwar, (2020) according to her study, entrepreneurial traits have a positive impact on market growth, which has a positive effect on credit opportunities. Meanwhile, Bahri and Arda's (2019) research shows that the characteristics of entrepreneurs have a positive influence on the success of small businesses among the Z Generation.

It's critical to research the factors that influence market performance so that they can be replicated and more entrepreneurs can prosper (Islam *et al.*, 2011). Entrepreneurial characteristics have a significant and positive impact on entrepreneurial competence (Heslina, Payangan, Taba, & Pabo, 2016) and have a positive impact on the success of small businesses (Abdulwahab & Al-damen, 2015). Entrepreneurial characteristics are personal traits needed to achieve success (Abdulwahab & Al-damen, 2015; Islam *et al.*, 2011; Musluhittinoglu & Adiguzel, 2019). Entrepreneurial characteristics such as generic and unique awareness, motives, traits, self-images, social identities, and abilities that result in venture birth, survival, and/or development are referred to as entrepreneurial competencies (Bird, 2019).

Research conducted by Anwar and Saleem (2019) shows that entrepreneurially inclined students had higher levels of all entrepreneurial traits than entrepreneurially non-inclined students, with the exception of general self-efficacy. Entrepreneurial students are more likely to take risks, innovativeness, locus of control, need for achievement and tolerance for ambiguity (Anwar & Saleem, 2019; Reissová, Šimsová, Sonntag, & Kučerová, 2020). The attempts of an enterprise to find new possibilities and strategies through innovation and imagination are referred to as innovativeness (Al Mamun & Fazal, 2018).

When confronted with a risky situation, a person's tendency to take risks is described as their willingness to take or avoid risks. Entrepreneurship can be linked to taking risks (Anwar & Saleem, 2019; Reissová *et al.*, 2020). Innovativeness necessitates the ability to create a unique product to have better quality using cutting-edge manufacturing methods, as well as finding innovative ways to penetrate a market, establishing a reliable supply source, or establishing a new structure for a business enterprise. People with an external locus of power feel that events beyond their immediate control, such as luck, fate, fortune, and other people, have an effect on their outcomes (Anwar & Saleem, 2019). Entrepreneurs are supposed to have better self-esteem when they make decisions and embark on difficult challenges, which they are unable to complete if they lack self-confidence. Uncertainty is an uncontrollable condition caused by a lack of details. The willingness to handle uncertainty is embodied in how an individual responds to uncertain and unfavorable circumstances (Anwar & Saleem, 2019).

In recent years, entrepreneurial resilience has been recognized as a central component in explaining entrepreneurial actions to tackle discomfort, confusion, and loss (Hamedi & Mehdiabadi, 2020). When it comes to grappling with risks, flexibility is very useful. Because entrepreneurs have flexible minds and believe they have the ability to change, they can easily respond to external environmental problems. Entrepreneurs will go on with confidence and hope if they have a good perspective on life. Reflecting on prior failures and preventing disappointment as a cost of learning from prior lessons will help entrepreneurs become more resilient. This will assist business owners in dealing with tension and negative feelings (Hamedi & Mehdiabadi, 2020)

The strategic intuition model had three key components, according to the findings: (1) Sensory capacity, (2) Aggressive reasoning ability, and (3) Strategic decision-making ability (Aujirapongpan, Songkajorn, Hareebin, Deelters, & Jutidharabongse, 2020). The ability of an entrepreneur's strategic intuition is directly related to strategic selection, so that the selection of an operations planning strategy must be adjusted to the vision and mission of the organization (Aujirapongpan *et al.*, 2020). As a result, in order to build and improve their strategic intuitive skills, all entrepreneurs must gain comprehensive expertise and experience.

Entrepreneurial Competencies

Entrepreneurial preparation has a major impact on student entrepreneurial skill through mediation of positive psychology money, according to research conducted on students in South Sulawesi Province (Hasan *et al.*, 2019). Al Mamun, Fazal, and Muniady (2019) found that entrepreneurial capabilities, business orientation, and networking, have a positive impact on entrepreneurial competency. Then, entrepreneurship competency, entrepreneurial expertise, and networking have a positive impact on the success of businesses. It demonstrates that entrepreneurial competency has an important mediating impact on the relationships between entrepreneurial expertise, business orientation, and networking, as well as enterprise success (Al Mamun *et al.*, 2019). Entrepreneurial competence has the following characteristics: (1) Integration of knowledge, skills, and attributes; (2) Complex situation handling applications; and (3) Leading to new business performance (Man, 2019). Competencies refer to an entrepreneur's and his or her partners' abilities to effectively acquire, use, and grow tools for their commercial intent in the particular environment in which the company works (Mitchelmore & Rowley, 2010).

The findings revealed that creativity and innovativeness, pro-activeness and autonomy had a positive influence on entrepreneurial competencies (Al Mamun & Fazal, 2018). Furthermore, micro-enterprise success was boosted by autonomy and entrepreneurship competencies. The relationship between imagination, innovativeness, autonomy, and micro-enterprise success was then mediated by entrepreneurial competencies (Al Mamun & Fazal, 2018).

Finding and exploiting resources, taking initiative to achieve ideas, addressing challenges efficiently, managing individually, being accountable, successfully creating networks, creatively organizing matters, and being willing to plan for different risks are all examples of entrepreneurial conduct. Individuals with entrepreneurial characteristics such as goal oriented and ambition, self-confidence, success, high locus of control, action orientation, preference for learning by doing, perseverance, commitment, and imagination. Creative problem solving, negotiating skills, the ability to plan a company, mission, or situation holistically, think creatively, and make intuitive decisions under uncertainty are all examples of entrepreneurial skills. The findings of this research show that entrepreneurship learning has an effect on entrepreneurial competencies. These findings suggest that advanced entrepreneurship curriculum has been effective in covering a wide range of skills. There are three approaches to entrepreneurship research: analytical training, work-oriented learning, which allows students to practice being entrepreneurs, fosters students' interest in being entrepreneurs with experience and expertise in the area of entrepreneurship, and learning through entrepreneurial practices, this learning invites students to learn to be directly involved in business activities (Hasan *et al.*, 2019). Contact, ingenuity and imagination, coordination and cooperation, strategic thinking and problem solving, desirability and viability, ICT comprehension, social and cross-cultural, understanding and self-direction, management and leadership, and versatility and adaptability are all examples of entrepreneurial qualities that can be evaluated (Edokpor, 2020).

Al Mamun, Muniady, Fazal, and Malarvizhi (2019) were found that three of the six entrepreneurship competencies (i.e., incentive identification competency, planning competency, and partnership competency) found to be greatly impaired by business leadership training programs. These results emphasize the value of micro entrepreneurs participating in business growth training programs in order to improve their skills. An entrepreneur should have an ability to identify entrepreneurial opportunities at the beginning. Entrepreneurs may use this skill to find, evaluate, and pursue market opportunities. An entrepreneur's ability to schedule, coordinate, direct, inspire, assign, and manage resources is referred to as organizing competency. This competency is essential for every entrepreneur because it entails organizing everyday activities, purchasing and allocating capital, delegating and defining rules and regulations, as well as directing and empowering staff. The study's results showed that training programs have a positive and important impact on incentive identification, planning, and partnership competency among Malaysian micro entrepreneurs. This suggests that involved organizations' training programs and initiatives can improve micro-entrepreneurs' ability to recognize (identify, evaluate, and seek) business opportunities, as well as their ability to prepare, coordinate, lead, inspire, and allocate capital (e.g. human,

physical, financial, and technological), and their capacity to connect and form networks both on one-to-one and group bases (Al Mamun *et al.*, 2019).

RESEARCH METHOD

One of the most critical activities for progressing a line of study is synthesizing previous research results. Scientific mapping explores the relationships between disciplines, areas, specialties, and individual articles using bibliometric techniques (Zupic & Čater, 2015). Bibliometric approaches can help researchers conduct literature reviews by directing them to the most influential works and mapping the research area objectively (Zoogah & Rigg, 2014; Zupic & Čater, 2015). The aim is to divide elements (documents, writers, papers, words) into separate categories in order to create a description of the research area's structure (Zupic & Čater, 2015). After that, visualization is used to construct a graphic image of the classification that is discovered (Zupic & Čater, 2015).

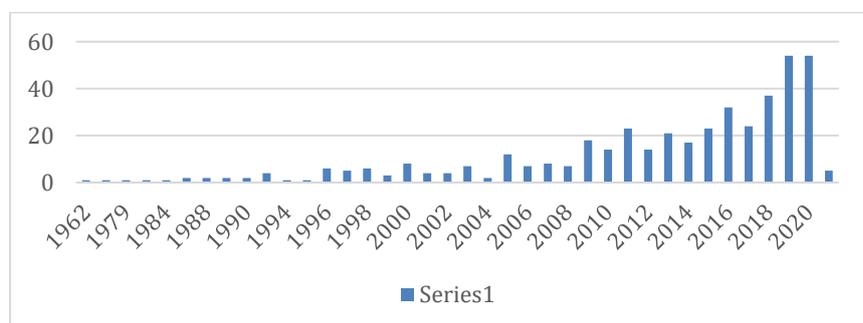
Co-word analysis is a bibliographic tool for describing, interpreting, and organizing information in a scientific field that is commonly used in scientometric science (Mihalic, Mohamadi, Abbasi, & Dávid, 2021), identifies relations between terms that appear in text names, keywords, and other places (Zupic & Čater, 2015; Dolhey, 2019; Köseoglu, Law, Okumus, Barca, & Dogan, 2019).

The author of this thesis employs bibliometric analysis (co-word analysis) to create a literature-based information system on entrepreneurial characteristics and competencies, as well as to analyze patterns and evolution of the research subject. The review process consists of the following stages:

1. Selection of keyword search criteria, namely entrepreneurial characteristics, entrepreneurial competence.
2. Selection of data base sources, namely Scopus, Web of Science and Publications. At this stage the authors collected 435 documents, consisting of 76 Scopus documents, 34 documents from Publons and 325 documents from the web of science.
3. Data analysis, in which the authors perform.
 - a. Identification of relevant papers published by year.
 - b. Identification of relevant papers published based on journals.
 - c. Areas related to entrepreneurial characteristics, entrepreneurial competence.
 - d. VOSviewer tools can be used to do co-word analysis. Co-word analysis is used to identify the keywords from all chosen articles, allowing the writers to see which fields are relevant to entrepreneurial traits and competencies.
 - e. New keywords that appear in density visualization will be used to provide suggestions regarding future research.

FINDINGS

Entrepreneurial characteristics and competencies research was discovered to begin in 1962, as seen in Figure 1.



* The search period ends on January, 2022

Figure 1. Year of publications

From 1962 to 2021, Figure 1 depicts the trend in the number of publications in the area of entrepreneurial characteristics and competencies. Research in the field of entrepreneurial characteristics and competencies has increased, this shows that this field has received quite a lot of research attention.

Furthermore, as seen in Figure 2, the researcher creates a table for publications that conduct research in the area of entrepreneurial characteristics and competencies.

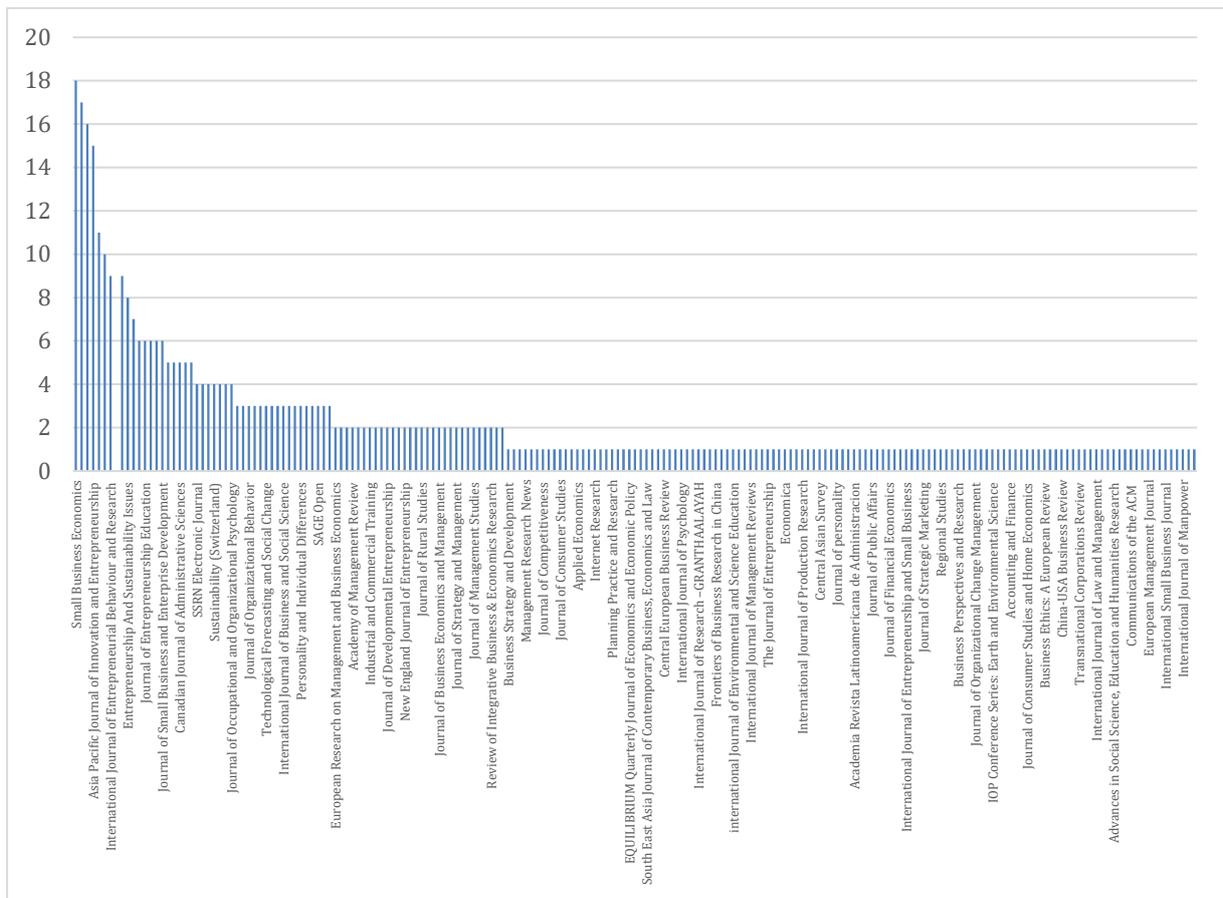


Figure 2. Distribution of publications by journal

Based on journals that publish research results in the field of entrepreneurial characteristics and competencies, the authors have grouped these journals based on the number of articles published. Small Business Economics published 18 manuscripts, Entrepreneurship: Theory and Practice published 17 manuscripts, Journal of Small Business and Entrepreneurship published 16 manuscripts, Asia Pacific Journal of Innovation and Entrepreneurship published 15 manuscripts, Journal of Small Business Management published 11 manuscripts, Journal of International Studies published 10 manuscripts, International Journal of Entrepreneurial Behaviour and Research published nine manuscripts, Journal of Business Research published nine manuscripts, Entrepreneurship And Sustainability Issues published eight manuscripts, International Journal of Entrepreneurial Behaviour & Research published seven manuscripts, Entrepreneurship and Regional Development published six manuscripts, Journal of Entrepreneurship Education published six manuscripts, Journal of Business Venturing published 6 manuscripts, Strategic Entrepreneurship Journal published six manuscripts, Journal of Small Business and Enterprise Development published six manuscripts, International Small Business Journal: Researching Entrepreneurship published five manuscripts, Journal of Entrepreneurship, Management and Innovation published five manuscripts, Canadian Journal of Administrative Sciences published five manuscripts, Industry and Higher Education published five manuscripts, Education + Training published five manuscripts.

Furthermore, the authors performed a study based on the authors' relationships, determining that the maximum number of authors per article should be five. The findings are shown in the Figure 3.

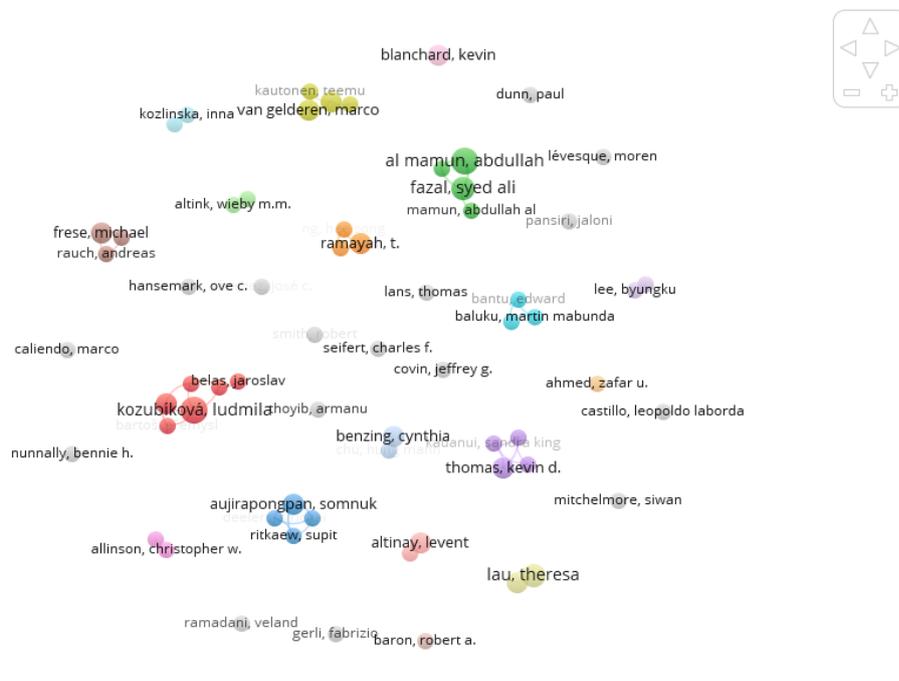


Figure 3. Co-authorship network map of various authors carried out analysis on entrepreneurial characteristics and competencies

Based on co-authoring research, Figure 3 depicts a chart of collaboration between key authors who have publications on the subject of entrepreneurial characteristics and competencies. The colors indicate the working group, while the size of the circles varies according to the number of manuscripts published by each author. From Figure 3, it can be seen that there are not many authors who are not connected to each other.

Then, using the keywords of all of the documents, a co-occurrence analysis is performed to determine which keywords are often included in the different manuscript in this review. The minimum number of occurrences of keywords is set at three, so that out of 1159, 103 satisfying keywords are obtained. In the next step, the author selects keywords with identical definitions and eliminates them.

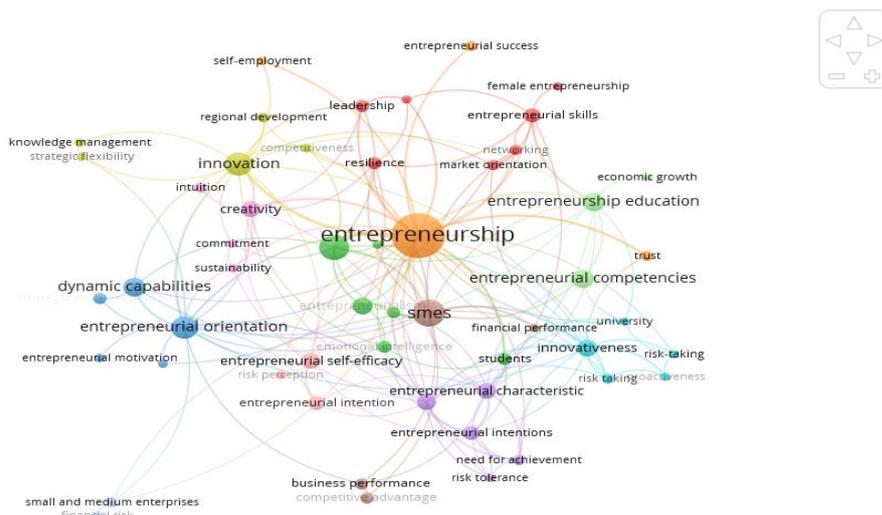


Figure 4. Keyword co-occurrences network map of various keywords, based on several studies on entrepreneurial characteristics and competencies

The keyword co-occurrence network in Figure 4 shows the various relationships between keywords and research topics, namely entrepreneurial characteristics and competencies. This map can provide some

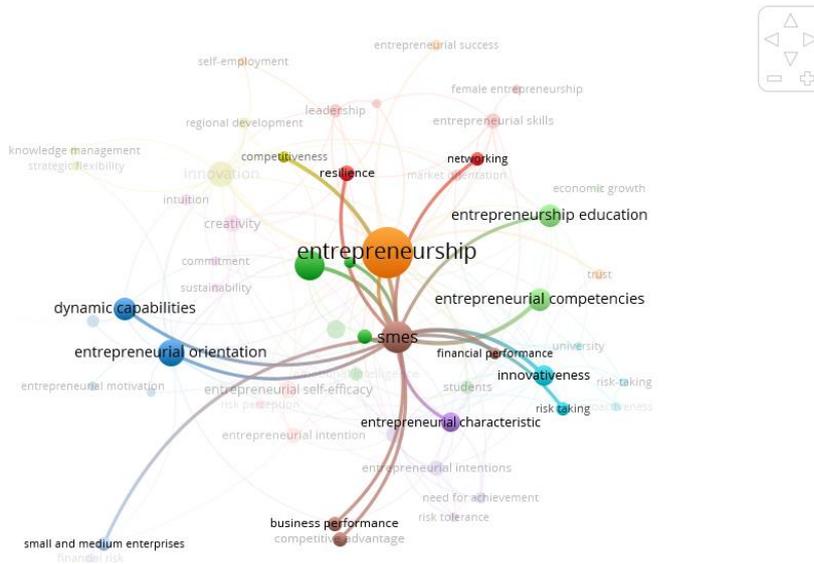


Figure 6. Keyword co-occurrences network map on small medium enterprises (SME)

Micro entrepreneurs' contribution and opportunity recognition competencies both have a significant positive impact on micro-enterprise profits, but only opportunity recognition competency has a significant positive effect on micro-enterprise asset net worth, according to the findings (Mustapha, Al Mamun, Mansori, & Balasubramaniam, 2020).

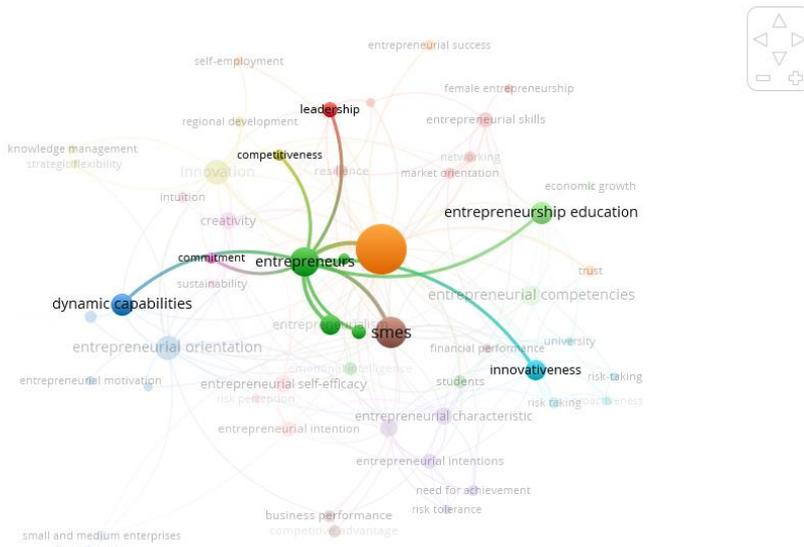


Figure 7. Keyword co-occurrences network map on entrepreneurs

The third biggest nodes are entrepreneurs connected with leadership, commitment, competitiveness, dynamic capabilities, SME, innovativeness. Ayoade, Adegbuyi, and Ogunnaike (2018) and Ezekiel, Ogunnaike, and Omotayo (2018) shows the significant impact of entrepreneurial commitment on business performance. Meanwhile, Chang (2012) found that the dynamic skills that IT entrepreneurs need include: market sensitivity, the ability to process information, social networking skills, and the ability to collaborate and negotiate in a holistic manner. The owner's innovativeness, one aspect of an entrepreneurial orientation, tends to be a significant feature of a small company because it is closely correlated with productivity, as measured in these tests, and it pervades all variables in the model (Verhees & Meulenber, 2004).

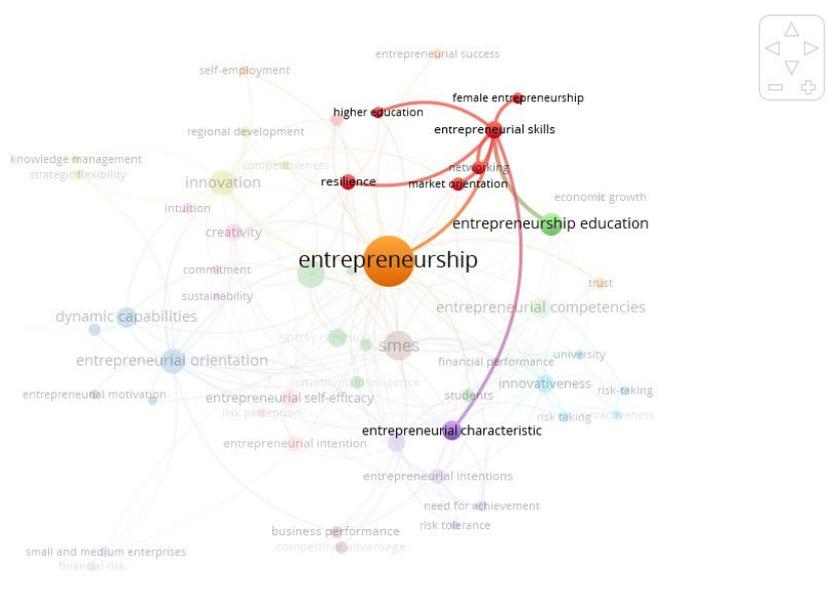


Figure 13. Keyword co-occurrences network map on entrepreneurial skills

Figure 13 shows that entrepreneurial skills are connected with female entrepreneurship, higher education, market orientation, resilience, entrepreneurship education, entrepreneurship, entrepreneurial characteristic and networking. Behling and Lenzi (2019) suggest that entrepreneurship skills can influence the implementation of more consistent market tactics, which can help people adapt to changing social and economic conditions. Entrepreneurial skills can be shaped by entrepreneurship education, by teaching various skills, such as management skills, technical skills, communication and networking. Findings of Al Mamun, Kumar, Ibrahim, and Yusoff (2018) revealed that networking is the highest contributor to entrepreneurial knowledge and skills among low-income households in Kelantan, followed by market orientation, entrepreneurial skills, and market orientation. One of the skills needed by entrepreneurs is financial management, so it is important to improve financial management skills by providing training (Riza & Ariani, 2019)

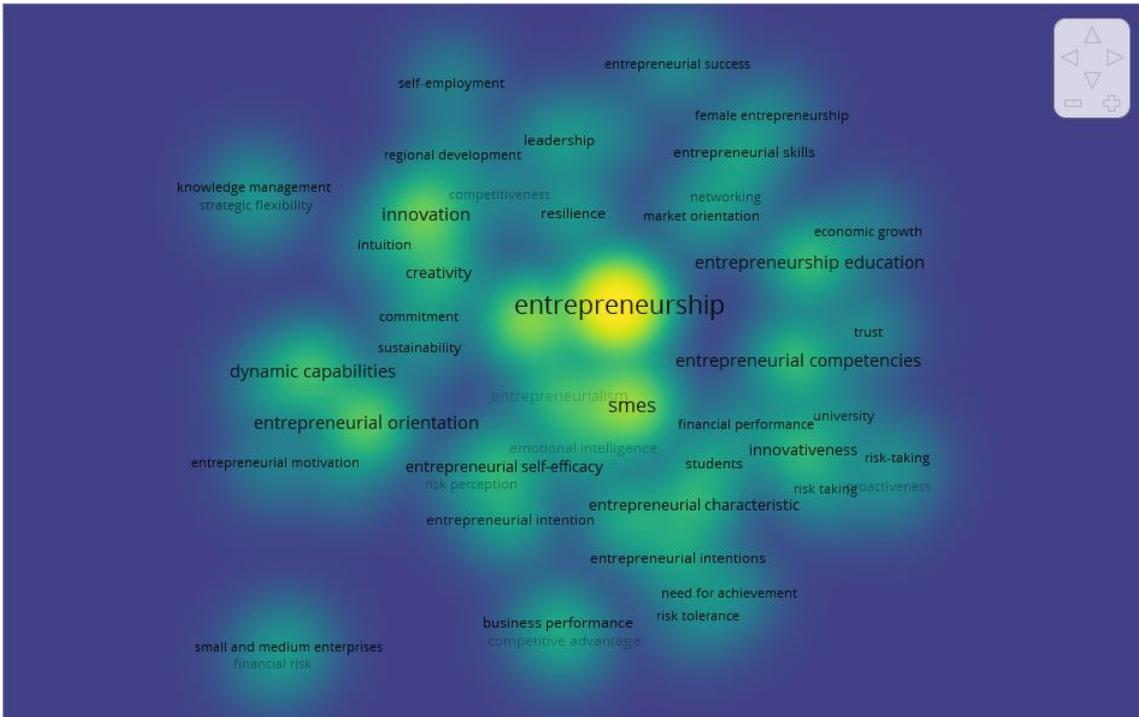


Figure 14. Density visualization on entrepreneurial characteristic and competencies

Based on Figure 14, there are still many areas that have not been studied much, such as knowledge management, strategic flexibility, entrepreneurial motivation, risk tolerance, need for achievement, risk taking, trust, entrepreneurial success.

CONCLUSION

Bibliometric analysis in the field of entrepreneurial characteristics and competencies identifies and analyzes the results of research published in journals, totaling 435 articles. Entrepreneurial characteristics and competencies are more associated with education, where entrepreneurship education can improve entrepreneurial characteristics and competencies.

In general, there are not many research results that publish entrepreneurial characteristics into a single unit, and entrepreneurial characteristics tend to be examined separately. Likewise, with entrepreneurial competence. This caused the author to have difficulty identifying the article.

Entrepreneurship education connected with entrepreneurial characteristic, entrepreneurial competencies. Entrepreneurship education influence entrepreneurial competencies, as a distinct set of skills necessary for good entrepreneurship. It's important to determine the characteristics and skills for entrepreneurship growth in this setting, such as perseverance, a goal-oriented approach, the ability to see opportunities, and motivation. Entrepreneurial skills connected with resilience, entrepreneurship education, entrepreneurial characteristic and networking. Entrepreneurial skills can be shaped by entrepreneurship education, by teaching a variety of skills, such as management skills, technical skills, communication and networking.

Future research can be directed towards researching topics such as knowledge management, strategic flexibility, entrepreneurial motivation, risk tolerance, need for achievement, risk taking, trust, entrepreneurial success in the area of entrepreneurship or small and medium enterprises.

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REFERENCES

- Abdulwahab, M. H., & Al-damen, R. A. (2015). The Impact of entrepreneurs ' characteristics on small business success at medical instruments supplies organizations in Jordan. *International Journal of Business and Social Science*, 6(8), 164–175.
- Afolabi, A. (2015). The effect of entrepreneurship on economic growth and development in Nigeria. *International Journal of Development and Economic Sustainability*, 3(2), 49–65.
- Al Mamun, A., & Fazal, S. A. (2018). Effect of entrepreneurial orientation on competency and micro-enterprise performance. *Asia Pacific Journal of Innovation and Entrepreneurship*, 12(3), 379–398. <https://doi.org/10.1108/apjie-05-2018-0033>
- Al Mamun, A., Fazal, S. A., & Muniady, R. (2019). Entrepreneurial knowledge, skills, competencies and performance. *Asia Pacific Journal of Innovation and Entrepreneurship*, 13(1), 29–48. <https://doi.org/10.1108/apjie-11-2018-0067>
- Al Mamun, A., Kumar, N., Ibrahim, M. D., & Bin Yusoff, M. N. H. (2017). Validating the measurement of entrepreneurial orientation. *Economics and Sociology*, 10(4), 51–66. <https://doi.org/10.14254/2071-789X.2017/10-4/5>
- Al Mamun, A., Kumar, N., Ibrahim, M. D., & Yusoff, H. (2018). Establishing a valid instrument to measure entrepreneurial knowledge and skill. *Business Perspectives and Research*, 6(1), 1–14. <https://doi.org/10.1177/2278533717730449>
- Al Mamun, A., Muniady, R. A., Ibrahim, M. A. H. Bin, & Nawi, N. B. C. (2018). Effect of economic vulnerability on entrepreneurial competencies among Malaysian micro-entrepreneurs. *Asia Pacific Journal of Innovation and Entrepreneurship*, 12(2), 222–237. <https://doi.org/10.1108/apjie-03-2018-0013>
- Al Mamun, A., Muniady, R., Fazal, S. A., & Malarvizhi, C. A. (2019). Micro-enterprise development

- training and entrepreneurial competencies among low-income households in Malaysia. *Asia Pacific Journal of Innovation and Entrepreneurship*, 13(3), 354–366. <https://doi.org/10.1108/apjie-06-2019-0042>
- Ankrah, E., & Collins, C. Y. M. (2015). Measuring performance in small and medium scale enterprises in the manufacturing industry in Ghana. *International Journal of Research in Business Studies and Management*, 2(12), 34–43.
- Anwar, I., & Saleem, I. (2019). Exploring entrepreneurial characteristics among university students: an evidence from India. *Asia Pacific Journal of Innovation and Entrepreneurship*, 13(3), 282–295. <https://doi.org/10.1108/apjie-07-2018-0044>
- Arasteh, H., Enayati, T., Zamani, F., & Khademloo, A. (2012). Entrepreneurial personality characteristics of university students: A case study. *Social and Behavioral Sciences*, 46, 5736–5740. <https://doi.org/10.1016/j.sbspro.2012.06.507>
- Arend, R. J. (2014). Entrepreneurship and dynamic capabilities: How firm age and size affect the “capability enhancement-SME performance” relationship. *Small Business Economics*, 42(1), 33–57. <https://doi.org/10.1007/s11187-012-9461-9>
- Ataei, P., Karimi, H., Ghadermarzi, H., & Norouzi, A. (2020). A conceptual model of entrepreneurial competencies and their impacts on rural youth’s intention to launch SMEs. *Journal of Rural Studies*, 75(April 2019), 185–195. <https://doi.org/10.1016/j.jrurstud.2020.01.023>
- Aujirapongpan, S., Songkajorn, Y., Hareebin, Y., Deelers, S., & Jutidharabongse, J. (2020). Indicators of strategic intuition for SMEs’ entrepreneurs: Evidence from Thailand Somnuk. *Entrepreneurship And Sustainability Issues*, 8(2), 51–63.
- Ayoade, E. O., Adegbuyi, O., & Ogunnaike, O. O. (2018). Entrepreneurs’ commitment and business performance in a recessed economy. *Academy of Entrepreneurship Journal*, 24(2), 11–22. <https://doi.org/10.21125/iceri.2017.2259>
- Bahri, S., & Arda, M. (2019). Pengaruh karakteristik pengusaha terhadap keberhasilan usaha kecil pada kalangan Generasi Z. *Seminar Nasional Kewirausahaan*, 1(1), 265–273. Retrieved from <http://journal.umsu.ac.id/index.php/snk/article/view/3621>
- Baručić, A., & Umihanić, B. (2016). Entrepreneurship education as a factor of entrepreneurial opportunity recognition for starting a new business. *Management (Croatia)*, 21(2), 27–44.
- Behling, G., & Lenzi, F. C. (2019). Entrepreneurial competencies and strategic behavior: A study of micro entrepreneurs in an emerging country. *Brazilian Business Review*, 16(3), 255–272. <https://doi.org/10.15728/bbr.2019.16.3.4>
- Bernat, T., Maciejewska-Skrendo, A., & Sawczuk, M. (2016). Entrepreneurship – risk – genes, experimental study. Part 1 - Entrepreneurship and risk relation. *Journal of International Studies*, 9(3), 270–278. <https://doi.org/10.14254/2071-8330.2016/9-3/21>
- Bikse, V., & Riemere, I. (2013). The development of entrepreneurial competences for students of Mathematics and the Science subjects: The Latvian experience. *Procedia - Social and Behavioral Sciences*, 82, 511–519. <https://doi.org/10.1016/j.sbspro.2013.06.301>
- Bird, B. (2019). Toward a theory of entrepreneurial competency. *Advances in Entrepreneurship, Firm Emergence and Growth*, 2, 115–131. <https://doi.org/10.1108/S1074-754020190000021011>
- Bismala, L. (2016). Model manajemen usaha mikro kecil dan menengah (UMKM) untuk meningkatkan efektivitas usaha kecil menengah. *Jurnal Entrepreneur dan Entrepreneurship*, 5(1), 19–26.
- Bismala, L. (2021). The role of entrepreneurship education in improving student competency. *Jurnal Entrepreneur dan Entrepreneurship*, 10(1), 35–42.
- Bismala, L., Andriany, D., & Siregar, G. (2019). Model pendampingan inkubator bisnis terhadap kemajuan usaha kecil dan menengah (UKM) di kota Medan. *Seminar Nasional Kewi*, 38–44.
- Bismala, L., & Handayani, S. (2021). *Eksplorasi karakteristik kewirausahaan pelaku usaha kecil menengah*. Medan: UMSU Press.
- Bosire, K. J., & Nzaramba, K. (2013). Entrepreneurship skills development and growth of small and medium enterprises in Rwanda (Case study: “CAPLAKI”) 2007–2011. *International Journal of Information Technology and Business Management*, 17(1), 12–28.
- Burlea-Schiopoiu, A., & Mihai, L. S. (2019). An integrated framework on the sustainability of SMEs. *Sustainability*, 11(6026), 1–22. <https://doi.org/10.3390/su11216026>
- Camuffo, A., Gerli, F., & Gubitta, P. (2012). Competencies matter: Modeling effective entrepreneurship in northeast of Italy small firms. *Cross Cultural Management*, 19(1), 48–66. <https://doi.org/10.1108/CCM-01-2012-0001>

1108/13527601211195628

- Castro, M. P., Scheede, C. R., & Zermeño, M. G. (2020). Entrepreneur profile and entrepreneurship skills: Expert's analysis in the Mexican entrepreneurial ecosystem. *International Conference on Technology and Entrepreneurship - Virtual, ICTE-V, April*, 1–6. <https://doi.org/10.1109/ICTE-V50708.2020.9114372>
- Chandrayanti, T., Nidar, S. R., Mulyana, A., & Anwar, M. (2020). Impact of entrepreneurial characteristics on credit accessibility: Case study of small businesses in West Sumatera, Indonesia. *Entrepreneurship and Sustainability Issues*, 7(3), 1760–1777. [https://doi.org/10.9770/jesi.2020.7.3\(21\)](https://doi.org/10.9770/jesi.2020.7.3(21))
- Chang, C. C. (2012). Exploring IT entrepreneurs' dynamic capabilities using Q-technique. *Industrial Management and Data Systems*, 112(8), 1201–1216. <https://doi.org/10.1108/02635571211264627>
- Cheraghi, M., & Schøtt, T. (2015). Education and training benefiting a career as entrepreneur: Gender gaps and gendered competencies and benefits. *International Journal of Gender and Entrepreneurship*, 7(3), 321–343.
- Chu, P. (2000). The characteristics of Chinese female entrepreneurs: Motivation and personality. *Journal of Enterprising Culture*, 08(01), 67–84. <https://doi.org/10.1142/s021849580000005x>
- Dabić, M., Stojčić, N., Simić, M., Potocan, V., Slavković, M., & Nedelko, Z. (2021). Intellectual agility and innovation in micro and small businesses: The mediating role of entrepreneurial leadership. *Journal of Business Research*, 123(July 2020), 683–695. <https://doi.org/10.1016/j.jbusres.2020.10.013>
- Dai, L., Maksimov, V., Gilbert, B. A., & Fernhaber, S. A. (2014). Entrepreneurial orientation and international scope: The differential roles of innovativeness, proactiveness, and risk-taking. *Journal of Business Venturing*, 29(4), 511–524. <https://doi.org/10.1016/j.jbusvent.2013.07.004>
- Didonet, S. R., Simmons, G., Díaz-Villavicencio, G., & Palmer, M. (2016). Market Orientation's boundary-spanning role to support innovation in SMEs. *Journal of Small Business Management*, 54(s1), 216–233. <https://doi.org/10.1111/jsbm.12288>
- Dolhey, S. (2019). A bibliometric analysis of research on entrepreneurial intentions from 2000 to 2018. *Journal of Research in Marketing and Entrepreneurship*, 21(2), 180–199. <https://doi.org/10.1108/JRME-02-2019-0015>
- Edokpolor, J. E. (2020). Entrepreneurship education and sustainable development: Mediating role of entrepreneurial skills. *Asia Pacific Journal of Innovation and Entrepreneurship*, 14(3), 329–339. <https://doi.org/10.1108/apjie-03-2020-0036>
- Ezekiel, A., Ogunnaike, & Omotayo, A. (2018). An empirical investigation of direct and indirect effect of personality traits on entrepreneurs' commitment of SMEs. *Journal of Entrepreneurship Education*, 21, 1–11.
- Gakure, R. W., Ngugi, P. K., Waititu, A. G., & Keraro, V. N. (2013). Effect of entrepreneurial skills on the sustainability of small and medium family enterprises after the exit of the founders. *International Journal of Management & Business Studies*, 3(2), 11–24.
- Hamedi, H., & Mehdiabadi, A. (2020). Entrepreneurship resilience and Iranian organizations: application of the fuzzy DANP technique. *Asia Pacific Journal of Innovation and Entrepreneurship*, 14(3), 231–247. <https://doi.org/10.1108/apjie-10-2019-0074>
- Harkema, S. J. M., & Schout, H. (2008). Incorporating student-centred learning in innovation and entrepreneurship education. *European Journal of Education*, 43(4), 513–526. <https://doi.org/10.1111/j.1465-3435.2008.00372.x>
- Hasan, M., Hatidja, S., Nurjanna, Guampe, F. A., Gempita, & Ma'ruf, M. I. (2019). Entrepreneurship learning, positive psychological capital and entrepreneur competence of students: A research study. *Entrepreneurship and Sustainability Issues*, 7(1), 425–437. [https://doi.org/10.9770/jesi.2019.7.1\(30\)](https://doi.org/10.9770/jesi.2019.7.1(30))
- Haseeb, M., Hussain, H. I., Kot, S., Androniceanu, A., & Jermsittiparsert, K. (2019). Role of social and technological challenges in achieving a sustainable competitive advantage and sustainable business performance. *Sustainability*, 11(3811), 1–23. <https://doi.org/10.3390/su11143811>
- Heslina, Payangan, O. R., Taba, M. I., & Pabo, M. I. (2016). Factors affecting the business performance of the micro, small and medium enterprises in creative economic sector in Makassar, Indonesia. *Scientific Research Journal (SCIRJ)*, 4(1), 41–49.
- Hien, N. A., Nhu, H. H., Trung, P. T., Trang, L. N. D., & Tam, P. T. (2019). Study factors affecting management capacity and the business effectiveness: A case of small and medium enterprises in

- Vietnam. *Academy of Entrepreneurship Journal*, 25(3), 1–11.
- Idowu, O. O., Olusola, A. M., & Olawale, A. H. (2017). Effect Of Entrepreneurs' Character On SMEs Performance In Lagos State. *Journal of Management and Science*, 7(3), 17–26.
- Islam, M. A., Khan, M. A., Obaidullah, A. Z. M., & Alam, M. S. (2011). Effect of entrepreneur and firm characteristics on the business success of small and medium enterprises (SMEs) in Bangladesh. *International Journal of Business and Management*, 6(3), 289–299. <https://doi.org/10.5539/ijbm.v6n3p289>
- Jiménez, A., Palmero-Cámara, C., González-Santos, M. J., González-Bernal, J., & Jiménez-Eguizábal, J. A. (2015). The impact of educational levels on formal and informal entrepreneurship. *BRQ Business Research Quarterly*, 18, 204–212. <https://doi.org/10.1016/j.brq.2015.02.002>
- Köseoglu, M. A., Law, R., Okumus, F., Barca, M., & Dogan, I. C. (2019). Evolution of strategic management research lines in hospitality and tourism. *Journal of Hospitality Marketing and Management*, 28(6), 690–710. <https://doi.org/10.1080/19368623.2019.1550693>
- Krajnakova, E., Navikaite, A., & Navickas, V. (2015). Paradigm shift of small and medium-sized enterprises competitive advantage to management of customer satisfaction. *Inzinerine Ekonomika-Engineering Economics*, 26(3), 327–332.
- Kurniawan, J. E., Setiawan, J. L., Sanjaya, E. L., Wardhani, F. P. I., Virlia, S., Dewi, K., & Kasim, A. (2019). Developing a measurement instrument for high school students' entrepreneurial orientation. *Cogent Education*, 6(1), 1–12. <https://doi.org/10.1080/2331186X.2018.1564423>
- Kyguolienė, A., & Švipas, L. (2020). Personal entrepreneurial competencies of participants in experiential entrepreneurship education. *Management of Organizations: Systematic Research*, 82(1), 37–51. <https://doi.org/10.1515/mosr-2019-0012>
- Lackéus, M. (2015). *Entrepreneurship in education: What, why, when, how*. Retrieved from https://www.oecd.org/cfe/leed/BGP_Entrepreneurship-in-Education.pdf
- Man, T. W. Y.. (2019). Nurturing entrepreneurial competencies through university-based entrepreneurship centers: A social constructivist perspective. *Advances in Entrepreneurship, Firm Emergence and Growth*, 21, 141–161. <https://doi.org/10.1108/S1074-754020190000021006>
- Man, T. W. Y., & Lau, T. (2005). The context of entrepreneurship in Hong Kong: An investigation through the patterns of entrepreneurial competencies in contrasting industrial environments. *Journal of Small Business and Enterprise Development*, 12(4), 464–481. <https://doi.org/10.1108/14626000510628162>
- Mihalic, T., Mohamadi, S., Abbasi, A., & Dávid, L. D. (2021). Mapping a sustainable and responsible tourism paradigm: A bibliometric and citation network analysis. *Sustainability (Switzerland)*, 13(853), 1–22. <https://doi.org/10.1016/j.jclepro.2021.126376>
- Mitchelmore, S., & Rowley, J. (2010). Entrepreneurial competencies: A literature review and development agenda. *International Journal of Entrepreneurial Behaviour & Research*, 16(2), 92–111. <https://doi.org/10.1108/13552551011026995>
- Musluhittinoglu, N. N., & Adiguzel, Z. (2019). Analysis regarding impact of self-efficacy and personality traits of university students on their entrepreneurial intentions. *Ekonomi, İşletme ve Maliye Araştırmaları Dergisi*, 1(2), 156–175.
- Mustapha, W. N. W., Al Mamun, A., Mansori, S., & Balasubramaniam, S. (2020). Effect of entrepreneurial competencies on micro-enterprises income and assets in Malaysia. *Asia Pacific Journal of Innovation and Entrepreneurship*, 14(3), 249–261. <https://doi.org/10.1108/apjie-01-2020-0009>
- Ndoen, W. M., Bunga, M., & Fanggidae, R. E. (2019). Analysis of small and medium industry of the tenun ikat craft in Kupang city. *Advances in Economics, Business and Management Research*, 103, 138–141.
- Nikraftar, T. (2016). The competitiveness of small and medium sized enterprises of stone industry. *Journal of Engineering Management and Competitiveness*, 6(2), 92–98. <https://doi.org/10.5937/jemc.1602092n>
- Prianto, A., Zoebaida, S., Sudarto, A., & Hartati, R. S. (2018). The effectiveness of an entrepreneurship learning model in growing competence and entrepreneurial intention of vocational high school students in East Java Indonesia. *International Journal of Humanities and Social Science*, 8(8), 199–209. <https://doi.org/10.30845/ijhss.v8n8p22>
- Rankhumise, E. M., & Letsoalo, M. E. (2019). Owners' perspective of factors associated with performance of small, medium and micro enterprises. *International Journal of Entrepreneurship*, 23(3),

1–17.

- Reissová, A., Šimsová, J., Sonntag, R., & Kučerová, K. (2020). The influence of personal characteristics on entrepreneurial intentions: International comparison. *Entrepreneurial Business and Economics Review*, 8(4), 29–46. <https://doi.org/10.15678/EBER.2020.080402>
- Rico, P., & Cabrer-Borrás, B. (2019). Entrepreneurship, firms creation and regional performance. *European Journal of Management and Business Economics*, 28(2), 158–173. <https://doi.org/10.1108/ejmbe-07-2018-0077>
- Riza, F. V., & Ariani, R. (2019). Pelatihan manajemen keuangan berbasis excel pada unit Up2k di desa Galang Suka. *Seminar Nasional Kewirausahaan*, 1(1), 373–377.
- Ruskov, P., Haralampiev, K., & Georgiev, L. (2012). *Online investigation of SMEs competitive advantage*. Presented in the 10th International Conference on Management, Enterprise and Benchmarking June 1–2, 2012, Budapest, Hungary
- Tagraf, H., & Akin, E. (2009). Relations between the characteristics of entrepreneurship and the business owner: An analysis of SME's in Konya. *Serbian Journal of Management*, 4(2), 239–257.
- Tirtayasa, S., Khair, H., & Yusri, M. (2021). Influence of education of entrepreneurship, self efficacy, locus of control and entrepreneurs characters of enterprises (The study case is all the students of private university in Medan) Satria. *Indonesian Journal of Education, Social Sciences and Research*, 2(2), 53–64.
- Tresna, P. W. (2017). External and internal environment analysis (A study in Tasikmalaya city embroidery Industry). *Review of Integrative Business and Economics Research*, 6(1), 401–411.
- Verhees, F. J. H. M., & Meulenbergh, M. T. G. (2004). Market Orientation, innovativeness, product innovation, and performance in small firms. *Journal of Small Business Management*, 42(2), 134–154.
- Vodă, A. I., & Florea, N. (2019). Impact of personality traits and entrepreneurship education on entrepreneurial intentions of business and engineering students. *Sustainability (Switzerland)*, 11(1192), 1–34. <https://doi.org/10.3390/SU11041192>
- Wang, J., & Yang, W. (2019). The construction of college students' entrepreneurial competency model and its improvement path. *Advances in Social Science, Education and Humanities Research*, 329 (Iccessh), 1363–1366. <https://doi.org/10.2991/iccessh-19.2019.301>
- Wirda, F., Herri, Elfindri, Rivai, H. A., & Herizon. (2019). Competitive advantage: Mediation effect between entrepreneurial competency and business performance creative industries in West Sumatera, Indonesia. *Academy of Entrepreneurship Journal*, 25(1), 1–11.
- Zaridis, A. D. (2016). The relation between entrepreneur's characteristics and competitive advantage. A roadmap to SME's success. *International Journal of Emerging Research in Management & Technology*, 5(9), 53–58.
- Zeffane, R. (2013). Need for achievement, personality and entrepreneurial potential: A study of young adults in the United Arab Emirates. *Journal of Enterprising Culture*, 21(01), 75–105. <https://doi.org/10.1142/s0218495813500040>
- Zoogah, D. B., & Rigg, J. S. (2014). Bibliographic analysis and strategic management research in Africa. *Advancing Research Methodology in the African Context: Techniques, Methods, and Designs*, 10, 189–213. <https://doi.org/10.1108/s1479-838720140000010016>
- Zupic, I., & Čater, T. (2015). Bibliometric methods in management and organization. *Organizational Research Methods*, 18(3), 429–472. <https://doi.org/10.1177/1094428114562629>

THE ROLE OF MOTIVATION FOR SUSTAINABLE SOCIAL ENTREPRENEURSHIP

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ABSTRACT

Social entrepreneurship is the idea of social change that uses an entrepreneurial approach. Social entrepreneurship grows rapidly along with efforts to solve various social problems, such as economic improvement and poverty alleviation. Social value creation and innovation are important parts of social entrepreneurship. Social goals with the impact of community empowerment and sustainability of social entrepreneurship are values developed in social entrepreneurship. The purpose of this research is to explore the motivational factors used in creating a social business environment. The push/pull approach to motivation is used in this study. The results of this preliminary study discuss further the role of social support and the role of financial literacy for the sustainability of social entrepreneurship in a community. The results of the study answer the question that there is an influence of entrepreneurial motivation in forming social entrepreneurship, the sustainability of social enterprises is driven by an understanding of financial literacy in social business actors, other findings from this study indicate that entrepreneurial motivation encourages business sustainability. The research method used is a mixed method with quantitative and qualitative approaches, by providing a description of the results of research that has been carried out based on observations and results of interviews that have been conducted with social business actors.

Keywords: *Motivation, financial literacy, business sustainability, social entrepreneurship.*

INTRODUCTION

Running a sustainable business is not an easy thing to do these days. The COVID19 pandemic has become a condition that has made many business actors, especially social entrepreneurship, unable to continue their business due to various existing factors. This opinion is strengthened by the results of research written by Stawicki *et al.* (2020), it was said that the COVID-19 pandemic had an impact on the worsening of the global economic situation, where the GDP figure experienced negative growth, and unemployment increased. This also happened in Indonesia. Therefore, the Indonesian government issued extraordinary fiscal policies for handling Covid-19 and mitigating economic impacts in the form of stimulus funds focused on handling the Covid-19 disaster (Kementerian Koordinator Bidang Perekonomian Republik Indonesia, 2020).

The above conditions prompted the Indonesian government to make extraordinary breakthroughs so that Indonesia would not be too depressed economically because of this pandemic. One of the efforts that the government can do is to encourage the birth of social entrepreneurs through providing opportunities for social entrepreneurs. The government together with the relevant ministries need to initiate more new social entrepreneurs through social entrepreneurship incubators, competitions, grants, incentives, awards and various other programs as an integrated ecosystem circle, in creating social entrepreneurship more massively, especially for young people and women.

Building entrepreneurship, especially social entrepreneurship, is not an easy thing in the current economic conditions. Many businesses that have been running have also closed due to current conditions. Motivation is one of the internal factors that has an important role for social entrepreneurship actors to maintain the sustainability of social entrepreneurship that is run. Based on the explanation above, the purpose of this study is to explore the motivational factors used in creating a social business environment. The push/pull approach to motivation proposed by Gilad and Levine (1986) will be used in this study.

LITERATURE REVIEW AND HYPOTHESIS

Entrepreneurial motivation is a person's attention, pleasure, and willingness to carry out independent business activities based on their abilities, strengths and skills (Herawati, 2000). The motivation theory used in this study is a theory related to entrepreneurial motivation, using motivation theory through a push/pull approach (Gilad & Levine, 1986; Kirkwood & Campbell-Hunt, 2007; Schjoedt & Shaver, 2007). Using the drive theory according to the push approach and using the incentive theory according to the pull approach (Carsrud & Brannback, 2011). The push dimension used consists of economic (lack of employment) and non-economic (dissatisfaction with previous work) motives. Business creation is motivated by a driving factor known as the entrepreneurial need (Reynolds *et al.*, 2002; Acs, & Varga, 2005). Meanwhile, the pull dimension consists of economic motives (the existence of business opportunities which means an increase in income) and non-economic motives (the desire to be independent). The pull dimension is related to opportunity-driven creation (Reynolds *et al.*, 2002; Acs, & Varga, 2005). This is the main characteristic of the push/pull approach, namely that the two dimensions have an exclusive relationship. This model is commonly used to measure entrepreneurial motivation in the Global Entrepreneurship Monitor Survey (GEM). The questions given are used to classify entrepreneurs either because of need or opportunity (Acs, & Varga, 2005).

Table 1
Push/Pull Model

Push	Pull
Necessity/Dissatisfaction	Opportunity/Independence

A common concern about using this approach is that there may be bias in the interpretation of motivation caused by exclusive choice. Another problem with the push/pull model was studied by Hughes (2003). In this article, the author explains about dimensional ambiguity. The tendency to dichotomize individual choices to determine who is pushed or pulled is a limitation of the study of entrepreneurial motivation (Hughes, 2003).

There are four main drivers of entrepreneurial motivation. First, the desire for independence (and related factors such as greater autonomy and control) is often cited as the number one motivating factor for many people to become entrepreneurs (Alstete, 2003; Wilson, DeJoy, Vandenberg, Richardson, & Mcgrath, 2004; Cassar, 2007). A desire for independence is primarily classed as a pull factor. The second is monetary motivation which is also classified as a pull factor. Time flexibility is also a push and pull factor to run entrepreneurship. The last motivational factor is external factors, such as sources of opportunities, the importance of stakeholders and how to measure performance can explain the decision to engage in the creation of a corporate social environment related to social entrepreneurial activities.

According to Prabawanti and Sanie (2018), social entrepreneurship is believed to be able to bring benefits to society. Communities consisting of various stakeholders can get involved and feel both directly and indirectly the benefits of social entrepreneurship.

Schwab (2010) revealed that social entrepreneurs have an important role to share in the current economic crisis. Through social entrepreneurship, the problem of the financial crisis can be solved and even promote economic development, especially in Asia by maximizing the role of society and the environment through innovative and effective business models. Social entrepreneurship is an option to overcome social problems carried out by developing countries, Hulgard (2010) provides an understanding that social entrepreneurship consists of four main elements, namely: social value, civil society, innovation, economic activity.

Based on the explanation above, the purpose of this study is to explore the motivational factors used in creating a social business environment. The push/pull approach to motivation proposed by Gilad and Levine (1986) will be used in this study. Overall, this research is expected to provide answers

related to the push and pull motivation of social entrepreneurship actors to build business sustainability and the impact generated by women's social entrepreneurship for the community.

The research questions that will be answered in this study are:

1. Does entrepreneurial motivation influence social entrepreneurship?
2. Does entrepreneurial motivation encourage business sustainability?

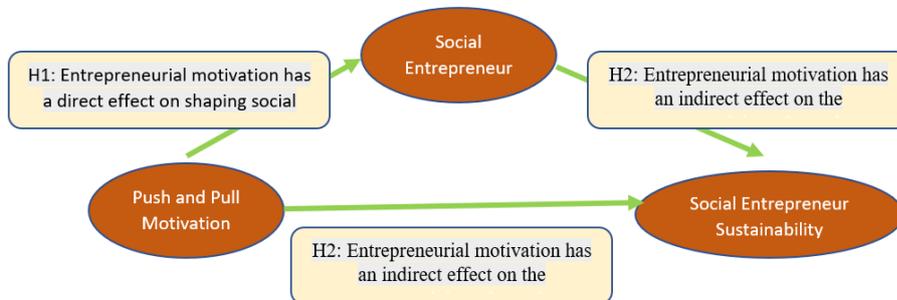


Figure 1. Conceptual framework

The hypothesis formed from the conceptual framework above is as follows:

- H₁*: Entrepreneurial motivation has a direct effect on shaping social entrepreneurship.
H₂: Entrepreneurial motivation has an indirect effect on the sustainability of social entrepreneurship.
H₃: Entrepreneurial motivation has a direct effect on the sustainability of social entrepreneurship efforts.

RESEARCH METHOD

This research design uses a mix method approach (qualitative – quantitative). The research design begins with analyzing the situation through a survey that aims to get a descriptive picture of the characteristics of the population and study the relationship between elements used in the research model through testing (Priyono, 2008). Researchers will use open-ended questions to obtain answers about the motivations needed for female social entrepreneurship actors, for the sustainability of their business.

Sampling Method

Researchers will use purposeful sampling, namely researchers select participants based on the characteristics that have been described previously (Creswell, 2012). The existence of these predetermined characteristics is expected to help researchers to understand and explore the phenomena of this research topic based on the individual experiences of participants.

Data Analysis Technique

This research will use a mix method with quantitative and qualitative approaches, in order to get a more complete understanding of the research questions and hypotheses. In order to carry out a quantitative analysis of the research data obtained, two methods were used, namely descriptive statistical analysis and inferential statistical analysis. Inferential statistical analysis was carried out on the data obtained through a research questionnaire made on the basic theory used. While descriptive statistical analysis aims to describe the results of interviews conducted to participants and to map out the results of these interviews to then be processed using statistical measuring tools that will help researchers to see the strength or weakness of the influence or relationship between the variables used in this study.

FINDINGS

Regression Analysis

Using simple linear regression analysis. Before reading the regression results, it is necessary to test

assumptions (normality, linearity, multicollinearity, heteroscedasticity). The normality test is carried out by testing the residual value of the regression results with the Kolmogorov-Smirnov test, if the $p\text{-value} > 0.05$, then the assumption of normality is met. The linearity test is carried out by performing ANOVA on the regression model, if the $p\text{-value} < 0.05$, then the linearity assumption is met. The multicollinearity test is seen from the value of VIF , if the value of $VIF < 10$, then the assumption of multicollinearity is met. The heteroscedasticity test was carried out using the Spearman correlation test, if the $p\text{-value} > 0.05$, then the heteroscedasticity assumption was met.

Regression analysis of motivational variables (X_i) with sustainability (Y). The assumptions were tested and the results were obtained as shown in Table 1.

Table 1
Assumptions Test 1

Assumptions	Results	Remarks
Normality	$p\text{-value} = 0.026$	The assumption of normality is not met
Linearity	$p\text{-value} = 0.00$	The linearity assumption is met
Multicollinearity	$VIF = 1.000$	The multicollinearity assumption is met
Heteroscedasticity	$p\text{-value} = 0.126$	Heteroscedasticity assumption is fulfilled

Based on the Table 1, the assumption of normality is not met so that regression analysis cannot be performed. To overcome this, check the data whether there are outliers using a boxplot as seen in Figure 2.

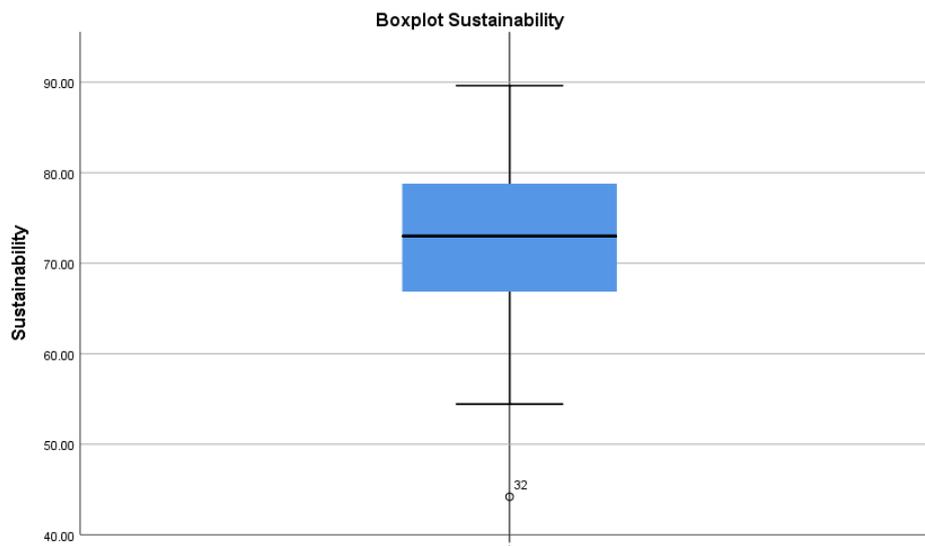


Figure 2. Boxplot sustainability

There is an outlier in the 32nd respondent, so the data is trimmed. After trimming the data, the results of the Kolmogorov-Smirnov test were obtained with $p\text{-value} = 0.200$, which is greater than 0.05 so that the assumption of normality is met. The regression analysis was carried out again and the following results were obtained (Table 2).

Table 2
The Regression Analysis 1

Independent Variable	Coefficient	Significance	Remarks
Constanta	25.834	0.001	Significant
Motivation	0.398	0.000	Significant

So that the regression equation is obtained as follows:

$$Y = 25.384 + 0.398X_1$$

So, it can be interpreted that

- (1) There is a positive influence of motivation on the sustainability of SMEs.
- (2) Each increase in the motivation variable by one unit will increase the sustainability variable by 0.398.

The *R-square* of the regression equation is 0.445, which means that based on this regression model, the motivation variable affects the sustainability variable by 44.5%, the rest (55.5%) is influenced by other variables outside the motivational variable (Figure 2).

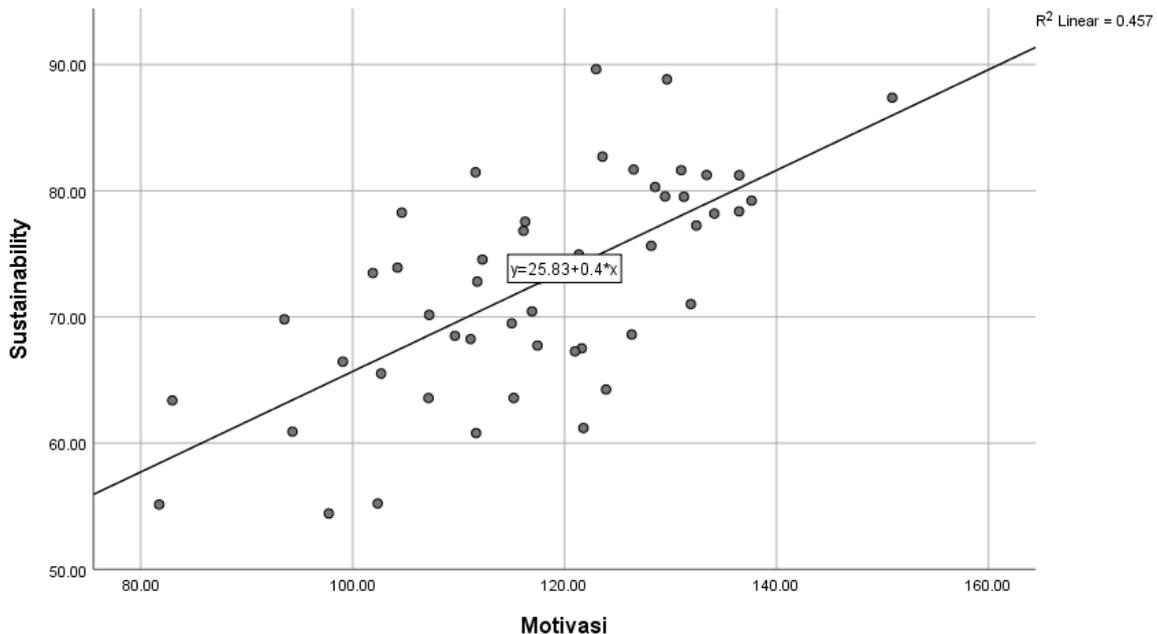


Figure 2. The regression equation

Regression Analysis of Social Support Variables (X_2) with Sustainability (Y)

The assumptions were tested and the following results were obtained (Table 3).

Table 3

Assumptions Test 2

Assumptions	Results	Remarks
Normality	$p\text{-value} = 0.200$	The assumption of normality is met
Linearity	$p\text{-value} = 0.087$	The linearity assumption is not met
Multicollinearity	$VIF = 1.000$	The multicollinearity assumption is met
Heteroscedasticity	$p\text{-value} = 0.053$	Heteroscedasticity assumption is fulfilled

The linearity assumption is not met so that regression analysis cannot be performed. To overcome this, a data transformation is carried out, in this situation the value of the X variable is transformed

into X_{23} .

After the transformation, the assumption test is carried out again and the following results are obtained (Table 4).

Table 4
Assumptions Test 3

Assumptions	Results	Remarks
Normality	$p\text{-value} = 0.187$	The assumption of normality is met
Linearity	$p\text{-value} = 0.041$	The linearity assumption is not met
Multicollinearity	$VIF = 1.000$	The multicollinearity assumption is met
Heteroscedasticity	$p\text{-value} = 0.064$	Heteroscedasticity assumption is fulfilled

After data transformation, all regression assumptions are met, regression analysis was carried out and the following results were obtained (Table 5).

Table 5
The Regression Analysis 2

Independent Variable	Coefficient	Significance	Remarks
Constanta	68.202	0.000	Significant
Motivation	0.000024	0.041	Significant

So that the regression equation is obtained as follows:

$$Y = 68.202 + 0.000024X_{23}$$

So, it can be interpreted that

- (1) An increase in the value of the social support variable by 1 to the power of 3 units will increase the sustainability variable by 0.000024.
- (2) Although there is a significant positive effect of the social support variable on sustainability, this number can be said to be very small.

The *R-square* of the regression equation is 0.084, which means that based on this regression model the social support variable explains the sustainability variable only by 8.4%, the rest is influenced by other variables outside the study.

Research Limitations

The research time was very short so that the number of respondents who filled out the questionnaire was less than 100 or as many as 60 respondents. This study only limits the role of motivation as an internal factor that makes a person do social entrepreneurship and how this motivation can encourage social entrepreneurship actors to maintain the sustainability of their business. For further research can add other variables that can be used to measure the role of these variables to create sustainability of social entrepreneurship.

REFERENCES

- Acs, Z. J., & Varga, A. (2005). Entrepreneurship, agglomeration and technological change. *Small Business Economics*, 24(3), 323–334. <https://doi.org/10.1007/s11187-005-1998-4>
- Alstete, J. W. (2003). On becoming an entrepreneur: An evolving typology. *International Journal of Entrepreneurial Behaviour & Research*, 8(4), 222–234. DOI: 10.1108/13552550210436521
- Carsrud, A., & Brännback, M. (2010). Entrepreneurial motivations: What do we still need to know? *Journal of Small Business Management*, 49, 9–26. 10.1111/j.1540-627X.2010.00312.x.
- Cassar, G. (2007) Money, money, money? A longitudinal investigation of entrepreneur career reasons, growth preferences and achieved growth. *Entrepreneurship & Regional Development: An International Journal*, 19(1), 89–107. <https://doi.org/10.1080/08985620601002246>
- Creswell, J. (2012). *Educational research* (11th ed.). Boston: Pearson Education Inc.

- Gilad, B., & Levine, P. (1986). A behavioural model of entrepreneurial supply. *Journal of Small Business Management*, 24, 45–53.
- Herawati. (2000). *Kewiraswastaan*. Jakarta: BP IPWI.
- Hughes, K. (2003). Pushed or pulled? Women's entry into self-employment and small business ownership. *Gender, Work, and Organization*, 10(4), 433–454. <https://doi.org/10.1111/1468-0432.00205>
- Hulgard, L. (2010). *Discourses of social entrepreneurship - Variation of the same theme?* Retrieved from https://base.socioeco.org/docs/wp_10-01_hulg_rd_web_.pdf
- Kementerian Koordinator Bidang Perekonomian Republik Indonesia (2020). *Pemerintah umumkan stimulus ekonomi kedua untuk menangani dampak Covid-19*. Retrieved from <https://ekon.go.id/publikasi/detail/183/pemerintah-umumkan-stimulus-ekonomi-kedua-untuk-menangani-dampak-covid-19>
- Kirkwood, J., & Campbell-Hunt, C. (2007). Using multiple paradigm research methodologies to gain new insights into entrepreneurial motivations. *Journal of Enterprising Culture*, 15(3), 219–241. <http://dx.doi.org/10.1142/S0218495807000137>
- Prabawanti, B. E., & Sanie, Y. R. S. (2018). *Kewirausahaan sosial: Konsep teori dan praktek*. Jakarta: Penerbit Unika Atma Jaya.
- Priyono. (2008). *Metode penelitian kuantitatif*. Sidoarjo: Zifatama Publishing.
- Reynolds, P., & Bygrave, W. D., Autio, E., Cox, L. W., & Hay, M. (2003). *Global entrepreneurship monitor: 2002 executive report*. Babson College, London Business School, Ewing Marion Kauffman Foundation. <http://dx.doi.org/10.13140/RG.2.1.1977.0409>
- Schjoedt, L., & Shaver, K. G. (2007). Deciding on an entrepreneurial career: A test of the pull and push hypotheses using the panel study of entrepreneurial dynamics data. *Entrepreneurship: Theory and Practice*, 31(5), 733–752. <https://doi.org/10.1111%2Fj.1540-6520.2007.00197.x>
- Schwab, H. (2010). *Schwab foundation honours Asia social entrepreneurs of the year*. Geneva: The World Economic Forum.
- Stawicki, S. P., et al. (2020). The 2019–2020 novel coronavirus (severe acute respiratory syndrome coronavirus 2) pandemic: A joint American College of Academic International Medicine-World Academic Council of Emergency Medicine Multidisciplinary Covid-19 working group consensus paper. *Journal of Global Infectious Diseases*, 12(2), 47–93. doi: 10.4103/jgid.jgid_86_20
- Wilson, M., DeJoy, D., Vandenberg, R. J., Richardson, H. A., & Mcgrath, A. L. (2004). Work characteristics and employee health and well-being: Test of a model of healthy work organization. *Journal of Occupational and Organizational Psychology*, 77(4), 565–588. <http://dx.doi.org/10.1348/0963179042596522>

STARA IMPLEMENTATION IN VUCA WORLD: THEORETICAL DIMENSIONS AND CONCEPTUAL FRAMEWORK

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ABSTRACT

Advancements in the field of technology have led to the relentless progression in every aspect of human life. This dynamic and fast-paced life has also created situations of high vulnerability and liability. This comes primarily from volatility, uncertainty, complexity, and ambiguity (VUCA) of situations, which arises due to the present way of living. A new measure (STARA competencies) has been evaluated in this study to evaluate the probable role it could play to alleviate and eliminate the present situation of vulnerability caused by the modern-day dynamic style of life. The study has been conducted using secondary data. The grounded theory approach has been used to perform data analysis. A positivist research philosophy and descriptive research design have been selected as the framework to conduct the study. It has been found that humans are capable of designing systems that could outperform them. This could be significant in eliminating the errors and mistakes from systems. This can be a major step towards creating a world which with minimal volatility, uncertainty, complexity, and ambiguity. Smart technologies can be highly useful in preventing the rise of confusing and ambiguous situations. Similarly, artificial intelligence and smart algorithms can be developed to reduce the volatility and uncertainty of situations. Higher STARA competencies have been found to positively impact eliminating VUCA characteristics.

Keywords: *STARA competencies, VUCA world, STARA framework, technology in VUCA scenario, STARA antecedents and consequences.*

INTRODUCTION

Looking at the present, it can be certainly said that humans live in a VUCA world- an acronym that was first coined in the army is now widely used in different sectors of business as well as in societies. VUCA stands for volatility, uncertainty, complexity, and ambiguity. These characteristics, when integrated, designate a very difficult situation or circumstance (Rodriguez & Rodriguez, 2015).

As stated by Mack, Khare, Krämer, and Burgartz (2015), volatility can be relative to any situation that is subject to change. This can be associated with stock markets. A company can gain or lose a massive proportion of its value within a few days. Weather can similarly be associated with volatility. Volatility leads to an unstable and unpredictable situation. It does not associate with complications or difficulty. Volatility is inversely proportional to the ability to predict the outcome of a situation.

Uncertainty is related to the lack of adequate information which inhibits the ability to predict the result of events. An uncertain situation is not necessarily volatile. It is the absence of certainty about the consequences of actions.

A complex situation arises due to the presence of numerous parts in a system that is highly interconnected and reciprocative to each other. It is mostly impossible to relate the behaviour of a system with an individual fragment due to the absence of any central unit controlling or designing it. Ambiguity generates due to the presence of more than one interpretation of a system. The presence of no absolute meaning gives rise to a vague, indistinct, insufficient, and contradictory situation. This inhibits human limitations to extract clear and comprehensible meaning from a situation (Kraaijenbrink, 2022).

Stara Competencies

STARA is the acronym for Smart Technology, Artificial intelligence, Robotics, and Algorithms. A brief assessment of the above technologies will provide a concise idea regarding the concept of STARA and its operations (Oosthuizen, 2019).

Smart Technology: The word ‘SMART’ symbolizes “self-monitoring, analysis and reporting technology”. It is a broad spectrum that is associated with introducing innovations and creations in the area of technology. Smart technology has assured sustainability, convenience, safety, and efficiency in everyday operations. The internet of things (IoT), smart connected devices, and smart devices are some of the major smart technologies which are involved in providing ease and convenience (Xiao *et al.*, 2018).

Artificial Intelligence (AI): It is a branch of technology associated with computer science and is concerned with designing super-smart machines which replicate the human brain. Smart assistants, self-driving cars, conversational bots, and youtube recommendations are some examples of artificial intelligence (Priyadarshini & Cotton, 2021).

Robotics: The integrating fields of science, engineering, and technology is called robotics. The field is concerned with the designing of machines that are capable of performing human activities mechanically such as performing surgical tasks, assembling the parts of an automobile, etc. Robots can be preprogrammed, humanoid robots, teleported robots, augmented robots, etc. (Redfield, 2021).

Algorithms: Algorithms are sequential instructions to conduct mathematical operations. Algorithms have prominent applications in different practical and intellectual fields. They have major utilities in data processing, automated reasoning, and machine learning. Some major types of algorithms include search engine algorithms, greedy algorithms, encryption algorithms, recursive algorithms, dynamic programming algorithms, etc. (Koren, 2018).

Research Aim and Objectives

The following study has been conducted to develop theoretical dimensions and design a conceptual framework for STARA implementation in a VUCA world on successful evaluation of the role of STARA in a VUCA world. The following objectives have been designed for the study:

- To explore the different aspects of a VUCA world
- To investigate the various technologies according to STARA competencies
- To evaluate the role of STARA in a VUCA world and its consequences
- To design and formulate appropriate theoretical dimensions and conceptual framework of possible STARA implementation in a VUCA world.

Research Significance

The study holds the following significance:

Shedding light on how STARA can be implemented in a VUCA world to improve present situations of vulnerability and susceptibility posed by such.

- The theoretical dimensions and conceptual framework designed by this study on how STARA can be implemented in a VUCA world can be implemented by relevant organizations or institutions to improve their situations.
- As of present, there is not much reliable and relevant information present on this subject. Hence, this study will highly benefit the ones who are interested in exploring this field.
- The study will provide valuable knowledge to all the relevant fields and aid in the conduction of similar studies in the future.

LITERATURE REVIEW

In the last few years, several theories and concepts have been developed regarding the implementation of STARA to combat VUCA situations and alleviate its consequences. Some prominent and relevant studies of the past which integrate STARA technology to improve situations have been discussed below.

Background of the Study

The acronym “VUCA” was first coined in 1987 based on the concepts of leadership laid by Warren Bennis and Burt Nanus. The US Army War College used the term in response to the collapse of the USSR in the

wee 1990s. Within a short time, the term extended its roots in various new dimensions of the digital and dynamic world (Latha, 2020).

On the contrary, technology and smart solutions have made giant strides in the societies and businesses of today. The rise in the usage of novel systems and tools in various aspects of society such as education, healthcare, and corporations is gigantic. Smart technology, artificial intelligence, robotics, and algorithms (STARA), have eased the operations of organizations and firms and eliminated errors and contingencies from the equation (Marquardt, 2017).

Predictions made by futurists have revealed that STARA could replace one-third of the manual workforce around the world that exists today. As opined by Sarkar (2016), with increasing calls to combat the presence of the VUCA world and mitigate its consequences, innovations, and advancements in radical technology are highly desired. Deploying STARA can be fundamental to alleviating the present VUCA world and its consequences. Being competent to use STARA can be highly crucial to combat the vulnerabilities and liabilities presented by a VUCA environment (Oosthuizen, 2019). Smart technologies can be even more relevant in terms of removing complexity from situations and can deliver precise information regarding situations. As per Ding and Qu (2020), the relevance of using algorithms for eliminating volatility from systems is high. Algorithms can be used to predict future outcomes of situations. This can discard the uncertainty from situations and help to develop stable and certain predictions regarding the future. Artificial intelligence and robots have been found to outperform humans in several departments. This can be beneficial in removing complexity from situations and presenting information in simpler forms. Alleviating complexity from situations can be crucial in understanding the functioning of a system and recognizing the planning and designing of the system. STARA technologies will also significantly aid in removing ambiguity from systems. Smart algorithms and technologies can be used to extract a single meaningful conclusion of situations, eliminating vagueness and contrastive elements from situations.

The VUCA situation has become quite a common scenario in different sectors and organizations of the world. It is largely down to the irregularities and fluctuations in markets and prominent businesses and their inability to get a hold of the world and control the events around them. Different parameters such as uncertainty, quick changes, dynamism, complexity, hyper-competition, disruption, and flux have been identified as the most prominent factors causing the massive surge in this uncontrollable environment (Schoemaker, Heaton, & Teece, 2018).

Ogbeibu, Jabbour, Gaskin, Senadjki, and Hughes (2021), argue that implementing STARA is crucial in promoting green activity to control global warming. To achieve this, the organizational workforce must be constantly exercised to enhance their creativity to promote green initiatives. To ensure this, it is fundamental that organizations are competent to adopt smart technologies, artificial intelligence, robotics, and algorithms (STARA). The presence of a volatile environment has hindered investors from committing funds to such innovations. However, practising STARA has shown a very prominent relevance between enhancing environmental dynamics and bolstering green creativity. STARA has been found to have a significant influence on green creativity, which in turn enhances the green organizational innovative evidence (GOIE). Green creativity has also been found to be negatively associated with environmental dynamism which reduces the effects of a VUCA world.

Brougham and Haar (2018), state that the implementation of STARA technologies has popularized self-checkout rentals, automation in accounting, driverless vehicles, and smartphone applications. They have highly reduced the uncertainty and complex characteristics associated with such systems. Such technologies also significantly provide enhanced and precise results. They are highly cost and time-effective considering they do not need to pay taxes, need pensions or health insurance, and other benefits like human employees. Sophisticated algorithms can deliver precise solutions to complex and intricate issues which otherwise would have been a very critical task for a human being. STARA has allowed the prevalence of simpler and unambiguous situations.

Ogbeibu *et al.* (2021), demonstrated the role of using advanced technology in effectively managing and nurturing talented employees in workplaces. Technological advancements in the context of smart technologies, artificial intelligence, robotics, and algorithms (STARA), can curb the risk of potential employee turnover. This is done by creating a healthy and sustainable work environment for the staff and removing all volatility, uncertainty, complexity, and ambiguity from it. Proper management of such talent leads to a fostering environment that prevents further staff turnover and promotes green creativity. The scholars also debated the role of digitalization and independent working can catalyse the entire process. Their study also revealed the role of STARA in preventing the development of a VUCA environment within a workplace which in turn improves employee functionality and yields enhanced outputs.

Waller, Lemoine, Mense, Garretson, and Richardson (2019), stated that globalization has caused higher education to face numerous challenges since the beginning. However, the most prominent challenge of today is the combination of economic uncertainty and rapid globalization. In short, the complex, dynamic, and ever-evolving situation of global higher education can be defined using VUCA. However, technology has ushered a new era in global higher education by providing interconnectedness and restructuring the system. Comprehending smart technologies and applications for organization administrators has become pivotal for higher education from the viewpoint of regional, national and international systems. Technology has massively impacted the conceptual and realistic elements of higher education globally. The world has evolved simultaneously with the evolution of technology, and higher education aided by STARA is on the path to delivering a global platform of information and accommodation to meet the ever-changing dynamics of the world and uncertainty.

Hypothesis Development

Hypothesis 1: There is a positive influence of technology acceptance in STARA implementation in a VUCA world.

Hypothesis 2: The risk factor of a VUCA world has a significant impact on STARA implementation.

Hypothesis 3: Individual factor has a significant impact on STARA implementation.

Hypothesis 4: STARA implementation has a significant influence on the behaviour of people living in a VUCA world.

RESEARCH METHOD

This chapter circumscribes all the convictions, principles, and methodologies which has scholar has adhered to conduct his/her analysis. This will provide a comprehensive understanding of the processes and techniques applied to conduct the study.

Research philosophy: The study will use a *positivist philosophy* to ensure it is conducted conveniently and its objectives are met. This philosophy has been deemed suitable as it is based on quantifiable observations which suit the requirements of the present study. This philosophy also allows the scholar to work objectively, ensuring he/she can work independently and eliminate personal opinions and biases.

Research Design: For the present study, a *descriptive research design* has been appropriately selected for describing the elemental characteristics of the topic. This design primarily deals with the subject of the phenomenon rather than its cause. This feature of the design is the most suitable for the present study. A descriptive research design does not influence any variables of the study. Thus, the behaviour of the variables in this study will not be influenced by the scholar in any way.

Data Collection: For the conduction of this study, *secondary data* has been collected for the study. This data has been primarily sourced from existing literature by prominent scholars of relevant fields. Other sources of data include journals, reliable and official websites, books, and pdfs found on Google Scholar, Research Gate, Science Direct, etc.

Data Analysis: Secondary data analysis will be conducted using the grounded theory to extract insightful and reliable information collected from the existing data. Secondary data analysis allows the researcher to evaluate the research questions from large sets of existing data. This method is also highly efficient as it

saves an enormous amount of time and resources. Hence, secondary data analysis has been considered to be suitable for investigating these data sources and generating authentic conclusions from them.

FINDINGS

The conceptual framework has been developed based on the analysis of the secondary data (Figure 1).

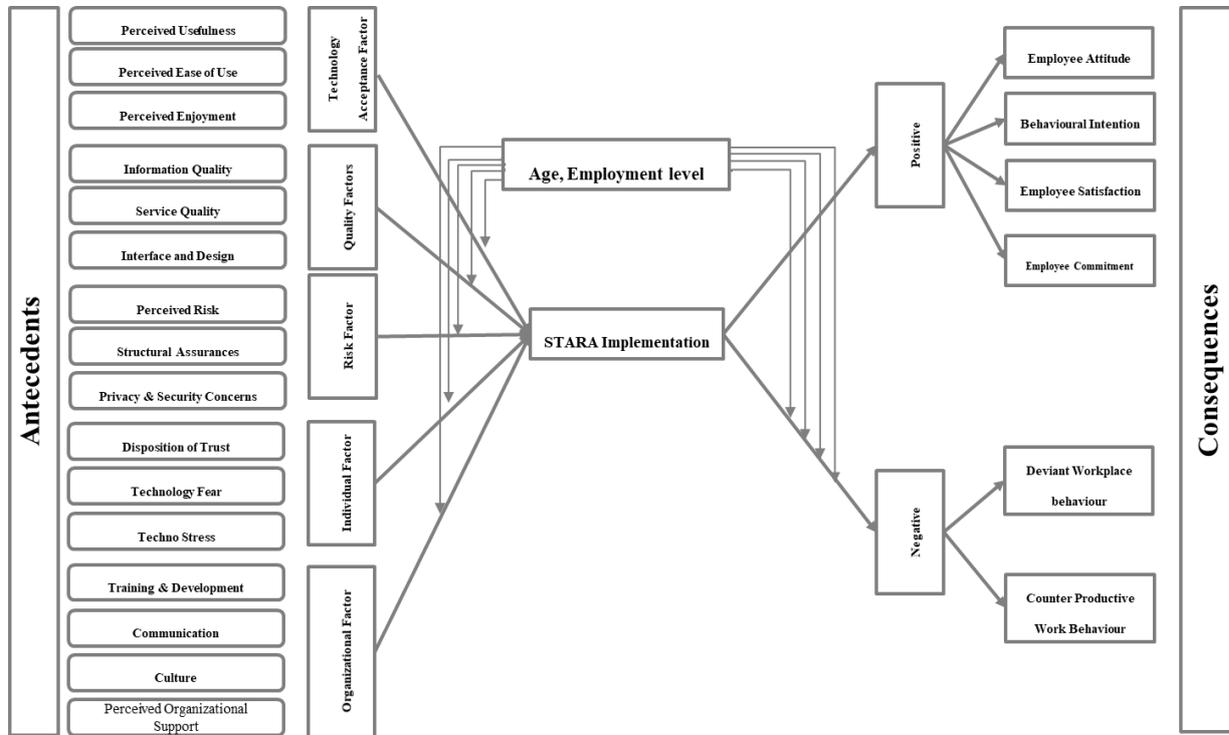


Figure 1. Conceptual framework

There were a total of 16 antecedents identified that could govern the degree of implementation of STARA within the VUCA world scenario. These are respectively perceived usefulness, information quality, service quality, interface and design, perceived risk, structural assurances, privacy and security attributes, disposition of trust, technology factor, techno stress, training and development, communication, culture, and perceived organizational support.

The consequential attributes caused by STARA's implementation within the VUCA scenario translate in two ways. The first set translates to positive consequences - employee attitude, behavioural intention, employee satisfaction, and employee commitment. The second set translates as negative consequences, i.e., deviant workplace behaviour, and counter-productive workplace behaviour.

The following theoretical framework has been designed based on existing literature and the collected secondary data (Figure 2).

On exploring existing literature and evaluating the data collected from secondary sources of data, the above factors are the most determining in implementing STARA in a VUCA world.

Technological acceptance of the population in a VUCA world is crucial in the implementation of STARA. If people in a VUCA world are open to accepting technological assistance, the process to implement STARA would be relatively convenient.

The other significant factor is the changes in the behaviour of the people on implementing STARA. If people have a negative response to the implementation of STARA, then it will be difficult to sustain the

technology in the future. Hence, STARA must be introduced in an effective manner such that the vulnerable population responds positively to it (Yudiatmaja, Salomo, & Prasajo, 2021).

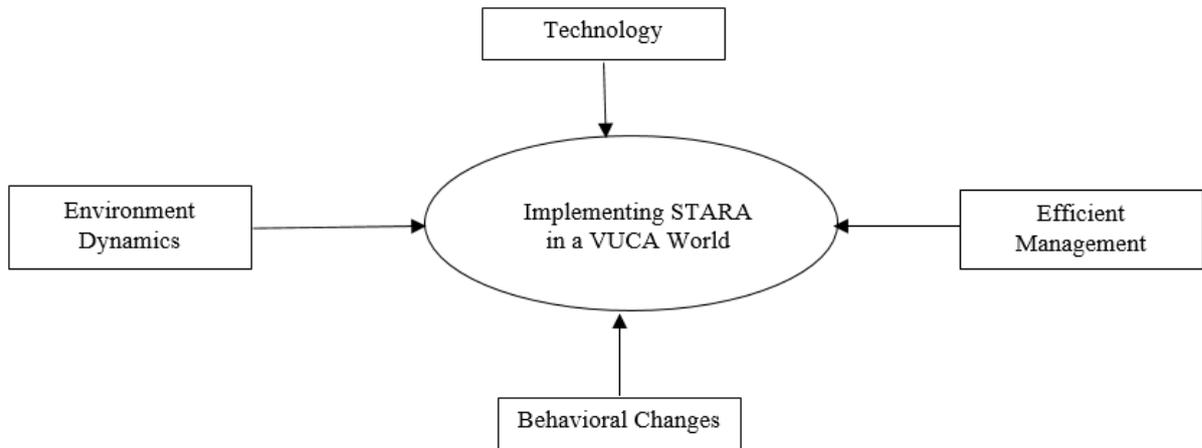


Figure 2. Theoretical framework

The extent to which an environment has been affected by VUCA dynamics will play a huge role in the implementation of STARA. It is necessary to implement STARA in stages so that it can be structured efficiently. Therefore, it is imperative to understand the environmental dynamics before implementing STARA.

Effective management is perhaps the most crucial in implementing STARA in a VUCA world. In the absence of structured management, STARA will fail massively in a VUCA world.

DISCUSSION

Outcomes relative to defined objectives

Concerning the first research objective, a VUCA world can be described as a situation or circumstance which is highly vulnerable. This is due to the inability of humans to extract precise and detailed information from present-day systems due to their highly dynamic nature.

In context to the second research objective, it can be said that the use of different aspects of STARA is relevant in specific areas of a VUCA world. Algorithms can be used to predict future outcomes of situations. Artificial intelligence and robots have been found to outperform human abilities in various situations. This can be beneficial in removing complexity from situations and presenting information in simpler and uncomplicated forms.

Referring to the third research objective, the study has verified that implementing STARA can potentially create a world with minimal volatility, uncertainty, complexity, and ambiguity. As stated by Millar, Groth, and Mahon (2018), smart technologies can be highly useful in preventing the rise of confusing and ambiguous situations. Similarly, artificial intelligence and smart algorithms can be developed to reduce the volatility and uncertainty of situations.

Introspecting the fourth research objective, the study has designed appropriate conceptual and theoretical frameworks which associate the role of different variables with the implementation of STARA in a VUCA world.

Hypothesis Significance

About the first research hypothesis, from relevant literature and findings of the study, it can be concluded that there is a definite connection between technology acceptance and implementation of STARA in a VUCA world. Hence, the alternate hypothesis holds valid.

Concerning the second hypothesis, no direct connection between implementing STARA and the volatility of a VUCA world has been established from existing literature and the findings of the study. Hence, the null hypothesis holds valid.

Concerning the third hypothesis, no direct relationship could be established between the role of an individual with the implementation of STARA in a VUCA world. Hence, the null hypothesis holds valid. Introspecting the fourth hypothesis, it has been established that the behavioral patterns of people living in a VUCA world are significantly impacted by the implementation of STARA. Therefore, the alternate hypothesis is valid here.

CONCLUSION

Morrar, Arman, and Mousa (2017), regarded the present period as the new industrial revolution. Resultantly, there have been numerous changes in the methods of how new-age systems work. This fast change is leading to a highly volatile and uncertain environment where it has become increasingly difficult to predict or forecast the nature of the future (Blackburn, Lurz, Priese, Göb, & Darkow, 2015). Consistent with the study, the findings of the research indicate a positive significance between STARA competencies and eliminating a VUCA world. Smart technologies, artificial intelligence, robotics, and algorithms are capable of generating systems that can offer stable, simple, and easy to comprehend situations. The implementation of the STARA framework can highly influence the present VUCA conditions around the world. To mitigate the consequences of a dynamic environment and a high-powered world, being competent to adopt the STARA framework can be a significant step toward creating an effortless system capable of generating undemanding and elementary information which will be easy to comprehend.

REFERENCES

- Blackburn, R., Lurz, K., Priese, B., Göb, R., & Darkow, I. L. (2015). A predictive analytics approach for demand forecasting in the process industry. *International Transactions in Operational Research*, 22(3), 407–428. <https://doi.org/10.1111/itor.12122>
- Brougham, D., & Haar, J. (2018). Smart technology, artificial intelligence, robotics, and algorithms (STARA): Employees' perceptions of our future workplace. *Journal of Management & Organization*, 24(2), 239–257. doi:10.1017/jmo.2016.55
- Ding, L., & Qu, H. (2020). Employees' STARA awareness and challenge-hindrane appraisals towards innovative work behavior: A case in the US quick-service restaurant industry. In C. Flavian (Ed.), *AIRSI2020 Proceedings book* (pp. 106–108), Zaragoza University.
- Koren, I. (2018). *Computer arithmetic algorithms*. AK Peters/CRC Press.
- Kraaijenbrink, J. (2022). *What does VUCA mean?* Retrieved 4 April 2022, from <https://www.forbes.com/sites/jeroenkraaijenbrink/2018/12/19/what-does-vuca-reallymean/?sh=5df82a2e17d6>
- Latha, S., & Christopher, P. (2020). Luca in engineering education: Enhancement of faculty competency for capacity building. *Procedia Computer Science*, 172, 741–747. <https://doi.org/10.1016/j.procs.2020.05.106>
- Mack, O., Khare, A., Krämer, A., & Burgartz, T. (Eds.). (2015). *Managing in a VUCA world*. Springer.
- Marquardt, K. (2017). Smart services—characteristics, challenges, opportunities, and business models. *Proceedings of the 11th International Conference on Business Excellence*, 789–801. DOI: 10.1515/picbe-2017-0084
- Millar, C. C. J. M., Groth, O., & Mahon, J. F. (2018). Management innovation in a VUCA world: Challenges and recommendations. *California Management Review*, 61(1), 5–14. <https://doi.org/10.1177%2F0008125618805111>
- Morrar, R., Arman, H., & Mousa, S. (2017). The fourth industrial revolution (Industry 4.0): A social innovation perspective. *Technology Innovation Management Review*, 7(11), 12–20. <http://dx.doi.org/10.22215/timreview/1117>
- Ogbeibu, S., Jabbour, C. J. C., Gaskin, J., Senadjki, A., & Hughes, M. (2021). Leveraging STARA competencies and green creativity to boost green organizational innovative evidence: A praxis for sustainable development. *Business Strategy and the Environment*, 30(5), 2421–2440. <https://doi.org/10.1002/bse.2754>

- Oosthuizen, R. M. (2019). Smart technology, artificial intelligence, robotics and algorithms (STARA): Employees' perceptions and wellbeing in future workplaces. In I. L. Potgieter, N. Ferreira, & M. Coetzee (Eds.), *Theory, research, and dynamics of career wellbeing: Becoming fit for the future* (pp. 17–40), Springer Nature Switzerland. <https://doi.org/10.1007/978-3-030-28180-9>
- Priyadarshini, I., & Cotton, C. (2021). Intelligence in cyberspace: The road to cyber singularity. *Journal of Experimental & Theoretical Artificial Intelligence*, 33(4), 683–717. <https://psycnet.apa.org/doi/10.1080/0952813X.2020.1784296>
- Redfield, S. (2019). A definition for robotics as an academic discipline. *Nature Machine Intelligence*, 1, 263–264. <https://doi.org/10.1038/s42256-019-0064-x>
- Rodriguez, A., & Rodriguez, Y. (2015). Metaphors for today's leadership: VUCA world, millennial, and "cloud leaders". *Journal of Management Development*, 34(7), 854–866. <https://doi.org/10.1108/JMD-09-2013-0110>
- Sarkar, A. (2016). We live in a VUCA world: the importance of responsible leadership. *Development and Learning in Organizations*, 30(3), 9–12. <https://doi.org/10.1108/DLO-07-2015-0062>
- Schoemaker, P. J. H., Heaton, S., & Teece, D. (2018). Innovation, dynamic capabilities, and leadership. *California Management Review*, 61(1), 15–42. <https://doi.org/10.1177%2F0008125618790246>
- Waller, R. E., Lemoine, P. A., Mense, E. G., Garretson, C. J., & Richardson, M. D. (2019). Global higher education in a VUCA world: Concerns and projections. *Journal of Education and Development*, 3(2), 73–83. <https://doi.org/10.20849/jed.v3i2.613>
- Xiao, J., Xiong, Z., Wu, S., Yi, Y., Jin, H., & Hu, K. (2018, August). Disk failure prediction in data centers via online learning. In *Proceedings of the 47th International Conference on Parallel Processing* (pp. 1–10).
- Yudiatmaja, W. E., Salomo, R. V., & Prasojjo, E. (2021, October). Smart technologies, artificial intelligence, robotics, and algorithms (STARA) competencies during COVID-19: A confirmatory factor analysis using SEM approach. *Journal of Physics: Conference Series*, 2049(1), 012014. <https://doi.org/10.1088/1742-6596/2049/1/012014>

ENTREPRENEURIAL MINDSET: A SCOPING LITERATURE REVIEW ON ITS ANTECEDENTS

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ABSTRACT

Entrepreneurial mindset is important to initiate entrepreneurial behavior, especially in the new economic era that is full of uncertainty. It is reported to benefit, not only entrepreneurs, but also students and managers. With increased attention on the construct, we sought to identify the factors that influenced or associated with entrepreneurial mindset. Scoping literature review is used to achieve the research purpose. The procedures carried out are establishing protocols, identification, selection, extraction and data synthesis. PRISMA flowchart is used to show the literatures selection process. From the 1247 papers identified through database screening, 33 articles founded to meet the inclusion criteria. Results showed several factors that influence or associated with entrepreneurial mindset, namely internal and external factors. However, these factors are fragmented, due to differences in the underlying theoretical conceptions of entrepreneurial mindset. Different conceptions will lead to different factors and conclusions. This review can provide insights for future research in entrepreneurial field. Moreover, this research can be a reference for policy makers and practitioners in an effort to develop entrepreneurial mindset.

Keywords: *Entrepreneurial mindset, scoping literature review, PRISMA.*

INTRODUCTION

An entrepreneurial mindset is important to engender entrepreneurial behavior. Entrepreneurs operate in an uncertain environment characterized by rapid change. The concept of an entrepreneurial mindset is not only needed by businesses, but also by individuals and organizations on a large scale. For large-scale organizations, adopting an entrepreneurial mindset could create a competitive advantage for the company so that it could contribute to the achievement of company performance and goals (Daspit, Fox, & Findley, 2021). Having an entrepreneurial mindset was a tool for success that assists someone to move forward in the entrepreneurial process, regardless of the business problems that were encountered (McGrath & MacMillan, 2000a). For individuals, an entrepreneurial mindset could influence one's intention to become an entrepreneur (Cao & Ngo, 2019; Alshebami, Al-Jubari, Alyoussef, & Raza, 2020), and enhance entrepreneurial creativity (Phipps & Prieto, 2012). An entrepreneurial mindset has been shown to be a critical factor in the process of gathering, evaluating and selecting knowledge that can lead individuals to potential business opportunities (Asenge, Diaka, & Soom, 2018). An entrepreneurial mindset was able to empower ordinary people to achieve extraordinary achievements (Anisah, Wandary, & Claudia, 2017).

Not only contributing to business success, an entrepreneurial mindset could lead to entrepreneurial resilience (Billingsley, Lipsey, Burnette, & Pollack, 2021). Research on Micro, Small and Medium Enterprises (MSME) entrepreneurs affected by COVID-19 showed that an entrepreneurial mindset could increase the ability of MSME entrepreneurs to survive, continue and even to grow their businesses (Purnomo et al., 2021). MSME entrepreneurs can find creative and innovative ways to process their resources. This is because MSME entrepreneurs were focused on executing opportunities and were able to change direction to seek or find new opportunities. In addition, they will also be able to create and maintain a network of relationships both inside and outside the business (Ngek, 2012), and use socio-cultural values to increase their business resilience (Purnomo et al., 2021).

While an entrepreneurial mindset has been recognized as an important thing to have, unfortunately the understanding of this construct is still superficial (Billingsley *et al.*, 2021), fragmented and underdeveloped (Pidduck, Clark, & Lumpkin, 2021). This was due to a lack of insight into the underlying conceptions of this variable, both theoretically and empirically. For this construct to be defensible and have practical utility, clarity is needed in terms of its formation and conceptualization.

Previous researchers have tried to understand and explore this construct through literature review (Daspit *et al.*, 2021; Naumann, 2017). Unfortunately, the existing literature review did not discuss the construct of entrepreneurial mindset within the scope of psychology, even though the concept of mindset comes from the domain of psychology, namely cognitive psychology (Mathisen & Arnulf, 2013; Lynch & Corbett, 2021).

Conceptual issues aside, since an entrepreneurial mindset develops over time and was not given or brought from birth (Naumann, 2017), the next question to be answered is how does one come to have an entrepreneurial mindset? How to influence or even change it? Unfortunately, scholars have paid little attention to this important question (Billingsley *et al.*, 2021). Driven by the desire to understand this construct more deeply, our research was aimed to get an overview of the construct of entrepreneurial mindset within the scope of psychology and identify the factors that influence it. From this understanding, insights will be identified that can be an agenda for future research on this construct.

RESEARCH METHOD

Research Procedure

This research was conducted by using a Semi-Systematic Literature Review (SSLR) method of entrepreneurial mindset constructs in the psychological science domain. PRISMA's multi-step process was used to select the articles that included in the study. The search was focused on empirical research articles, conceptual articles or review papers that discuss concepts and antecedents or factors that influence entrepreneurial mindset, using the keywords (mindset OR mind-set) AND Entrepreneur*. Since entrepreneurship is a multidisciplinary science, the literature search was not focused on specific journals, but rather on an aggregate of quality journals. The databases that were used are Scopus, Web of Science, and EBSCOhost. The search was limited to English-language articles published in 2012–2021. The restriction was made to get more up-to-date references.

To ensure the quality and suitability of the articles to the research objectives, articles were selected based on pre-defined criteria. The criteria for article selection are presented in the following table:

Table 1

Inclusion and Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
Using English language.	Using a language other than English.
Journal final article type with full text accessible.	Inaccessible full text.
Using one of the keywords in the title, abstract or keywords section.	Does not use one of the keywords in the title, abstract or keywords section.
Includes empirical research articles and opinion/conceptual papers.	Is a study with secondary data (review of literature, books, chapters in books etc.).
Using psychological theories/concepts.	Does not use psychological theories/concepts.
Population of students, self-employed, start-ups.	Population of companies, employees and social entrepreneurs.

The Preferred Reporting Item for Systematic Reviews and Meta-Analytic (PRISMA) method was used to select articles that were obtained from the search results. From the 1247 papers that were identified through database screening, 33 articles were found to meet the inclusion criteria. The 33 articles consisted of two literature review papers, 26 empirical studies and five conceptual papers. The detailed selection process is illustrated in Figure 1.

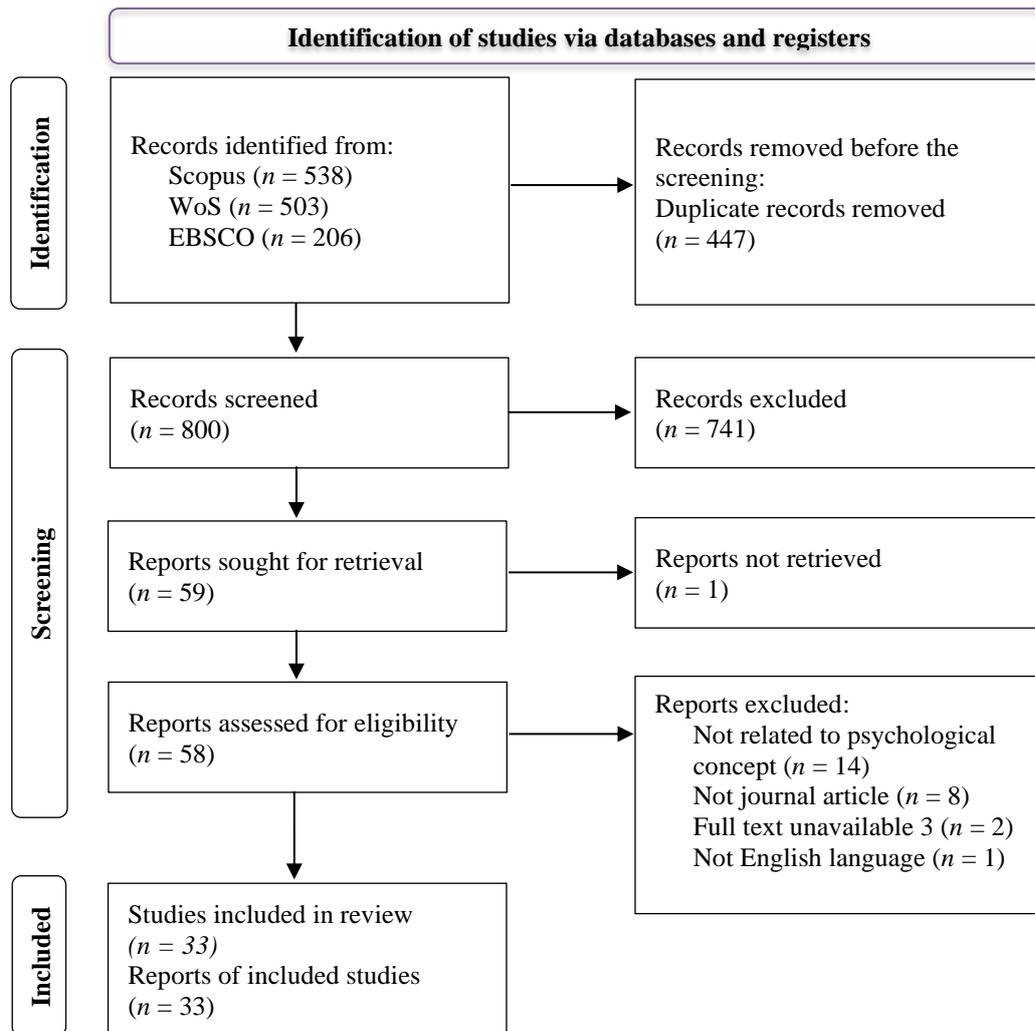


Figure 1. PRISMA flowchart

FINDINGS AND DISCUSSIONS

Theoretical Foundations of Entrepreneurial Mindset

Based on the literature search, it's found several theoretical foundations that were used by previous researchers to explain the construct of entrepreneurial mindset in the psychology domain. The first theory, which is also the initial theory in the development of this construct, is personality theory. This approach seeks to distinguish between entrepreneurs and non-entrepreneurs based on their personality characteristics and their contribution to business success. In its view, the elements of an entrepreneurial mindset are called entrepreneurial personality. Risk-taking, internal locus of control, achievement motivation, specific personality types of Myers-Briggs (in Robinson & Gough, 2020) were known as specific characteristics possessed by entrepreneurs. In addition, confidence in innovation (Ashourizadeh, Chavoushi, & Schøtt, 2014), and empathy (Korte, Smith, & Li, 2018) were also found to be traits that distinguish entrepreneurs and non-entrepreneurs. Davis, Hall, and Mayer (2016) added certain skills (e.g., optimism, confidence, perseverance) as dimensions of entrepreneurial mindset. Both personality and skills were needed for business success, where personality was the force that attracts a person to entrepreneurship and having skills will allow a person to run their business well (Davis *et al.*, 2016).

The second theoretical basis used to explain the construct of entrepreneurial mindset is cognitive theory. The two cognitive concepts used to explain the entrepreneurial mindset are cognitive adaptability and mindset. Cognitive adaptability could explain the origin of the cognitive approach to the construct of entrepreneurial mindset (Haynie, Shepherd, Mosakowski, & Earley, 2010). Cognitive adaptability is the ability to be dynamic, flexible and able to organize one's own thoughts in ever-changing and uncertain situations (Haynie *et al.*, 2010). Haynie *et al.* (2010) argued that an entrepreneurial mindset was

the result of meta-cognitive awareness, which is the ability to adapt thinking processes to the ever-changing contexts and task demands. Their work were built on the research of Ireland, Hitt, and Sirmon (2003) who also sought to find the conceptual basis of this construct. Ireland described the cognitive tasks that were important for managerial success. These tasks are being able to identify opportunities, constantly questioning the logic that dominates one's thinking in the context of an ever-changing environment and always asking simple questions about what is perceived to be true about company and market conditions. Someone with an entrepreneurial mindset could identify new opportunities because they have the cognitive ability to convey meaning to ambiguous situations (Ireland *et al.*, 2003). The study conducted by Haynie *et al.* (2010) was the first empirical study that puts cognitive as the basis of the entrepreneurial mindset construct.

Mindset is another cognitive concept that forms the basis for understanding and explaining the construct of entrepreneurial mindset. Mindset was defined as "general cognitive operations with distinct features that facilitate a given task" (Torelli & Kaikati, 2009). The concept of mindset was born from the research of Külpe *et al.* from the Würzburg school of psychological research in Germany in the late 19th century (in Mathisen & Arnulf, 2013). Since then, mindset research has evolved and have been studied in various fields, including entrepreneurship. There are two main theories of mindset that form the basis of existing entrepreneurship research, namely implicit theory (lay theory) (Dweck, 2014), and action phase theory (Gollwitzer, 1990).

Implicit theory (Dweck, 2014) described mindset as a continuum of fixed and growth mindset. Fixed mindset is the view of a person who believes that his/her qualities are "carved in stone" and impossible to change. Growth mindset is the view of someone who believes that through effort, everyone can change and grow. The results of Ngek's (2012) research showed that entrepreneurs have a growth mindset. There are interesting results from research by Billingsley *et al.* (2021) who found that growth mindset is actually more demonstrated by non-entrepreneurs than entrepreneurs. This research proves the weakness of this theory due to its inability to differentiate between entrepreneurs and non-entrepreneurs.

The second mindset theory used as the theoretical basis for entrepreneurial mindset research is *action* Gollwitzer's (1990) action phase theory. This theory is a combination of mindset research from Külpe *et al.* with Kurt Lewin's field theory. This theory explained that behavior is directed to achieve certain goals, which consist of four phases, namely deliberating, planning, acting, and evaluating. Each phase is characterized by a set of tasks that must be solved or completed. The success of a particular goal or activity will depend on success in one of these four phases. When a person is tied to the completion of a task in each phase, the person will produce a mindset that facilitates the completion of the desired task or goal.

Mathisen and Arnulf (2013) continued Gollwitzer's (1990) research and identified the four phases into two different mindset measurements, which became known as elaborating (deliberating and planning) mindset and implementing (acting and evaluating) mindset. These two mindsets operated at different stages of the entrepreneurial process. The elaborating mindset emerges in a phase characterized by a "fluid-state" where one is still thinking about whether or not to do entrepreneurship. On the other hand, the implementing mindset focused more on the specific how, when and where questions, hence more related to the decision to pursue entrepreneurship (Mathisen & Arnulf, 2013).

The next psychological concept used to explain entrepreneurial mindset stems from attitude theory, namely entrepreneurial attitude orientation (Robinson & Gough, 2020). In this view, mindset was defined as a set of attitudes that influence an individual's interaction with the world in a consistent and specific way. These attitudes are (1) business achievement (concrete outcomes associated with business start-up and development); (2) business innovation (performing business activities in new and unique ways); (3) perceived personal control of business outcomes (an individual's perception of the influence or control he/she has on his/her business); (4) self-esteem in business (self-confidence and perception of individual competence related to business affairs) (Robinson & Gough, 2020).

Furthermore, Krueger and Sussan (2017) used the basis of behavioral theory to explain the entrepreneurial mindset. They argued that entrepreneurial orientation at the individual level is a form of entrepreneurial mindset. Entrepreneurial orientation consisted of five dimensions, namely innovativeness, proactiveness, risk taking, competitiveness and autonomy (Lumpkin & Dess, 1996) which were used to explain entrepreneurial behavior at the organizational or corporate level. However, measuring these five dimensions in a person cannot necessarily be translated as an individual entrepreneurial mindset (Krueger & Sussan, 2017). The results of research conducted by Krueger (2006); Kollmann, Christofor, and Kuckertz (2007); and Langkamp-Bolton and Lane (2012) concluded that the five dimensions are not sufficient to measure entrepreneurial mindset, other dimensions are needed to complement it. Therefore, Krueger and Sussan (2017) added two other dimensions, namely strategic intent and the 'dark side' dimension.

The last concept used to explain entrepreneurial mindset is a combination of attitude and behavioral theories. According to this concept, the entrepreneurial mindset was explained as an interaction between cognitive (mental models of entrepreneurship), emotional (feelings about entrepreneurship) and behavioral (efforts to seek and find opportunities) aspects (Kuratko, Fisher, & Audretsch, 2020). Attempts to understand this construct based on only one of these three aspects are less accurate in characterizing the entrepreneurial mindset and may result in the risk of misinterpretation (Kuratko *et al.*, 2020). The summary of the theoretical conception of entrepreneurial mindset is shown in Table 2.

Table 2
Summary of the Theoretical Conception of Entrepreneurial Mindset Model

Approach	EM Concept	Dimension
Trait-based	A combination of personality characteristics and entrepreneurial mindset.	Risk-taking, internal locus of control, achievement motivation, certain personality types from Myers-Briggs (in Robinson & Gough, 2020), confidence in innovation (Ashourizadeh <i>et al.</i> , 2014), empathy (Korte <i>et al.</i> , 2018), skills and traits (Davis <i>et al.</i> , 2016).
Cognitive-based	Cognitive adaptability (Haynie <i>et al.</i> , 2010)	Goal orientation, metacognitive knowledge, metacognitive experience, metacognitive choice, monitoring.
	Implicit theory (Dweck, 2014)	Fixed dan growth mindset.
	Action phase theory (Gollwitzer, 1990).	Elaborating (deliberating and planning) mindset and implementing (acting and evaluating) mindset (Mathisen & Arnulf, 2013) .
Attitude-based	Entrepreneurial attitude orientation (Robinson & Gough, 2020)	Achievement in business, innovation in business, perceived personal control of business outcomes, self-esteem in business.
Behavior-based	Individual level entrepreneurial orientation	Innovativeness, proactiveness, risk taking, competitiveness and autonomy (Lumpkin & Dess, 1996), strategic intent and dimension 'dark side' (Krueger & Sussan, 2017).
Combined	The triad of entrepreneurial mindset (Kuratko <i>et al.</i> , 2020)	The cognitive aspect, the behavioral aspect, the emotional aspect.

Antecedents of EM

Over the years, several studies have uncovered factors that influenced entrepreneurial mindset. These studies not only showed entrepreneurial mindset as a malleable construct, but also highlight interven-

tions or strategies used to develop individual mindset. The factors that influenced or related to an entrepreneurial mindset are presented below. Considering the nature and nurture factors that shaped entrepreneurs, we used the framework to categorize the factors that influenced entrepreneurial mindset into two broad factors, namely internal and external. Internal factors are the innate or individual factors that each individual has, while external factors are other factors outside the individual that can shape his/her entrepreneurial mindset (e.g., environment, culture, etc.).

Internal Antecedents (Sub of Antecedent)

Several internal factors that influence the entrepreneurial mindset were found from the results of the literature review. The first internal factor was self-efficacy. Self-efficacy is a key component that has long been associated with entrepreneurship (Daspit *et al.*, 2021). The results of Ngek's (2015) research on MSMEs in South Africa showed that self-efficacy has a relationship with the entrepreneurial mindset of MSME entrepreneurs. This finding was in line with the results of the literature review of Daspit *et al.* (2021) which stated that self-efficacy is an important factor influencing the development of an entrepreneurial mindset. The existence of self-efficacy increases entrepreneurial confidence to obtain and utilize the resources needed for business success.

Motivation, need for achievement and risk taking are other individual variables shown to be related to entrepreneurial mindset. Need for achievement influenced the elaborative mindset and implementation mindset of university students in Vietnam (Cao & Ngo, 2019). Billingsley *et al.* (2021) also found a positive relationship between entrepreneurial mindset and need for achievement. Meanwhile, related to risk, Ngek (2012) proved that there is an effect of risk tolerance on entrepreneurial mindset. Motivation, need for achievement and risk taking are three characteristics that are closely related to the success and development of a business. The existence of motivation and desire to achieve success and achieve goals can increase the efforts made by an entrepreneur in finding and utilizing opportunities around him.

Personality variables, namely the big five, have also been shown to influence one's entrepreneurial mindset. Davis *et al.* (2016) conducted confirmatory factor analysis to test the relationship between the big five personality dimensions and entrepreneurial mindset. As a result, the dimensions of conscientiousness and openness to experience showed a consistent positive relationship with entrepreneurial mindset. In contrast, the dimensions of agreeableness and neuroticism showed a consistent negative relationship with entrepreneurial mindset. The extraversion dimension showed a positive relationship with entrepreneurial mindset, but the relationship was relatively weak (Davis *et al.*, 2016).

Furthermore, the variables of creativity and intolerance of uncertainty are individual factors that are proven to affect the entrepreneurial mindset. Creativity had a positive and consistent relationship with entrepreneurial mindset, where the higher the level of individual creativity, the more developed the entrepreneurial mindset (Davis *et al.*, 2016). Intolerance of uncertainty and inhibitory anxiety had a negative relationship with entrepreneurial mindset, while prospective anxiety showed a positive relationship with entrepreneurial mindset (Lee & Jung, 2021). Moore, McIntyre, and Lanivich (2019) conducted research to determine the effect of ADHD characteristics on entrepreneurial mindset. The result showed that neural differences in entrepreneurs with ADHD are related to aspects of the entrepreneurial mindset. Those with ADHD use more intuition in making decisions and showed a higher vigilance and resource-induced coping heuristic.

Entrepreneurial life experiences and the lessons learned from these experiences were other factors that influenced the entrepreneurial mindset. Ajike and Nwakoby (2017) and Outsios and Kittler (2018) emphasized the importance of education, sociocultural, travel experiences and family upbringing to an entrepreneur's way of thinking. These experiences broaden the entrepreneur's perspective, including in terms of finding and creating business opportunities (Daspit *et al.*, 2021). In addition to experience, dispositional factors such as non-depressiveness, learning to be happy and gratitude were individual factors that influenced the entrepreneurial mindset (Daspit *et al.*, 2021).

External Antecedents (Sub of Antecedent)

In addition to internal factors, the entrepreneurial mindset is also formed from external factors. These external factors are entrepreneurial learning, cultural, and environmental factors. Entrepreneurship education and training (Entrepreneurship curriculum, entrepreneurship education (Jiatong *et al.*, 2021)), (Entrepreneurship education (Wardana *et al.*, 2020)) had been proven to significantly predict an increase in entrepreneurial mindset in student subjects and MSMEs (Incubators, accelerators, training, entrepreneurship education (Lombardi, Tiscini, Trequattrini, & Martiniello, 2020)), entrepreneurship learning (Ajike & Nwakoby, 2017), education and learning (Ngek, 2012)). Entrepreneurship education is a lifelong learning process that triggers the development of personal qualities, skills and mindset to survive in a business.

Another external factor that influences entrepreneurial mindset is culture. Research from Rarick and Han (2015) found that culture plays an important role in the entrepreneurial success of a region. Countries with a high individualism culture were more successful in terms of entrepreneurship than countries with a low individualism culture. Meanwhile, countries with low power distance had an advantage in creating high-impact entrepreneurship. Research by Scuotto, Del Giudice, Holden, and Mattiacci (2017) on family-owned businesses in the Mediterranean also found that low power distance affects the mindset of family business owners.

Besides culture, environmental factors also influence the entrepreneurial mindset. In fact, environment was integrated in many definitions of entrepreneurial mindset. For example, McGrath & MacMillan's (2000b) definition stated that an entrepreneurial mindset was present when entrepreneurs successfully navigate an environment of uncertainty..

Moderators and Mediators

In addition to the antecedent variables, moderator and mediator variables that play a role in the entrepreneurial mindset were also identified from the results of the literature review. The moderator variable found was the entrepreneurial climate. Entrepreneurial climate was proven to moderate the relationship between entrepreneurship curriculum and student mindset (Cui, 2021). In addition to the entrepreneurial climate, in their literature review, Daspit *et al.* (2021) mentioned socio-cultural factors, trigger events, environmental dynamics and government regulations/policies as variables that have a moderating effect on the entrepreneurial mindset construct. Regarding mediator variables, entrepreneurial attitude was proven to be a variable that mediates the relationship between entrepreneurship education and entrepreneurial mindset and the relationship between self-efficacy and entrepreneurial mindset in college students (Wardana *et al.*, 2020). The existence of high entrepreneurial efficacy forms a positive attitude of students towards entrepreneurship and ultimately strengthens their entrepreneurial mindset.

Agenda for Future Research

The explanation of the conceptual review and the results of empirical studies as on Figure 2 showed that there is still a fragmented understanding of what factors affect the entrepreneurial mindset. Of course, this problem is inseparable from the theoretical basis used to identify these factors. Different theoretical conceptions will lead to different factors, results and conclusions.

However, from the differences, it appears that existing models of entrepreneurial mindset, both conceptual and empirical, focused more on internal factors that influence entrepreneurial mindset rather than external factors. The same thing was also concluded by Naumann (2017) and Daspit *et al.* (2021) in their literature review. In our opinion, external factors have an equally important contribution in shaping or influencing the entrepreneurial mindset. Despite having a direct influence on entrepreneurial mindset, environmental and cultural factors have received less attention from previous researchers. That is why, examination towards the influence of cultural or environmental factors on entrepreneurial mindset has been suggested by many studies (Mathisen & Arnulf, 2013; Rarick & Han, 2015; Cao & Ngo, 2019; Lombardi *et al.*, 2020; Billingsley *et al.*, 2021).

Another thing that can be an agenda for future entrepreneurial mindset research is related to the research methods that were used. The majority of existing studies use cross-sectional quantitative research methods and qualitative research. Future researchers could use longitudinal research methods to see the

consistency of the influence of antecedents on entrepreneurial mindset over time. Future researchers could also use mixed-method research methods, to explain more deeply the dynamics of the influence of certain variables on entrepreneurial mindset.

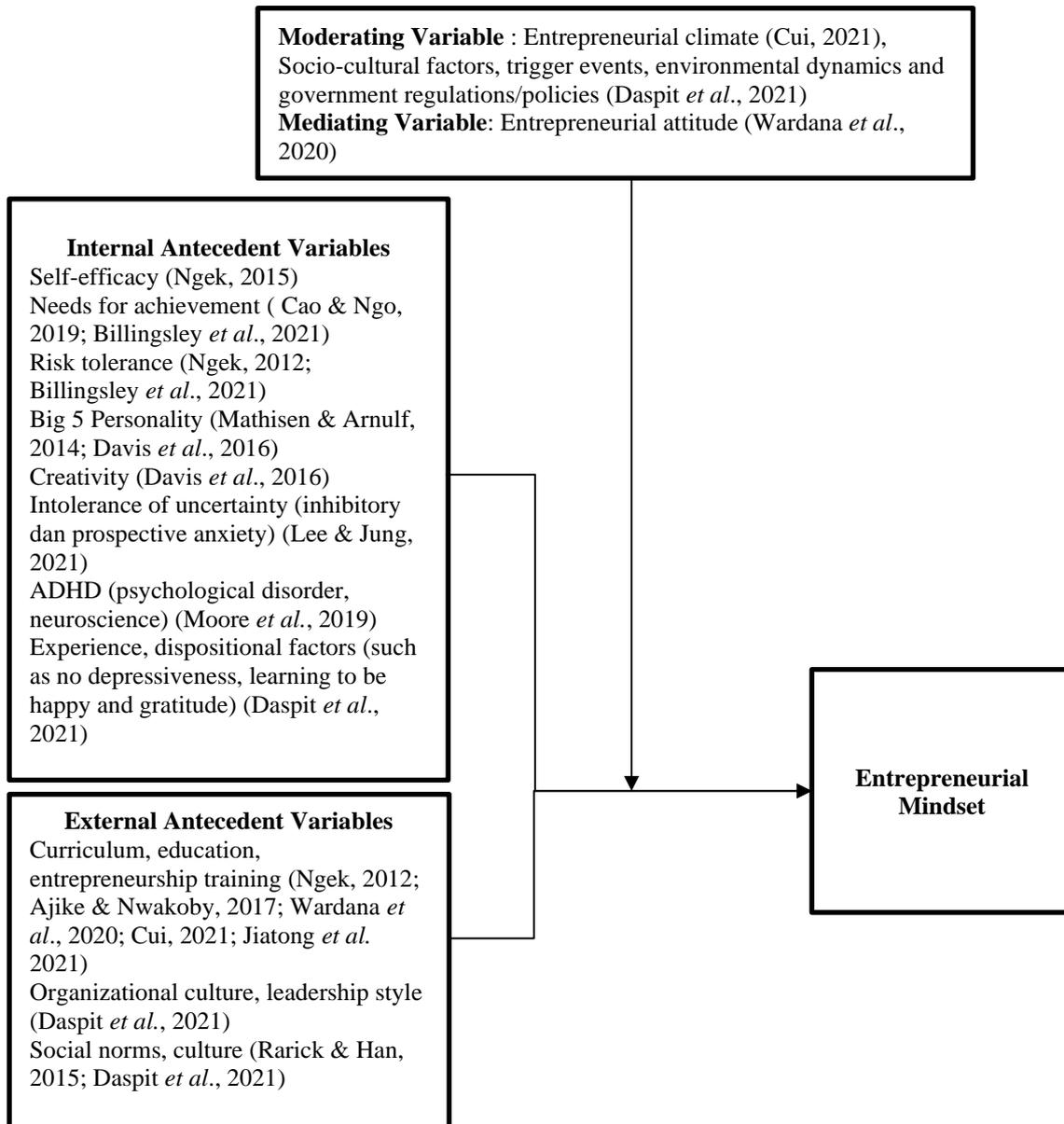


Figure 2. Framework summarizing extant research on entrepreneurial mindset

Furthermore, meta-analysis or meta-synthesis could be conducted to integrate existing research results in an effort to get a more integrated conclusion. In addition, through meta-analysis, the reasons for the differences in results between one study and another can be identified. Understanding these differences can be the basis for better understanding the construct of entrepreneurial mindset and its shaping factors in more depth. This understanding can improve the quality of research in this area.

CONCLUSION

This research is a semi-systematic literature review of previous entrepreneurial mindset studies. In this literature review, key theories or concepts underlying entrepreneurial mindset as well as antecedents or factors that influence entrepreneurial mindset were identified. In the review process, research gaps were found that could be an agenda or opportunity for future research on entrepreneurial mindset.

REFERENCES

- Ajike, A. K., & Nwakoby, N. P. (2017). Assessment of entrepreneurial mindset on sustainability of Nigerian SMEs. *International Journal of Business and Entrepreneurship Research*, *11*(2), 1–16.
- Alshebami, A. S., Al-Jubari, I., Alyoussef, I. Y., & Raza, M. (2020). Entrepreneurial education as a predictor of community college of Abqaiq students' entrepreneurial intention. *Management Science Letters*, *10*(15), 3605–3612. <https://doi.org/10.5267/j.msl.2020.6.033>
- Anisah, H. U., Wandary, W., & Claudia, M. (2017). The development of entrepreneurial mindset measurement instruments as predictor for Wetland's MSMEs business sustainability. *Advances in Economics, Business and Management Research*, *40*, 270–280. <https://doi.org/10.2991/icame-17.2017.21>
- Asenge, E. L., Diaka, H. S., & Soom, A. T. (2018). Entrepreneurial mindset and performance of small and medium scale enterprises in Makurdi Metropolis, Benue State-Nigeria. *International Journal of Innovation*, *6*(2), 124–146. <https://doi.org/10.5585/iji.v6i2.223>
- Ashourizadeh, S., Chavoushi, Z. H., & Schött, T. (2014). People's confidence in innovation: A component of the entrepreneurial mindset, embedded in gender and culture, affecting entrepreneurial intention. *International Journal of Entrepreneurship and Small Business*, *23*(1–2), 235–251. <https://doi.org/10.1504/IJESB.2014.065310>
- Billingsley, J., Lipsey, N. P., Burnette, J. L., & Pollack, J. M. (2021). Growth mindsets: Defining, assessing, and exploring effects on motivation for entrepreneurs and non-entrepreneurs. *Current Psychology*. <https://doi.org/10.1007/s12144-021-02149-w>
- Cao, V. Q., & Ngo, T. T. T. (2019). Linking entrepreneurial intentions and mindset models: A comparative study of public and private Universities in Vietnam. *Gadjah Mada International Journal of Business*, *21*(2), 115–133. <https://doi.org/10.22146/gamaijb.34753>
- Cui, J. (2021). The impact of entrepreneurship curriculum with teaching models on sustainable development of entrepreneurial mindset among higher education students in China: The moderating role of the entrepreneurial climate at the institution. *Sustainability*, *13*(14), 7950. <https://doi.org/10.3390/su13147950>
- Daspit, J. J., Fox, C. J., & Findley, S. K. (2021). Entrepreneurial mindset: An integrated definition, a review of current insights, and directions for future research. *Journal of Small Business Management*, 1–33. <https://doi.org/10.1080/00472778.2021.1907583>
- Davis, M. H., Hall, J. A., & Mayer, P. S. (2016). Developing a new measure of entrepreneurial mindset: Reliability, validity, and implications for practitioners. *Consulting Psychology Journal*, *68*(1), 21–48. <https://doi.org/10.1037/cpb0000045>
- Dweck, C. S. (2014). *Self-theories: Their role in motivation, personality, and development*. New York, NY: Psychology Press. <https://doi.org/10.4324/9781315783048>
- Gollwitzer, P. M. (1990). Action phases and mind-sets. In E.T. Higgins, R.M. Sorrentino (Eds.), *The Handbook of motivation and cognition: Foundations of social behavior* (Vol. 2, pp. 53–92). New York, NY: Guilford Press.
- Haynie, J. M., Shepherd, D., Mosakowski, E., & Earley, P. C. (2010). A situated metacognitive model of the entrepreneurial mindset. *Journal of Business Venturing*, *25*, 217–229. <https://doi.org/10.1016/j.jbusvent.2008.10.001>
- Ireland, R. D., Hitt, M. A., & Sirmon, D. G. (2003). A model of strategic entrepreneurship: The construct and its dimensions. *Journal of Management*, *29*(6), 963–989. [https://doi.org/10.1016/S0149-2063\(03\)00086-2](https://doi.org/10.1016/S0149-2063(03)00086-2)
- Jiatong, W., Murad, M., Bajun, F., Tufail, M. S., Mirza, F., & Rafiq, M. (2021). Impact of entrepreneurial education, mindset, and creativity on entrepreneurial intention: Mediating role of entrepreneurial self-efficacy. *Frontiers in Psychology*, *12*, 724440. <https://doi.org/10.3389/fpsyg.2021.724440>
- Kollmann, T., Christofor, J., & Kuckertz, A. (2007). Explaining individual entrepreneurial orientation: Conceptualization of a cross-cultural research framework. *International Journal of Entrepreneurship and Small Business*, *4*(3), 325–340
- Korte, R., Smith, K. A., & Li, C. Q. (2018). The role of empathy in entrepreneurship: A core competency of the entrepreneurial mindset. *Advances in Engineering Education*, *7*(1), 1–10.
- Krueger, B. S. (2006). A comparison of conventional and internet political mobilization. *American*

- Politics Research*, 34(6), 759–776. <https://doi.org/10.1177/1532673X06290911>
- Krueger, N., & Sussan, F. (2017). Person-level entrepreneurial orientation: Clues to the 'entrepreneurial mindset'? *International Journal of Business and Globalisation*, 18(3), 382–395. <https://doi.org/10.1504/IJBG.2017.083216>
- Kuratko, D. F., Fisher, G., & Audretsch, D. B. (2020). Unraveling the entrepreneurial mindset. *Small Business Economics*, 57, 1681–1691. <https://doi.org/10.1007/s11187-020-00372-6>
- Langkamp-Bolton, D., & Lane, M. D. (2012). Individual entrepreneurial orientation: Development of a measurement instrument. *Education + Training*, 54(2/3), 219–233. <https://doi.org/10.1108/00400911211210314>
- Lee, A., & Jung, E. (2021). The mediating role of entrepreneurial mindset between intolerance of uncertainty and career adaptability. *Sustainability*, 13, 1–15. <https://doi.org/10.3390/su13137099>
- Lombardi, R., Tiscini, R., Trequattrini, R., & Martiniello, L. (2020). Strategic entrepreneurship: Personal values and characteristics influencing SMEs' decision-making and outcomes. The Gemar Balloons case. *Management Decision*, 59(5), 1069–1084. <https://doi.org/10.1108/MD-10-2019-1416>
- Lumpkin, G. T., & Dess, G. G. (1996). Clarifying the entrepreneurial orientation construct and linking it to performance. *Academy of Management Review*, 21(1), 135–172. <https://doi.org/10.2307/258632>
- Lynch, M. P., & Corbett, A. C. (2021). Entrepreneurial mindset shift and the role of cycles of learning. *Journal of Small Business Management*. <https://doi.org/10.1080/00472778.2021.1924381>
- Mathisen, J. E., & Arnulf, J. K. (2013). Competing mindsets in entrepreneurship: The cost of doubt. *International Journal of Management Education*, 11(3), 132–141. <https://doi.org/10.1016/j.ijme.2013.03.003>
- Mathisen, J. E., & Arnulf, J. K. (2014). Entrepreneurial mindsets: Theoretical foundations and empirical properties of a mindset scale. *International Journal of Management and Business*, 5(1), 81–97. <https://doi.org/10.5465/ambpp.2012.13739abstract>
- McGrath, R. G., & MacMillan, I. C. (2000a). *The entrepreneurial mindset* (1st ed.). Harvard Business School Press.
- McGrath, R. G., & MacMillan, I. C. (2000b). The entrepreneurial mindset: Strategies for continuously creating opportunity in an age of uncertainty. *The Academy of Management Review*, 26, No. (3), 457–459. <https://doi.org/10.2307/259188>
- Moore, C. B., McIntyre, N. H., & Lanivich, S. E. (2019). ADHD-related neurodiversity and the entrepreneurial mindset. *Entrepreneurship: Theory and Practice*, 45(1), 1–27. <https://doi.org/10.1177/1042258719890986>
- Naumann, C. (2017). Entrepreneurial mindset: A synthetic literature review. *Entrepreneurial Business and Economics Review*, 5(3), 149–172. <https://doi.org/10.15678/EBER.2017.050308>
- Ngek, N. B. (2012). An exploratory study on entrepreneurial mindset in the small and medium enterprise (SME) sector: A South African perspective on fostering small and medium enterprise (SME) success. *African Journal of Business Management*, 6(9), 3364–3372 <https://doi.org/10.5897/ajbm10.1631>

- Ngek, N. B. (2015). Entrepreneurial self-efficacy and small business performance: The mediating effect of entrepreneurial mindset and openness to experience. *Problems and Perspectives in Management*, 13(4), 271–280.
- Outsios, G., & Kittler, M. (2018). The mindset of UK environmental entrepreneurs: A habitus perspective. *International Small Business Journal: Researching Entrepreneurship*, 36(3), 285–306. <https://doi.org/10.1177/0266242617739343>
- Phipps, S. T. A., & Prieto, L. C. (2012). Knowledge is power? An inquiry into knowledge management, it's effects on individual creativity, and the moderating role of an entrepreneurial mindset. *Academy of Strategic Management Journal*, 11(1), 43–58.
- Pidduck, R. J., Clark, D. R., & Lumpkin, G. T. (2021). Entrepreneurial mindset: Dispositional beliefs, opportunity beliefs, and entrepreneurial behavior. *Journal of Small Business Management*, 00(00), 1–35. <https://doi.org/10.1080/00472778.2021.1907582>
- Purnomo, B. R., Adiguna, R., Widodo, W., Suyatna, H., & Nusantoro, B. P. (2021). Entrepreneurial resilience during the covid-19 pandemic: Navigating survival, continuity and growth. *Journal of Entrepreneurship in Emerging Economies*, 13(4), 497–524. <https://doi.org/10.1108/JEEE-07-2020-0270>
- Rarick, C., & Han, T. (2015). The role of culture in shaping an entrepreneurial mindset. *International Journal of Entrepreneurship*, 19, 119–125.
- Robinson, P. B., & Gough, V. (2020). The right stuff: Defining and influencing the entrepreneurial mindset. *Journal of Entrepreneurship Education*, 23(2), 1–16.
- Scuotto, V., Del Giudice, M., Holden, N., & Mattiacci, A. (2017). Entrepreneurial settings within global family firms: Research perspectives from cross-cultural knowledge management studies. *European Journal of International Management*, 11(4), 469–489. <https://doi.org/10.1504/EJIM.2017.085586>
- Torelli, C. J., & Kaikati, A. M. (2009). Values as predictors of judgments and behaviors: The role of abstract and concrete mindsets. *Journal of Personality and Social Psychology*, 96(1), 231–247. <https://doi.org/10.1037/A0013836>
- Wardana, L. W., Narmaditya, B. S., Wibowo, A., Mahendra, A. M., Wibowo, N. A., Harwida, G., & Rohman, A. N. (2020). The impact of entrepreneurship education and students' entrepreneurial mindset: The mediating role of attitude and self-efficacy. *Heliyon*, 6(9), e04922. <https://doi.org/10.1016/j.heliyon.2020.e04922>

IMPLEMENTATION OF CUSTOMER RELATIONSHIP MANAGEMENT IN SMALL AND MEDIUM FURNITURE INDUSTRIES

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ABSTRACT

Small and Medium Furniture Industry is one of the leading commodities of Kendal Regency and has important role in regional economy. In its development, many obstacles are met by SMEs Furniture including product marketing, technology, financial management, capital and quality of human resources. In addition, market competition in SMEs furniture is getting tighter. The era of free markets and dynamic environmental conditions caused SME Furniture to set the right strategy and implement it well. Furniture SMEs performance is not enough to be seen only from the financial side but must be able to combine technology, business processes and human resources. Furniture SMEs, which was only focused on products, must now change its strategy to focus on customers and implement modern management and be able to build relationships with customers. Consumers need more than just the value offered and have unique needs so companies need to think about creating marketing concepts that not only rely on the company's internal capabilities, but also involve consumer feelings. Maintaining good relation with customers and increasing their loyalty through the development and fulfillment of customer needs is one of SMEs furniture strategies in developing business. From the description, the author took the initiative to help design an information system based on Customer Relationship Management (CRM) as an industrial technology 4.0 to digitize marketing, especially for managing customers. The implementation of CRM-based information systems starts from collecting data, then analyze business processes, and using case diagrams. The next step is to implement a CRM system using Microsoft Excel VBA. Finally analyze and evaluate CRM implementations in Furniture SME. From this research we get a CRM system that is suitable for furniture SME business processes.

Keywords: *Customer relationship management, industrial technology 4.0, furniture SMEs.*

INTRODUCTION

Currently, Small and Medium Enterprise (SME) actors in Kendal regency generally still carry out business transactions manually or through face-to-face (*offline*). This is considered less effective because it requires them to be active in expanding the network of offers to customers so that it is difficult to market products and process transactions that do not run effectively. For this reason, the researcher conducted observations and interviews with several furniture SMEs in Kendal district. From the results of observations and interviews that have been carried out on product sales activities, it can be concluded that the sales system still needs to be maximized so that later it is expected to increase product sales (Alfarisi & Mahendra, 2021).

The researchers used the interview method with related people to find out what obstacles they faced. First, researchers conducted interviews with furniture SMEs in the Kebondalem, Kendal area. The SMEs owner explained that currently he has marketed his products through several social media, one of which is Facebook. According to him, currently Facebook is a more effective media than other online media, because until now, most of the buyers who come from Indonesian Migrant Workers who work from abroad buy their products from Facebook. However, the obstacles faced by these furniture SMEs are the absence of a database of consumer records, consumer preferences, and consumer interactions. For furniture marketing through Facebook, there is only one way, the SME posts its products, if there are buyers, the products will be sent.

Furthermore, the researchers also conducted interviews with furniture SMEs in Kaliwungu, Kendal. The results of the interview show that the marketing of furniture SMEs in Kaliwungu is carried out on

the E-commerce website, olx.id. However, the sales are still not as expected. One of the obstacles to selling through E-commerce is the knowledge of SME owners who do not really understand E-commerce so that their products are rarely seen by many consumers.

Finally, the researchers conducted an interview with furniture SMEs in Sukorejo, Kendal. The marketing mechanism of furniture SMEs at the Sukorejo, Kendal is still carried out directly or offline. Thus, the sales are still limited to the Sukorejo, Kendal area. The owner of the furniture SMEs asked for help in making online marketing media and its system as well as teaching about online product marketing.

From the results of interviews with SMEs of Kendal, SMEs of Kendal requires increased interaction, database storage, and strategies related to consumer preferences, especially in the online market. Therefore, the application of Customer Relationship Management (CRM) is needed by Kendal Furniture SMEs. CRM is a business application that integrates business processes that are in direct contact with consumers (marketing, sales, and services) with business people, business processes and supporting technology in order to obtain customer retention (Irwiensyah, 2008). The benefits of this CRM application are to encourage customer loyalty, reduce costs, increase operational efficiency, increase time to market and increase revenue (Choudhury & Harrigan, 2014)

Therefore, in this study, the researchers implemented CRM in Kendal furniture SMEs using Microsoft Excel and Visual Basic Application (VBA). it can be integrated with online marketing both through E-Commerce and social media.

LITERATURE REVIEW

Customer Relationship Management (CRM)

There are several definitions of CRM according to experts, namely: According to Kalakota and Robinson (2001), CRM is an integration and selling strategy, coordinated marketing and service. According to Laudon and Traver (2017), CRM stores customer information and records all contacts that occur between customers and the company, and creates customer profiles for company staff who need information about these customers. CRM is a strategy to establish relationships with customers and provide satisfactory service to customers. CRM supports companies or SMEs to provide services to customers in real time by establishing relationships with each valuable customer through the use of information about customers. Based on what is known from the customer, the company can make a variety of offers, services, programs, messages and media (Rowe & Clark, 1927).

From some of the definitions above, it can be concluded that: CRM is a type of management that specifically discusses the theory of handling the relationship between a company and its customers, which aims to improve relationships with each customer in order to achieve healthy growth.

Objectives and Benefits of CRM

The advantages of implementing CRM in a business or company vary greatly depending on the business the company is engaged in. CRM is very important for companies that have frequent interactions with their customers and the customers who have a dependency to make repeated purchases, and have the potential to make purchases of other products. The benefits of CRM according to (Kalakota & Robinson, 2001) are:

1. Encourage customer loyalty
2. Reduce Costs
3. Improve Operational Efficiency
4. Improved Time to Market
5. Increased Income

CRM Implementation

The most important and fundamental thing in CRM is the integration of all customer business data into a system that makes it easier for companies to process, identify and maintain relationships with consumers. Thus, mapping and marketing implementation can be carried out effectively and efficiently

in accordance with organizational goals. The success and utilization of CRM applications is influenced by many factors, both technical and non-technical. Need other aspects besides the CRM application itself. According to Chen and Popovich in the journal (Choudhury & Harrigan, 2014) there are three main elements that are the keys to the successful implementation of CRM, namely people, process and technology. These three things cannot be done alone. Where these three things will depend on each other so as to create a good business strategy. Briefly, it can be seen in Figure 1.

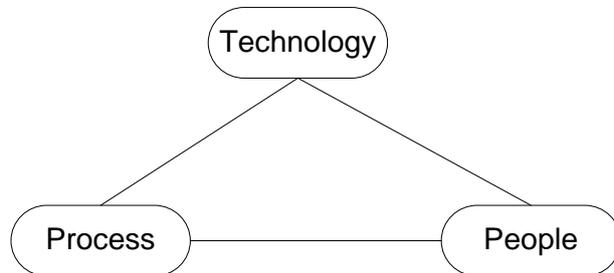


Figure 1. Aspects of the CRM implementation process

The explanations related to aspects of the CRM implementation process are as follows:

1. **People: HR Aspect**
That includes the way people think about how to serve customers (professionalism). Everyone who deals with customers, from the highest level of a company to the level that deals with customers directly, must have the same thought, namely how to serve customers as well as possible. The purpose of implementing CRM must be clear, so that it is easily understood by employees.
2. **Process: Process Aspect**
That is the process of ongoing activities in a company that is regulated through a system and clearly defined through standardized procedures as a reference for employees in serving customers (processes and procedures). Companies must reorganize existing business processes to match CRM initiatives. Clearly defining the targeted consumers is important so that employees who interact directly with consumers have clear and standardized references on how to serve their customers.
3. **Technology**
The technology aspect is the CRM technology development strategy and implementation process. Companies must choose good and appropriate technology to support this aspect of the process. This is related to the strategy of selecting and developing CRM technology. It is necessary to carry out implementation steps in the form of a pilot project first, so that in the future the implementations can run successfully as expected.
4. **CRM Technology Application**
Connecting the front office (sales, marketing and customer service) and back office (financial, operational, logistics and human resources) with the touch points of company customers (Greenberg, 2010). The company touch points include internet, email, sales, email, telemarketing, call centers, advertising, fax, pagers, stores, and kiosks. Often, the company touch points are controlled by a separate information system from the main information system. CRM serves to integrate touch points into existing systems (Beck & Summer, 2001). The relationship between touch points with front and back office is illustrated in Figure 2.

CRM Developer Application

Microsoft Excel is an application program from Microsoft that is used to process data. The displaying and processing data in Microsoft Excel is carried out quickly and accurately for the purposes of quantitative information such as numbers, tables and graphs. Currently Microsoft Excel is equipped with VBA features, VBA is Visual Basic for Application which is a derivative of the Visual Basic language developed by Microsoft. Visual Basic is a derivative of the BASIC programming language (Beginners All-purpose Symbolic Instruction Code) which was developed in 1963 by John George Kemeny and Thomas Eugene Kurtz from Dartmouth College. With the VBA in excel, it is possible to run certain

tasks automatically and add other functions to the excel application. It therefore allows the creation of CRM via Microsoft Excel and VBA (Lestari, Sabri, & Yuwono, 2014).

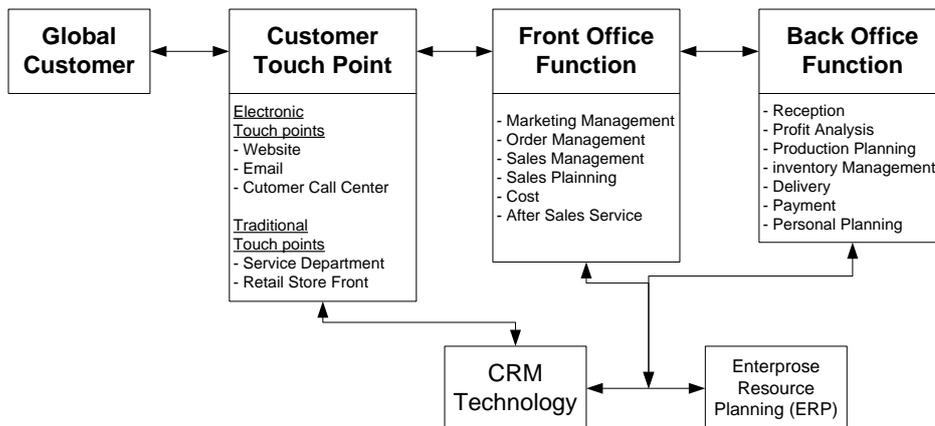


Figure 2. Relations of front office, back office and touch point technology

Source: Choudhury and Harrigan (2014)

RESEARCH METHOD

Sample

The research method used is quantitative method based on secondary and primary data from research results and literature references related to data and information of the research. The research time interval is from February to May 2022. This research was carried out at Furniture SME in Kendal. The data collection techniques are observation, interview and questionnaire. There are 17 Furniture SME populations in Kendal that will be observed and interviewed and three SMEs will be sampled for the implementation and evaluation of CRM applications in these SMEs.

Data Collection

In this study, the primary data sources of this study include:

1. Promoting media on social media
The social media used by Kendal furniture SME for promotion.
2. Customer database
Customer database of Kendal furniture SMEs both from offline customers and online customers.
3. Data supply chain
Data Supply chain consists of supplier data, furniture SMEs business processes and supply chain process flow from suppliers to customers.

FINDINGS

Research Description

The result of this research is CRM application that can be applied to Kendal Furniture SME so that it can be integrated in social media for product marketing. The next step is to get an evaluation and improvement from the implementation of the CRM application in Furniture SME in Kendal.

Research procedure

The following are the steps taken in implementing CRM in the Furniture SMEs in Kendal as follows:

1. Collection of CRM Module development data

At this stage, data collection is carried out in the following way:

- ✓ Direct observation at Furniture SME in Kendal
- ✓ Interviewing Furniture SME Owner
- ✓ Compiling CRM module of development data need

2. CRM implementation

In designing CRM at Furniture SME in Kendal, the researchers chose to use the development method (SDLC) or what is commonly called the system development life cycle. In general, the phases of the CRM system development life cycle can be grouped into six major phases, namely:

- a. **Planning**
This planning stage aims to develop and determine the CRM module. At this stage, the researcher collected data so that the CRM template used can be formulated.
- b. **Analysis**
At this stage, an analysis will be carried out using the Business Process Modeling Notation (BPMN). From the BPMN analysis, it is obtained an overview and business process flow of furniture SME in Kendal.
- c. **Design**
The next step is designing CRM using CRM developer application, namely Microsoft Excel and VBA. The first step in designing CRM is preparation of modules using excel application and then integrating them using VBA. This result is a customized and integrated module.
- d. **Implementation**
After the CRM system is structured, then implement it in furniture SMEs. This implementation consists of three stages. The first stage is CRM trial in furniture SME, the next is to provide training and manual books for users and the last stage is its use.
- e. **Testing**
After the stage of use by the user, then testing by the user through the testing process, it is obtained an assessment of the CRM application and its integration into business processes.



Figure 3. System development of life cycle plan

DISCUSSION

Business Process

Kendal Furniture SME is a small and medium-sized industry in the furniture sector with a concentration of products such as chairs, tables, and cabinets. The material used comes from teak wood which is obtained from the supplier of TPK Subah Batang. As shown in Figure 4, furniture SME in Kendal fulfills its production mostly using the make-to-stock system rather than the make-to-order system. For the first process, furniture SME in Kendal will offer furniture designs that they can make to customers. Furniture designs are usually shown in a furniture catalog. After customers agree, then furniture SME will record the order and the time for completion. After that, the owner will place an order for raw materials or materials for the manufacture of furniture to be ordered. When the raw materials have arrived, the raw materials will immediately enter into various kinds of production processes. Starting from cutting, sanding, assembling to the finishing process of the furniture. After the goods are finished, Furniture SME contact the buyer to inform the order has been completed and immediately pay off the payment. After the payment is paid off, the furniture is ready to be sent to the customer (Alfarisi & Mahendra, 2021).

System Planning

System planning starts from direct observation at furniture SME in Kendal. After that, the researchers conducted an interview with the owner of Furniture SME. The data obtained from the interview are in the form of Kendal furniture SME business processes, business conditions, marketing conditions, cus-

tomter data, customer biodata. Furthermore, the data will be processed with the VBA system and Microsoft Excel to become a CRM application. After the application is completed, it is implemented in Kendal furniture SME for one week. Testing and evaluation are carried out after implementation. Respondents from this testing and evaluation are the owners of Kendal Furniture SME as well as the CRM users.

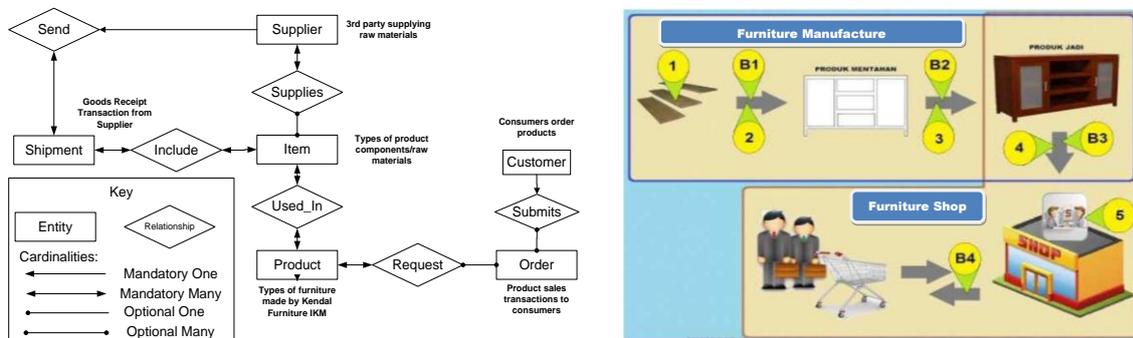


Figure 4. Business process flow of Kendal furniture SME

System Analysis

System analysis is used to get all the requirements needed to build the system. To identify what system requirements are involved, the CRM system analysis used is as follows: (Amin & Kristanto, 2014)

1. Functional Needs

Its functions include in this system, among others:

 - a. The system is capable of storing customer information
 - b. The system has a function to send WhatsApp
 - c. The system can display a list of documents
 - d. The system can display the saved reminder schedule
 - e. The system can save contacts
2. Non-Functional Needs

Non-functional requirements include:

 - a. The system is easy to understand by users
 - b. The system can provide the required information
 - c. The system can provide benefits to users

The need to make this application system for furniture SME in Kendal is the reference for making this system which can help simplify the process of storing information on SME and will increase customer loyalty and quantity.

Interface Design

The CRM application interface design starts from the worksheet design (interface) of each page, setting the pages to be created such as the application start page, WhatsApp (WA) page, contact page, document page, reminder page and database page. The initial page design has four menus, namely contacts, WhatsApp, documents, and schedule reminders. Each menu has a different icon and image, and creates several fill boxes. After creating a design worksheet, then create a show command button which is used to display each page that will be clicked later. After that create a save, new, load, send, attachment button in the VBA module command (Kansao, Yrigoyen, Haris, & Saputelli, 2017).

Interface design consists of the appearance of the application that has been built. Applications are made by following developments, one of which is easy to operate/use (*User Friendly*), and an attractive appearance for users.

1. Main Page Display



Figure 5. Home page display

2. WhatsApp Page View

The WhatsApp page is a page where users can send WA messages which will later be forwarded to the WhatsApp Direct application.



Figure 6. WhatsApp Page Display

3. Contact Page View

Contact page is a page to store contact information such as name, phone number, whatsapp



Figure 7. Contact page display

4. Reminder Page View

Reminder page is a page to save reminder notes such as schedule to meet clients.

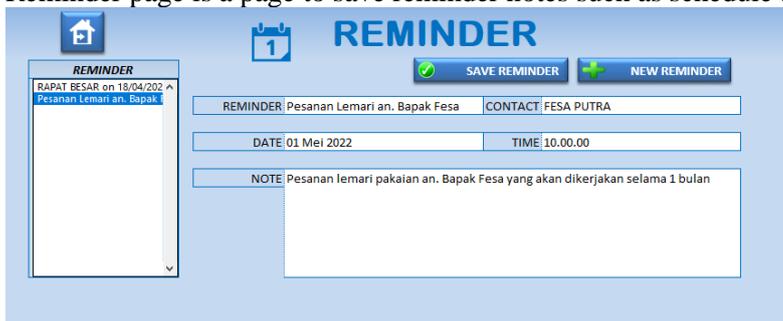


Figure 8. Reminder page display

5. Document Page View

The document page is a page for storing documents that will later be used in sending WA.

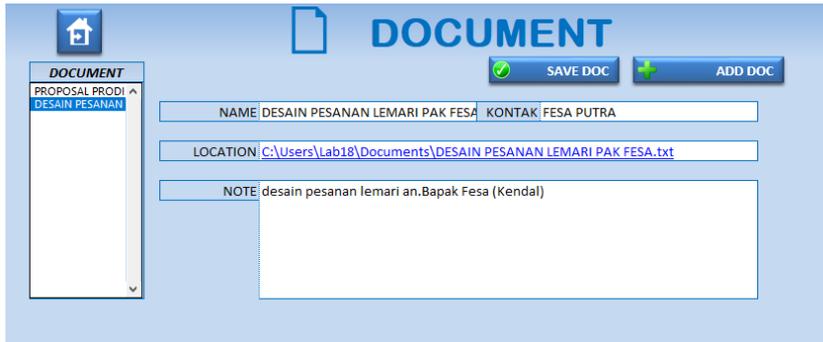


Figure 9. Document page view

There are several discussions in this system that show a service for users contained in this application, for example:

1. Saving Customer Contact



Figure 10. Features in contact menu

2. Sending WhatsApp Messages



Figure 11. Features in the WhatsApp Menu

3. Important Schedule Reminder

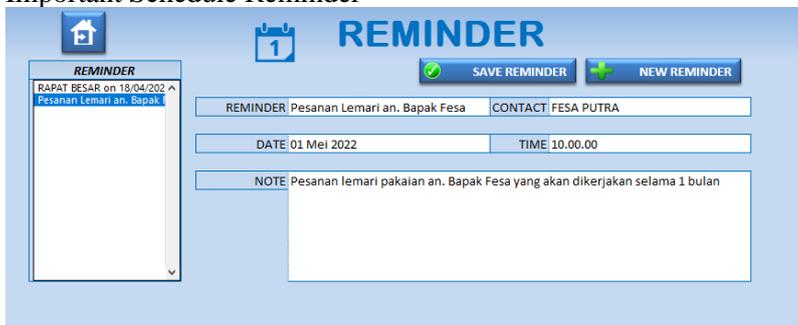


Figure 12. Features in the reminder menu

At this stage the interface design is designed using VBA and features in Microsoft Excel by entering certain commands. Each of these commands has different use but it interacts with each other, which means that they work together to form a system. Such as code/scripts, modules, procedures, functions, objects, variables, events.

Implementation

After the CRM application is complete, the installation is carried out on the computer of Kendal furniture SME, then transfers the existing data on the Kendal furniture SME to the CRM application such as customer/client information who will order furniture SME products both offline and online, information data such as name, phone number, booking requirement, WhatsApp number and schedule reminder to meet with clients. Later, this data will be stored into the CRM application database and all of these features will also be integrated with social media so that Kendal furniture SME are closer to clients. This implementation is applied for one week to the user i.e., the owner of the Kendal furniture SME, then testing and evaluation will then be carried out (Figure 13).



Figure 13. Implementation of the CRM application

Testing and Evaluation

Testing and evaluation of CRM applications is carried out to find out where the weaknesses of the system are as follows:

1. Testing Process

In this testing section, the researcher will use the black box setting whether it is working or not and provide an overview of the features available in the CRM application at the Kendal furniture SME. For testing, only one part is the customer database. In testing the customer database, there are features of customer biodata, customer habits records, schedule reminders, and sending messages. From these features, we can map the customer want and give the remainder to the customer for their needs. So that, customers will continue to order from furniture SME if there is a need for furniture. From this CRM application, furniture SME will be able to match supply and demand with their customers as well as the integration of social media that can facilitate communication.

2. Evaluation

For the CRM application system that has been designed, an evaluation will be carried out with the aim of knowing whether the CRM that has been created has met the needs of the user or not. This evaluation describes the advantages of the CRM system when it is compared to manual customer recording (Utomo, Winarno, & Amborowati, 2016). Respondents in the CRM evaluation were three furniture SMEs with a rating scale of 1–10. The following are the comparison results and scores from the respondents (Table 1).

Table 1
Comparison of Manual System with CRM

Element	Impact of CRM	Score
Quickness	All customer data is collected into one. The habit of customer of our products has been mapped so that when they will order back from us, we have predicted so that they can stock their products and remind customers to order.	8.33
Flexibility	Business processes in CRM applications are more flexible, because the data needed to get integrated information, both data from order of customers or	7

Accuracy	customers who are interested in social media. In this CRM application, there is accuracy in providing information about customer habits related to promotions.	9
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Based on this explanation, it is evident that the CRM application created is able to facilitate furniture SMEs of Kendal in managing customer data, providing fast information and being able to predict orders from customers correctly so that the customer is satisfied with the services provided.

This is also supported by a friendly user interface that easy to use and understand by users. With these advantages, it is hoped that this application will be able to meet usage needs and be a better alternative solution than the old system which still uses manual processes.

CONCLUSION

Based on the discussion above, conclusions can be drawn including:

1. With the CRM application, it is easier for furniture SMEs in Kendal to manage all running business processes, such as managing customer database and integrating them with social media accounts.
2. With the CRM application system, it is easier for furniture SMEs in Kendal to communicate with customers by mapping customer habits/preferences so that they can predict and prepare customer orders faster.
3. The design of this CRM application uses Microsoft Excel and VBA, this makes the user interface more friendly and simple to use. This is very suitable for the business conditions of the furniture SMEs, which will still switch to digital databases and digital marketing.

Some suggestions that are expected to be developed in further research are to conduct further research towards CRM applications that can be accessed via smartphones and can be downloaded on Google PlayStore.

REFERENCES

- Alfarisi, A. M., & Mahendra, D. (2021). Rancang bangun sistem informasi penjualan berbasis crm pada usaha mikro kecil menengah (UMKM) di Kabupaten Jepara. *Journal of Information System and Computer*, 01, 43–48.
- Amin, I. H. A., & Kristanto, K. (2014). Aplikasi customer relationship management (CRM) di CV. Matahari Digital Printing Semarang. *Dinamika Teknik*, 8(2), 49–65.
- Beck, B., & Summer, J. (2001). *Data warehousing horizons CRM: Not just operational and collaborative*. Retrieved from <http://www.dmreview.com/master.cfm?NavID=198&EdID=3956>
- Choudhury, M. M., & Harrigan, P. (2014). CRM to social CRM: The integration of new technologies into customer relationship management. *Journal of Strategic Marketing*, 22(2), 149–176.
- Greenberg, P. (2010). *CRM at the speed of light*. Fourth Edition. New York, NY: McGraw Hill.
- Irwiensyah, E. B. F. (2008). Analisis fitur CRM untuk meningkatkan kepuasan pasien berbasis pada framework of dynamic CRM studi kasus: Departemen Obstetri dan Ginekologi FKUI-RSCM Jakarta. *Seminar Nasional Informatika*, 349.
- Kalakota, D. R., & Robinson, M. (2001). *e-Business 2.0 roadmap for success*. Retrieved from https://repository.dinus.ac.id/docs/ajar/e-business_roadmap_for_success_full.pdf
- Kansao, R., Yrigoyen, A., Haris, Z., & Saputelli, L. (2017). Waterflood performance diagnosis and optimization using data-driven predictive analytical techniques from capacitance resistance models CRM. *Society of Petroleum Engineers - SPE Europec Featured at 79th EAGE Conference and Exhibition*, 1545–1571.
- Laudon, K. C. & Traver, C. G. (2017). *E-commerce: Business, technology, society*. Boston: Pearson.
- Lestari, E., Sabri, L., & Yuwono, B. (2014). Pembuatan program perataan parameter jaring poligon dengan menggunakan Visual Basic for Application (VBA) Microsoft Excel. *Jurnal Geodesi Undip*, 3(1), 332–346.
- Rowe, J. W. F., & Clark, F. E. (1927). Principles of marketing. *Economica*, 19(1), 118–119.

Utomo, Y. B., Winarno, W. W., & Amborowati, A. (2016). Perancangan customer relationship management pada klinik (Studi kasus: Klinik Pratama Nusa Medika Meritjan). *Multitek Indonesia*, *10*(1), 57–68. <https://doi.org/10.24269/mtkind.v10i1.239>

POLLUTANT CROP STUBBLE TO ENERGY RESOURCE BRIQUETTES: ECONOMY, BEHAVIORAL AND POLICY CHALLENGES

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ABSTRACT

India is the fourth largest agriculture economy in the world and it produces equally huge amount of crop residue. India alone produces approximately 516 million tons and burns 116 million tons of crop residue every year causing excessive particulate matter emission and air pollution. Additionally, crop residual field burning also kills the insects and worms in the soil which are much needed organisms for its airing. The soil also loses a lot of nutrients. All these have been a grave concern for India since a very long time. This has ensued into a plethora of initiatives, remedies and mitigation strategies being proposed, namely composting, conversion into fabrics and conversion of crop residue into energy among others. Out of all, conversion of crop residue into briquettes and then using them as a source of energy generation in thermal plant and other manufacturing industries that uses conventional sources of energy like coal and wood has been under limelight. Despite the exigency of the current situation, the implementation of the crop stubble - to - briquette initiative has manifested a lackadaisical approach. This has been corroborated by the deterioration of the air quality in Delhi and other parts of North India. Keeping the aforementioned challenges in mind, this paper aims to scrutinize the hurdles in the realization and implementation of the environmental policy concerning with the usage of briquettes. In particular, the paper will throw light on the policy, efficiency and economic viability of the briquette technique. The paper thus begins by giving a brief introduction of the conversion of crop stubble into briquette and its usage as an energy resource instead of conventional energy resources. It will also endeavor to juxtapose the energy coefficient of coal and briquettes. This will be followed by analyzing the obstacles in the policy implementation and drawing conclusion into the economic viability of the crop stubble - to - briquette initiative.

Keywords: *Stubble burning, crop briquette, challenges to implementation.*

INTRODUCTION

India holds the title of being the fourth largest agriculture economy in the world and it employs around 58% of the Indian labor force. Despite of this fact it contributes just 18% to the Indian GDP. India is ranked first in the production of milk and wheat, second in dry fruits, third in fish production, fourth in egg, and fifth in poultry production worldwide. With such a large-scale agricultural activity, it results in the production of crop residual which proves to be big failure for the Indian government and the entrepreneurs when it comes to the mitigation strategy. One such innovative idea was the conversion of crop stubble into briquettes and further into energy. It encompasses the technique to stop burning them in the fields instead burn them in the thermal plants and burners to produce energy.

Every year the deteriorating air quality index in Delhi and other parts of North India especially during winters is attributed to the burning of crop residual after harvest. It was reported that the burning of 63 Mt of crop stubble releases 3.4 Mt of CO, 0.1 Mt of NO_x, 91 Mt of CO₂, 0.6 Mt of CH₄ and 1.2 Mt of PM into the atmosphere. The problem gets more severe when India grows rice and wheat one after the other. All of these has several drawbacks which are not limited to environmental aspect but also in terms of health and economic facets.

It is estimated that if all the stubble is converted into briquettes for conversion into energy in India, then, it has the potential to generate 18000 MW electricity. If on an average one house use one MW electricity in one month, then, it can be easily calculated the amount India is losing on.

The production of stubble will only increase in future owing to the inevitable growing population and burgeoning food demand. This necessitates the initiation and adoption of mitigation strategies and

corrective measures which are socially and economically viable. The paper thus seeks to look at the various factors which are slackening the above technique of crop stubble-to-briquette conversion method. In the subsequent sections, the paper will endeavor to analyze various reasons which include storage issues of briquettes, policy issue, improper management and disposal, efficiency criteria and economical unviability. Further, it will incorporate the behavioral aspects of the farming community which is preventing the adoption of this technique. In the concluding part, the paper will put forward some suggestions to realize the potential of the above technique in a pragmatic, realistic and phased manner.

Review Matrix Objectives

1. To study different challenges at different levels to eradicate stubble burning issue.
2. To study the effects of stubble burning in India.
3. To suggest solutions and ideas to eradicate stubble burning based on the experience of foreign countries and stakeholders in India.

LITERATURE REVIEW

India as an agricultural economy is growing with every passing day. It is expected that Indian agricultural export will reach US\$60 billion by 2022. Essential agriculture commodities export has already gone up by 43% for April–September 2020 as compared to its previous year 2019 to Rs. 53,626 crores (US\$ 7.3 billion). With this exceptionally outstanding performance, a problem arises and that is the problem of burning of crop stubble. India on an average produces 516 million tons of crop residue every year and burns as much as 90% of it for which everyone pays a heavy price. In 2018, it was found that people in rural areas of Punjab have to spend Rs. 7.6 crores every year on the treatment of people for ailments caused by the burning of stubble. The problem doesn't end here. It is not just a matter of a year or so but in fact, it remains for many years to come. The practice of burning stubble in the field releases 70% carbon dioxide, 0.66% methane and 2.09% nitrous oxide in the air. The impact of the first two gases remains for 100 years and the impact of the third gas remains for 170 years in the ecosystem.

It will be wrong on our part to say that the farmers, the government or the people of India are unaware of the above stated facts. Nonetheless, this environmentally hazardous practice is continuing without any halt. Alone farmers are not to be blamed but also the government has an equal share in it. Poor implementation of the policies formulated by the government is one of the major reasons for burning of crop stubble. The quantity of the stubble to be disposed of is humongous but the window is small. In 2019, the government announced Rs.2500/acre as a bonus to those farmers who will avoid burning it but there has been a negligible implementation of this subsidy for reasons that need no elaboration. To add to this, the farmers have to incur extra cost in disposing of the stubble. Burning stubble is inexpensive and time efficient according to the farmers. One more reason for burning crop stubble is high labor cost as workers are hired for the harvesting season. The government and other agricultural institutes tried mechanizing the process. But it has proven to be counterproductive. Increasing use of mechanical harvesters has aggravated the problem of post-harvest crop residue burning all over the country as the harvesters leave large amounts of stubble on the field.

Another question that is very frequently asked is about how to measure the damage done by the burning of crop stubble every year. There are many researchers who have already worked on this and according to Amandeep Kaur and Jyoti Rani, there are several ways to measure the effects of stubble burning out of which manual detection is one of them but that is not enough when things happen on such a large scale. Therefore, there are various other techniques such as Remote Sensing. It helps to collect the information about an entity even without being there. Both qualitative and quantitative information can be acquired about the entity.

Given the problem, the government and several other private sectors came up with an idea which was about converting the stubble into briquettes which further can be used to generate power in boilers and thermal plants. The main ingredients of briquette include various types of agricultural waste such as straw, sugarcane bagasse, maize stalk, rice and wheat husk. Moreover, it also includes saw dust and waste paper. It not only helps in reducing the waste discharge but also is a substitute of coal and other

non-renewable sources of energy for generating electricity. The process of converting into briquettes involves drying, grinding, sieving, mixing with a binder, compacting and cooling. Those farmers who sold their crop residue earned Rs. 5834 extra each month in Delhi, India. But when the stubble was sent to the Indian Agricultural Research Institute, they found the machine used in the process expensive.

This could be a major setback in the upscaling of this project. Moreover, India needs better infrastructure and a market to sell for this project to be a success. So, given the issues, Vipul Gulati, a 28-year-old entrepreneur came up with the idea of setting up bio plants near the field itself so that the transportation cost and even the collection cost can be reduced for the farmers. He suggests hiring collectors on a commission-based payment system who will deliver crop stubble to the plant. There are few other alternatives but none of them are fool proof solutions for the problem at hand. Mulching the stubble into fields with the customized machines is one such solution. Subsidies have been provided but these take care of only 20% of the cost. One such subsidy was provided in 2018 by the cabinet committee on economic affairs which encompassed a special fund of Rs. 1151 crores for Punjab, Haryana, U.P. and Delhi to tackle the problem of crop residue. The sanctioned amount was needed to be used in: 1. Establishing farm machineries for the on-site crop residue management; 2. Procurement of farm machines; 3. Information, education and communication. But there are other things as well like maintenance and time taken in it.

Even though there are problems, if implemented, the briquettes have several uses and can be very profitable from the economic point of view as well. They have other uses apart from being used in thermal plants and industries as a source of energy in cooking instead of wood for fire and in some industries like bricks and bakery. Bio coal or briquettes are comparatively cheaper than coal and can be economically profitable for the industries and power plants. It can be a source of supplemental income for the farmers. It also presents an opportunity for cheaper fuel for consumers. Owing to its high combustible rate, it produces very less ash and virtually negligible carbon and Sulphur dioxide emission. The combustion efficiency of wood charcoal is less than the rice husk, coconut husk and sawdust briquettes. The combustion efficiency increased from 13.1% to 31.2% in briquettes. Briquettes are able to perform better maybe because of superior energy density.

Thus, there has been extensive research on the issue of crop residue and its management. The issues associated with the crop residue management have been so far looked in demarcated territories. The non-implementation of the various novel techniques and innovations do not operationalize in isolation with each other. There is a ground of interplay and deeper engagements among all the obstacles, be it economic, efficiency and policy. It, therefore, becomes imperative to look at the three in connotation with the interdependence that plays among them. The subsequent paper thus focuses on all three aspects; economic, efficiency and policy hues, giving appropriate suggestions for the same (Table 1).

Table 1
Previous Researches

Research Topic	Author	Objectives & Findings	Methodology	Shortcomings
Impact of Practice of Stubble Burning in Environment	Chatterjee (2018)	The paper talks about the impact of stubble burning on environment and what can be the solution for stubble burning.	Secondary data collection	The paper didn't mention the challenges and reasons specifically that why stubble burning is still happening.
Stubble Burn Area Estimation and its Impact on Ambient Air Quality of Patiala and Ludhiana District, Punjab, India	Chawala and Sandhu (2020)	The paper mostly tries to find out the area where the stubble burning takes place. After finding the area they try to estimate the impact of stubble burning and finally conclude by putting all the data together.	Normalize burn rate, Remote sensing, GIS technique	The paper focusses on specific area of India. Even in north India, there are minimum of three states where stubble burning takes place. So, paper considers only one city and didn't take others into consideration.

Research Topic	Author	Objectives & Findings	Methodology	Shortcomings
Crop Residue Burning in India: Policy Challenges and Potential Solutions	Bhuvaneshwari, Hettliarachchi, and Meegoda (2019)	The paper only focusses on the policy challenges in India to stop stubble burning and gives the possible solutions. It also talks about the adverse impact and various government policies that were implemented.	Ethnography, Observation	Policy challenges are one of the very important factors but we cannot ignore the economic and behavioral aspects. If there isn't any change in the behavior of the stakeholders towards the given situation, policy challenges will always be there.
Stubble Burning in India: Defogging the Facts	Bisht (n.d.)	This paper tries to answer the issues of air pollution and stubble burning in India, which are becoming increasingly entwined. It looks deeper into the policy concerns that have led to the widespread use of stubble burning as a means of disposing of stubble. Finally, the paper offers a brief review of government interventions aimed at discouraging farmers from burning crop stubble, as well as potential short-term solutions.	Secondary data collection, Archival research	Paper definitely tries to address the stubble burning issue and how the government is trying to help in controlling the problem. They even try to suggest some short-term plans for the stakeholders but it fails to address different bottlenecks in the policies and administration which is a very vital information for knowing the reason why stubble burning is still continuing.
Addressing Air Quality Spurts Due to Crop Stubble Burning During Covid 19 Pandemic: A Case of Punjab	Pandey, Kedia, and Malhotra (2020)	The paper majorly focusses the issues of air quality near Punjab, Haryana and Delhi because of crop stubble burning in just Punjab. Then, it suggests some short-term practical measures and also, suggest some permanent solutions to make food production efficient and resilient to environmental changes.	Secondary data collection, Archival research	Again, the paper fails to take behavioral changes into consideration. Also, the paper tries to explain the effect of stubble burning in Punjab to nearby areas and not a problem as a whole.
A Technology Led Sustainable Solution to End Stubble Burning	Tiwari (2021)	Again, this paper talks about the adverse effects of stubble burning but he suggests new sustainable measures to control this. The paper mostly focusses on solutions using technology which is different from other papers.	Ethnography, Secondary data collection	The paper fails to talk about the bottlenecks in eradicating this situation. Technological solutions are a good move but not feasible for all the farmers as a lot of them are technically handicapped and for some of them it might not be very cost effective.

RESEARCH METHOD

Complete research is based on the secondary resources available in the form of research papers, news articles and different government and non-profit organization websites. Most of the information presented in the paper has been extracted from different knowledge holding centers in one form or the other. The issue which India is facing today has been faced by various other countries like Australia,

Scotland, Brazil, UK and China. Therefore, the paper consists of certain facts which are considered to give us better insights into the study conducted to compare and contrast Indian ways with the countries performing better than India. The paper has been written in a very structured way with as few constraints possible keeping an open mind towards the topic chosen. The paper itself is trying to find out what are the possible issues because of which stubble burning is still prevalent even after a number of schemes being introduced by the government on state and central level as well.

Therefore, as the first step to understand this, it was important to understand the research that has already been undertaken in this field and not just in India but outside India as well. To understand this, more than 20 research papers were reviewed and all the news articles in the last one year were taken into consideration. Because to understand the challenges in India it is important to understand the actions that were already taken or are underway. As the second step, it is important how crop briquette is formed and how it is different from coal because through this research paper we try to understand how crop briquette can replace coal in thermal plants and other areas where there is a need for power generation. Not only this, crop briquette can be easily treated in the farms as well and this can be used as a substitute of wood as well for the household purposes. Finally, we look for what are the challenges and we categorize them as economic challenges, policy challenges, bottlenecks in bureaucratic machinery and literacy and behavioral aspects. Because it is important to understand what are the challenges on the government side, bureaucratic side and from a farmer's point of view as well because then only we can actually come up with proper solutions to tackle all of them step by step. Subsequently, we come up with the solutions and try to frame a process of why this problem can be tackled and how it can be done. The ideas put forward are mostly written on the basis of self-understanding and from the experience and experiments done by other countries. For example, the first step is to educate farmers and understand why they are not willing to stop burning crop stubble. Finally, we conclude by curating different ideas from different sources, understanding Indian perspectives and finding a way forward for the same.

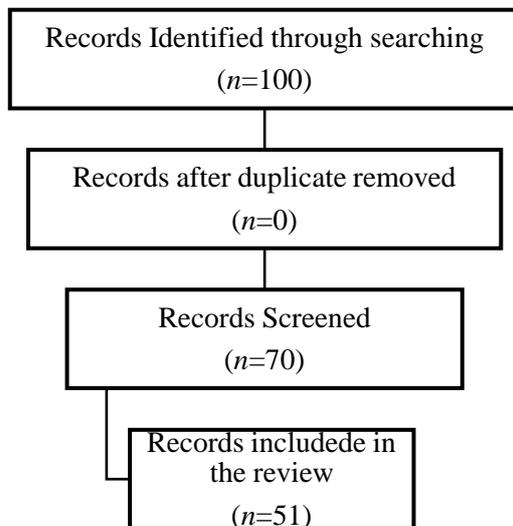


Figure 1. Meta analysis flowchart

For this study to be viable and acceptable, a total of 100 articles were researched through different web sources including research papers, newspaper articles, independent bloggers and interviews of the people. It was made sure that none of them were same or in any copy of the other. Further, few of them were eliminated because of the lack of content or similar content or irrelevant for the objectives undertaken for this study. In total, 51 articles were reviewed and taken into consideration for this study (Figure 1).

Process of Preparation of Briquettes

Crop residue cannot be burnt directly. It has to be converted into briquettes. Briquettes are nothing but compressed form of crop residue or a block of it. It is not necessary that it should be of coal or biomass material but it can be of any combustible matter which can be used for burning but here we will specifically

deal with the crop residue. The main raw materials needed for briquettes are rice husk, wheat husk and other crops residue along with biomass waste. Other things needed are baler machine, binder and in some cases water. The process of preparation can differ from one application to another. But the overall process remains the same. The main steps are collecting, cleaning, densification and binding.

The first step is to collect the stubble from the field. It may be either done manually by farmers or people hired for harvesting or else by a baler machine. When done manually it takes a lot of time and this is one of those reasons why the farmers are willing to burn it on field because it does not take much of labor and time. When done by baler machine, it takes very less time. In approximately 10–15 minutes, the machine is able to clear one hectare land and it directly converts the crop residue in briquettes to be picked up for further process if required. Sometimes, the farmers complain about machine being expensive, for that the government is trying to provide them with subsidies.

The second step is cleaning and also includes cutting them into a size of which briquette is needed so that it becomes easy to bind and transport. As mentioned above, this step is not taken into account when done by baler machine. When done manually, the collected crop residue is cleaned by removing mud and other unwanted particles from it. Sometimes, there might be insects also that need to be removed and then it is cut into the needed size. Sometimes, it is also done with the help of water but it is not recommended as it reduces the combustion rate because of rise of moisture in it. Secondly, it can increase the cost of production and farmers work as it takes a lot of time to dry (almost 2–3 days) and a lot of space to be kept. But still it is done by some farmers and dealers as it makes it easier to densify, bind and transport to various places and also cleaning happens easily.

The third step is densification. It is a process of compressing them and making into a briquette with the help of other biomass waste. When done by baler machine, it will be compressed and converted into a briquette. Manually there are different ways in which it can be harnessed. These are roller press, piston press and palettization. In roller press, it works on the same principal as sugarcane juicer. Pressure is applied between two rollers, when briquettes pass through them, it is pressed into a die or small pockets, forming the densified product. In another method, it is taken and kept into a kind of mould where it is compressed either in rectangular or cylindrical shape, also known as piston press. It is done because it gives a uniform shape and makes it easier to handle, transport and store. The process of palettization is very similar to piston press. The only difference is of the shape and of that it is not a machine-like piston press but instead first the residue is pushed into a mould and then a roller is used to push the briquettes out of the mould.

And finally, the last step is binding. It gives more strength to briquettes. It is nothing but the process of binding and keeping the briquettes together. In layman's word, it is same as packing papers using a thread or water used for making dough out of wheat powder. Similarly, binding is done for holding the briquettes together.

After this, it is taken for various uses out of which one is the use of briquettes in thermal and biogas plants, paper industry and other industry using furnaces for producing energy. It is then picked up from the farms and briquettes processing units by the companies and dealers. Farmers are paid for this and this becomes a source of supplement income for them.

Comparison Between Coal and Crop Briquette

Crop briquettes possess the advantage of reducing the emission of pollutants. But this assumption is not free of reservations since it will include some amount of burning. Although crop briquettes are comparatively inexpensive to coal yet industries and power plants are averse to its usage. The above questions can be answered after analyzing the differences in the characteristics of coal and crop briquettes.

To start with, coal has a heating value starting from 3000 kcal/kg going up to 8000 kcal/kg for high quality anthracite coal but generally, that high quality coal is not used. Instead, bituminous coal which has less energy output been used. Crop briquette share almost the same heating value as of bituminous coal, that is, a heating value of 3200 kcal to 3500 kcal/kg.

It is not hidden that coal is expected to get extinct soon, anytime between 2040 to 2070 at the rate at which it is being used. And therefore, a lot of countries are finding ways to shift to renewable sources of energy. On the other hand, biomass and crop briquette are available in large quantity but is not ubiquitous. Nevertheless, it can be made easily available and accessible. Punjab and Haryana alone produce nearly 35 million tons of paddy straw every year. The agriculture and farm waste are being produced in huge quantity but remains unutilized as fuel every year. But there is a problem associated with the crop briquettes that it is not available round the year but is a seasonal harvest. On the other hand, coal is available all-round the year and therefore, industrialist are a bit reluctant to invest in crop briquettes.

One more benefit of crop briquette is that it takes very less time to burn. It gives out instant energy and 1m^3 is capable of boiling 100 liters of water. A biogas plant of 2m^3 could supply a household with four members with the required cooking gas and lighting. Whereas a coal-based power plant may take at least 90 minutes to 600 minutes to run and produce energy from coal which is much more than what is needed by crop briquettes.

The most important criterion of distinction between coal and crop briquette is pollution. Crop briquette is one of the cleanest and carbon - neutral renewable source of energy. The carbon emission released during the combustion of biofuels match the amount of carbon dioxide inhaled by the plants taken from the atmosphere during their lifecycle. They also do not emit other harmful gases that are usually emitted by the burning of coal such as Sulphur, nitrogen and mercury among others which results in to acid rain, respiratory illnesses, and developmental illnesses. Coal also releases waste and a lot ash after burning which is discharged in water or dumped in pits across the country.

Aforementioned aspects elaborately scrutinize the difference between coal and crop briquettes and how the latter proves to be better in all hues as fuel. Despite of this, the crop briquettes are not harnessed to the fullest extent. This proves to be a major setback in its adoption and manifests various bottlenecks in the supply chain.

Challenges

Economic Challenges

As Marx rightly puts forward, the base of all society is the economic structure. Therefore, the economic challenge acquires the central position and needs to be dealt with in an exhaustive and comprehensive manner. Man is an economic being, materialistic and individualistic. Thus, they prioritize economic interest over all other interests. This is a fundamental hurdle when it comes to adopting this renewable source of energy.

Farmers are reluctant to change owing to a plethora of factors. Purchase of the machinery that facilitates the conversion of crop stubble into briquettes for the farmers is expensive, especially for the lower- and middle-income class. Farmers demand subsidization from the government. The farmers have the option to employ laborers but that will result in overhead costs for the farmers. Another challenge is the short window which consists of 10–15 days between harvest and next sowing season where farmers can either burn the crop stubble or can invest extra hours to harvest the stubble and convert them into crop briquettes. The farming community usually is inclined towards utilizing this period in preparation of the next sowing season. Alternative option is available with the farmers wherein they can send the crop stubble to other plants and factories where they can be converted into briquettes. But this is associated with the challenge of transportation and distance between the field and the factory. The farmer also lacks trust in the government and industrialists for payment in return of their crop stubble. The efforts, transportation costs and overhead labor costs which are borne by farmers during the process of conversion of crop stubble into briquettes is not always converted into timely payments to farmers. This further proves to be a disincentive to the farmers and deters them to adopt renewable energy.

The economic aspect is not limited to the farmers. It also encompasses an industrialist point of view. Replacement of coal with crop briquette would require industrialists to adopt structural changes in their

industry. This would require capital. The industrialists will have no incentive to reduce their profits and indulge into something which will necessitate fundamental changes. The government has to intervene when it comes to subsidization and giving financial benefits to industries.

Policy Challenges

No decision can be fruitful except the presence of political will and determination. The aforementioned challenges faced by farmers and factory owners can be resolved through ideal policies framed through discussion and deliberation. Most of the time, the policies made do not take into account all stakeholders. The policies are framed keeping in mind the perspective of one section of the population and lack inclusive character. Many times, vote politics is the framework followed while drafting policies. The delay in framing policies is another challenge that comes in the way.

Even when ideal policies are framed keeping in mind all the necessary prerequisites, the government's unwillingness to explain its stance to the public and the public furor over it results in a bitter tussle. The party's reluctance to come to a compromise since a single policy cannot address the demands of all sections is another obstacle.

Bottlenecks in Bureaucratic Machinery

The bureaucratic machinery is rife with internal hurdles. No policy decisions and monetary benefits are successful if not implemented efficiently. Corruption, or siphoning of money given for public purposes for personal use is a big drawback. Corruption is a big menace that is wreaking havoc in the Indian political system.

Slow implementation and underutilization of resources is another challenge that need to be dealt with utmost care. All the efficiencies of the government ensue in lack of trust among the farming community and industrialists and further impedes the process of implementation. The above challenges coupled with lack of support from people is a big stone in the path of policy implementation.

Nodal officers are being appointed every year in states like Punjab to control stubble burning but they are of no avail. There has been an increase of 26,000 cases of stubble burning in just three years from 2017–2020. The reason behind the failure of nodal officers is that they work as messengers or by-watchers but cannot take any action. Their functioning is limited to reporting of stubble burning and have no power other than that.

Another major issue is lethargic Indian systems. In 2013, Punjab State Council for Science and Technology came up with this idea of crop briquettes but it got granted by the Center only in 2016. The amount of time taken to get approval owing to the long chain of bureaucratic machinery is humungous and deteriorates the situation further. The needs and challenges also change during the long time of approval.

Literacy and Behavioral Aspect

This proves to be a significant factor that curbs the usage of crop briquettes. No number of efficient policies, implementation strategies and economic efficiency can overcome this challenge. This is associated with the ideology and the mindset of the people that they have nurtured for years. Aversion and reservation towards adoption of new policy and lack of risk-taking behavior among the present farmers can be attributed to the same. Harnessing the conventional sources of energy seems to be more elementary than switching onto new technologies which would be costly in the short run but highly beneficial in the long run. Farmers tend to ignore the bigger picture and adapt to a more short-sighted perspective of self-interest.

The reasons underlying for ignorance of the farmers is lack of literacy and education. The dearth of awareness among the farmers and unavailability of the sources for the same proves to be detrimental. Obsolete mindset of the farmers and unwillingness to revolutionize their thoughts comes as a hurdle in this process. The only focus is laid on economic purpose and, environmental and health arenas are put on the back seat.

Apart from the farmers point of view, industries and thermal power plants also manifest disinclination towards the adoption of novel technology. Replacement of coal with crop briquette would require industrialists to adopt structural changes in their industry. This would require capital. Industrialists are driven by profit and self-interest and ignore the environmental impact which does not affect them directly.

The above challenges can be overcome with plausible solutions. This is dealt with in the subsequent section of the paper.

Possible Way Forward

One of the major hurdles that can be inferred from the whole paper is the economic issues not confined to the farmers but encompasses the industrialists too. Policy formulation, implementation and its enforcement are another stumbling block in the journey. This when clubbed with the reluctance of the general public ensues into a veritable obstruction. The challenges discussed in the previous section cannot be resolved in one shot but needs a multi-pronged strategy.

Firstly, economic policies need to be revamped and must be considered on an urgent basis. There is no denial for the need of an impeccable policy that addresses the economic concerns of not just the farmers but industrialists as well. But this needs to be complemented by an inclusive and universal financial assistance by the government. One way is to provide regressive subsidization for farmers and industrialist. This will incentivize both the communities to adopt the policies on a full-fledged basis. A committee can be created to keep a check on thermal power plants regarding the policies implementation. The plants which follow the policy can be given tax rebates other than subsidies for adopting crop briquettes as a source of energy instead of coal. Additionally, a system of penalty should also be adopted in the form of progressive taxation as per the damage done to the environment. This can be measured with tools that facilitate the conversion of carbon emission released into monetary terms. We can take inspiration from recent legislation of the European Union, 'Fit for 55' which is drafted on the same lines. The main feature of this legislation is the carbon emission trading system. This can prove to be extremely effective in controlling the emission.

Secondly, the government should take prompt action instead of waiting for things to get out of hands. It is fairly known by all that there is a very small window of 10 to 15 days between the harvest and sowing seeds for new crop. Even last year, farmers complained about the inaction of the government when farmers notified the district administration for removing the stubble, no action was taken. Therefore, if farmers are ready to take the pain, the government needs to be on their feet to reciprocate the same. There is a dire need for a policy to be framed from the government's end. This year the Government of India came up with a policy of using crop stubble instead of coal in 11 thermal plants in a radius of 300 km of Delhi. This needs to be expanded to other thermal plants and not confined to a few. A policy necessitating the purchase of all the crop stubble from the farmers and the subsequent sale to the industrialists must be formulated. The government should play the role of middleman in the supply chain. Crop briquettes can also be alternatively used in boilers and clay brick making (burning stage). Government can provide farmers with laborers to clear the field. This can help government to generate employment. Government can also help the farmers by building a network and connecting the right people to the farmers for getting the crop residue clear from the field. Sometimes, because of lack of knowledge and connections, the interested parties in the deal are not able to meet and therefore, government can play a good role here.

Thirdly, simplifying the complex bureaucratic machinery and the tardy process of approval can be another step in the right direction. This will result into faster decision making and immediate implementation. There is a need for decentralization which will encompass the inclusion of all the shareholders associated with the policy. This will not only facilitate quick decision making but also showcase inclusive character. As it was mentioned above, it took three years for the approval of the idea of crop briquettes. In these three years, things changed drastically from technology used to the financial and behavioral aspects of the industrialists and farmers. This further paralyzed the process and made it ineffective.

Fourthly, the need to educate farmers should occupy the priority of public policy. All the burden should not be put on the government. People have a direct liability and therefore, must play an active role. The people can contribute efficaciously only when they are well informed. Thus, the government, various NGOs, self-help groups, think tanks, civil society among others can play a pivotal role in educating fellow citizens. Citizens living in Delhi are the most affected ones and therefore, they should be the most active ones for playing this role. Not only this, we need to educate the industrialists too. This can be done through concept awareness campaign. They are not aware of its benefits and therefore, it is equally important to have awareness campaigns by NGOs and government in collaboration with research institutes and those who already have shifted to using this.

Setting up thermal plants and boilers near farms can help in reducing the transportation issues for the farmers. The private sector must intervene and set up their plants near farms. They themselves can hire the laborers for collecting stubble and this measure will reduce the pressure on the farmers by reducing the financial burden and creating an extra source of income. For private sector, it won't be costlier than getting coal from foreign lands in lieu of the rising coal prices in the international market coupled with rising energy demand.

India is under the effect of coal crisis wherein thermal power plants don't have enough stock that will last for even a week. Keeping in mind that 70% of the electricity demand in India is met by coal, this poses an existential problem. The government has to be opportunistic. It is the best time for pushing thermal plants into using crop stubble and generating power.

It is very important for policy makers, those implementing and the ones who are adopting to be on the same page. For this, they have to work together and be together. A reason why various other big industries are able to maintain their status quo even after changes in their business environment is because they stay together. Similarly, here it's very important to have an association where everyone can feel recognized and associated to the cause. They should have a sense of being there for a good cause. We must learn from countries like Kenya that was able to switch affectively to other biomass products from coal for producing energy. We must adopt good practices of other countries and utilize them affectively suiting them to our endemic needs.

FINDINGS

Table 2
Challenges

Stakeholder or Level at Which Problem is	Challenges
Economic Level	<ol style="list-style-type: none"> 1. Purchase of machinery and employment of laborer is costly affair. 2. Transportation cost for sending stubble to industrial area is expensive for farmers. 3. Lack of trust in government for timely payment. 4. From the industrialist point of view, the cost of replacement of technology.
Policy Level	<ol style="list-style-type: none"> 1. Lack of political will and determination. 2. Does not take into account all sections of society. 3. Delay in framing of policies. 4. Influenced by vote politics. 5. Government's unwillingness and incompetency to explain their stance to public.
Bureaucratic Level	<ol style="list-style-type: none"> 1. Internal hurdles and inefficient implementation. 2. Corruption in India. 3. Underutilization of resources. 4. Lethargic Indian system and long chain of bureaucratic system.
Literacy or Behavioral Aspect	<ol style="list-style-type: none"> 1. Ideology of people. 2. Non-risk-taking behavior and fear of change. 3. Ignorance of the bigger picture by all stakeholders. 4. Lack of awareness and education among farmers. 5. Industrialist unwillingness to go for structural change.

Table 3
Different Challenges at Different Levels to Eradicate Stubble Burning Issue

Effects On	What are the Effects?
Air pollution	Releases toxic pollutants like Methane (CH ₄), Carbon Monoxide (CO), Nitrogen Oxide, Sulphur Dioxides (SO ₂) Volatile Organic Compound (VOC) and Polycyclic Hydrocarbons which eventually can lead to smog.
Soil Pollution	Heat released from stubble burning leads the soil to lose moisture and useful microbes which leads to soil erosion and makes it less fertile by destroying nutrients in it and further making it unfit for growing crops.

Table 4
Effects of Stubble Burning in India

Solutions concerned to	Solutions
Farmers and Industrialists	1. Financial assistance by the government in the form of regressive subsidization.
Industrialist	1. Progressive taxation as per the damage done by using coal instead of crop briquette. 2. Setting up thermal plants and boilers near farms to cut the transportation cost and save time.
Bureaucrats	1. To form a committee to keep a check on thermal plants to see if there is any progress. 2. Decentralization in the bureaucratic system of India for faster decision making. 3. They have to make sure that everyone is on the same page and have an association of all the stakeholders.
Government	1. Farmers are ready to take pain but the government needs to reciprocate the same. 2. The government has to act as a middleman in the supply chain between farmers and industrialists. 3. They need to expand the new policy of using stubble in thermal plants to other parts of India too. 4. They need to be opportunistic as there was a coal shortage in the recent past and there will be in future too.
People of India and NGO	1. They should take the responsibility of spreading awareness and educating the farmers and industrialists about the need for the shift.

Solutions and Ideas to Eradicate Stubble Burning

In the previous sections of this study, discussed the problem of stubble burning and how it is affecting the air quality and that of soil as well. It is not an issue for just Punjab or the neighboring states, but for India as a whole because it might be prominent in that part but it is happening in whole of India. Further, with the help of previous researcher's articles and experiments done, it was concluded that crop stubble if converted to crop briquette can be a source of energy which can be useful and less harmful for the environment as well and it can also solve the issue of crop stubble burning which can be a win-win situation for all. Then the challenges faced by farmers, government and other bureaucrats was briefly presented. The whole section was divided into four sub sections which are economic, policy, bureaucratic system and literacy issues.

All of them were equally important because it was found that 94% of Punjab and Haryana farmers were aware of Happy Seeder and 86% of them knew how to use it but only 11% of them use it. So, we can see that even if farmers know they are unwilling to go for it. In another article by BBC, it was found that after the government announced the rewards and farmers decided to not to burn in hope of rewards, got nothing. Farmers kept on waiting for one year but there was no reward so the next year they decided to burn again and when government was questioned, they said it wasn't economically feasible to reward so many farmers. It clearly tells that every year government has failed to address this issue in the manner it should have been. Therefore, in the last section, some suggestions and recommendations have been

made which can be implemented as few of them have already been tried and tested in some of the countries where this used to be a prominent issue.

Although, a lot of alternatives have been suggested before and were implemented but there remained some gap. Therefore, this paper aims at filling those gaps by answering all the remaining questions about challenges and how to tackle them.

CONCLUSION

The technique of using crop briquettes as a source of energy is not novel, not only in India but in other countries as well. But owing to certain challenges discussed above in the paper, India is somehow not able to materialize this into reality. With the help of government, private sector players, citizens, NGOs, bureaucrats, civil servants and farmers we can achieve the dream of zero carbon emission from burning of crop stubble. This situation can be a win-win situation for all. The crop stubble can be used as an alternative resource other than coal which will help in reducing pollution and cost of energy production. Additionally, it will help farmers earn supplemental income without indulging separately and investing time and efforts. In 2013, Punjab State Council for Science and Technology took the initiative of starting this process, now it's time for others to act on it before it gets too late and things get out of the hand. All the stakeholders just need to take a step towards it and other things will fall in line. To conclude, India has knowledge, technology and other needed financial resources for adopting this technique, the only thing that needs to change is the behavior and attitude of the stakeholders involved in the process to make this happen.

REFERENCES

- Bhuvaneshwari, S., Hettiarachchi, H., & Meegoda, J. (2019). Crop residue burning in India: Policy challenges and potential solutions. *International Journal of Environmental Research and Public Health*, 16(832), 1–9. <https://doi.org/10.3390/ijerph16050832>
- Bisht, J. (n.d.). *Stubble burning in North India: Defogging the facts*. Retrieved from <https://sprf.in/wp-content/uploads/2021/01/Stubble-Burning-in-North-India.-Defogging-the-Facts.pdf>
- Chatterjee, P. (2018). *Impact of practice of stubble burning in environment. A socio legal study*. Retrieved from <https://www.grin.com/document/437147>
- Chawala, P., & Sandhu, H. A. S. (2020). Stubble burn area estimation and its impact on ambient air quality of Patiala & Ludhiana district, Punjab, India. *Heliyon*, 6(1), e03095. <https://doi.org/10.1016/j.heliyon.2019.e03095>
- Pandey, R., Kedia, S., & Malhotra, A. (2020). *Addressing air quality spurts due to crop stubble burning during covid- 19 pandemic: A case of Punjab*. Retrieved from https://www.nipfp.org.in/media/medialibrary/2020/06/WP_308_2020.pdf
- Tiwari, P. (2021, September 28). *A technology-led sustainable solution to end*. Retrieved from <https://www.expresscomputer.in/news/a-technology-led-sustainable-solution-to-end-stubble-burning/79715/>

THE CAUSES OF BUSINESS FAILURE: A LITERATURE STUDY

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ABSTRACT

There are both success and failure stories in business. Therefore, to avoid repeating failure, the failed entrepreneur needs to investigate what caused the failure. Several studies abroad have discussed the causes of business failure. However, in Indonesia, most research focuses on business success factors. Research on business failure has not received the attention of researchers. Therefore, this study aims to analyze the factors causing business failure in various literature. By knowing the factors that cause failure, it is hoped that entrepreneurs can anticipate business failures. To achieve this goal, the researcher used a literature study research method. Research data are the results of as many as ten studies by previous researchers. The literature study results obtained two variables: the dependent and independent variables. The dependent variable of business failure has variations: the entrepreneur closes his business, goes bankrupt, is acquired by another company, merges with another company, dissolves the company, and dismisses employees. The independent variables that are widely mentioned as factors causing business failure are owner characteristics, business environment, entrepreneurship education, capital, resources, business experience, social relations, and entrepreneur psychology and emotions.

Keywords: *Business failure, failure causes, entrepreneurship.*

INTRODUCTION

In running a business, there are successes and failures. A successful business benefits the owner, while a failed business leads to bankruptcy. Therefore, it is essential to investigate the causes of failure faced by entrepreneurs. Unfortunately, many business failures in developed countries are caused by limited knowledge about the causes of business failure (Arasti, 2011).

Many studies have been conducted on business failure. Previous research stated that the problems found were poor management (Turner, 2013; Atsan, 2016; Hegarty, Stephens, Gallagher, & Cunningham, 2020), lack of resources and low quality of human resources (Franco & Haase, 2010; Khelil, 2014; Atsan, 2016), lack of capital (Argenti, 1976; Arasti, 2011; Franco & Haase, 2010; Khelil, 2014; Atsan, 2016; Filho, Albuquerque, Nagano, Junior, & Oliveira, 2017; Karabag, 2019; Hegarty *et al.*, 2020; He & Krähenmann, 2021), did not take entrepreneurship education (Franco & Haase, 2010; Arasti, 2011; Filho *et al.*, 2017), were unable to compete in the market (Turner, 2013; Khelil, 2014; Atsan, 2016), individual characteristics (Arasti, 2011; Khelil, 2014; Filho *et al.*, 2017; He & Krähenmann, 2021), cooperative relationships (Turner, 2013; Filho *et al.*, 2017; He & Krähenmann, 2021), lack of practice or experience (Franco & Haase, 2010; Khelil, 2014; He & Krähenmann, 2021), inappropriate strategy (Franco & Haase, 2010; Karabag, 2019), overly ambitious projects (Argenti, 1976), and entrepreneur psychology (Turner, 2013; Khelil, 2014; Hegarty *et al.*, 2020; He & Krähenmann, 2021). In addition, small businesses that experienced failure immediately closed their businesses, dissolved, and terminated their employees (Arasti, 2011).

Research in Indonesia focuses more on success factors in business. However, business failure is still less of attention from the scholars. For this reason, researchers want to find out more about the factors that can cause business failure in Indonesia. Efforts are made by investigating what factors cause failure in running a business. By knowing the factors that cause failure, it is hoped that entrepreneurs can anticipate business failures. This study aims to determine the factors that cause entrepreneurs to experience business failure.

LITERATURE REVIEW

An entrepreneur is an individual who is able and willing to take risks, has many innovative ideas to generate profits, and can allocate funds and create new goods. Therefore, entrepreneurship is an important aspect of the economy and is the most significant contributor to the economy in Indonesia through small business actors. Moreover, with many small businesses, it can help reduce the number of unemployed in Indonesia.

Entrepreneurial Principle

There are several entrepreneurial principles (Rauch, Wiklund, Lumpkin, & Frese, 2004). First, he has high proactive and hard work. Entrepreneurs who want to build a business must have high enthusiasm and hard work. Proactivity is the primary key to achieving success. In addition, proactive action aims to anticipate future demands to convince themselves that what they are doing will bring results.

Entrepreneurs also dare to take risks. Such a person will be able to solve all problems wisely. Unfortunately, the problems that occur in the business world are not minor. The risks that occur can be in the form of loss, fraud, and failure. Fear of taking risks will hinder the company's growth.

The following principle is innovative. With new ideas, businesses will not be left behind because consumers always demand new things. Entrepreneurs must have a creative attitude in the experimental process to produce something new such as a new product or service. The more ideas issued, the more the company will benefit.

Entrepreneurs are also competitive at heart. The competitive spirit aims to beat competitors so the company will be superior. He will not back down or stop in the competition but continue to try to run his business to exist, even excels.

The following entrepreneur principle is to have autonomy so that in making decisions, there should be no doubt and according to what he thinks is good to do. Decisions must be made quickly and accurately and with the team's approval. The goal is not to cause things that are not desirable, such as loss or failure.

Business Failure

Failure is defined as a bankruptcy. Bankruptcy in question means the company failed/went bankrupt legally and stopped operating, which resulted in losses (Perry, 2001). Although not always all entrepreneurs, the road will be smooth, and they become successful people quickly. Everyone has struggles and experiences in the business world, whether a loss, fraud, or failure. In the business world, failure is a natural thing and can happen to anyone. Failure can occur when the entrepreneur performs poorly, or the desired target is not achieved.

The causes of business failure are many and varied. Some studies focus more on the causes of managerial failure and categorize them as simply poor management. They conclude that poor management, owner-manager personality traits, and external factors lead to business failure (Berryman, 1993). Another cause of failure is that it is found that the characteristics of entrepreneurs are often relatively poor where there is a lack of insight, skills, and inflexibility. Lack of insight is the same as a lack of education regarding knowledge of the business world and knowledge in financial management. Thus, business failure is essential and needs to be understood, both the causes and the risks.

Business failure can come from the external environment or internal business factors. In many cases, internal factors can still be predicted in advance. Examples of internal factors are personal entrepreneurs, entrepreneur education, experience and others. However, external factors are still unpredictable. External factors include inadequate staff, lack of institutional support, and market conditions. Therefore, a combination of the internal and external factors explains the business failure.

RESEARCH METHOD

This literature research was conducted by digging references to obtain theories and research results that support the problem, namely the factors causing business failure. The next step is to define the operational definition of the variable. A variable is a concept that can be measured and also has unequal or different values. Therefore, the operational definition of variables aims to determine the method of measuring or assessing the variables.

In the literature data collection stage, this research collects data by searching for journals, conference proceedings, and books through a search facility using keywords that match the factors causing business failure. The references obtained are then peeled to see what variables are used in the reference and the indicators. From the many references collected, it will be calculated what indicators appear in many publications. The number of occurrences of an indicator in many publications will be determined as a significant indicator as a factor causing business failure.

FINDINGS

Research data was obtained from conducting a literature study according to the topic of the problem. Most of the literature studies came from abroad because in Indonesia, it is pretty rare to discuss business failure. Table 1 shows the literature that discusses the variables that cause business failure.

Table 1
Business Failure Variables

Title	Related Variables
1. An empirical study on the causes of business failure in Iranian context (Arasti, 2011)	(a) Owner characteristics (b) Business characteristics (c) Company policy (d) Environment (e) Education (f) Capital
2. Failure factors in small and medium-sized enterprises: Qualitative study from an attributional perspective (Franco & Haase, 2010)	(a) Finance (b) Education (c) Strategy & vision (d) Market/environmental conditions (e) Human resource (f) Experience & performance
3. Identifying SME mortality factors in the life cycle stages: an empirical approach of relevant factors for small business owner-managers in Brazil (Filho <i>et al.</i> , 2017)	(a) Personal characteristics (b) Education level (c) Social relations (d) Business motivation (e) Age (f) Gender (g) Financial support
4. The many faces of entrepreneurial failure: Insights from an empirical taxonomy (Khelil, 2014)	(a) Capital (b) Entrepreneurial psychology (c) Environment (d) Resources (e) Entrepreneurial skills (f) Entrepreneurial motivation (g) Entrepreneurial experience
5. Failure Experiences of Entrepreneurs: Causes and Learning Outcomes (Atsan, 2016)	(a) Economic situation (b) Government policy (c) Resources (d) Entrepreneurial management ability (e) Environment
6. Entrepreneurs and Business Failure: Taking a Second Chance (Hegarty <i>et al.</i> , 2020)	(a) Emotional stress (b) Resource management (c) Psychological (d) Extreme lifestyle (e) Business education (f) Economy (g) Motivation
7. Corporate Failure (Turner, 2013)	(a) Internal capabilities and assets (b) Material and emotional (c) Environmental changes (d) Top management (e)

Title	Related Variables
	Social relations
8. Corporate Planning and Corporate Collapse (Argenti, 1976)	(a) Top management (b) Budget (financial) (c) System (d) Overtrading (e) Ambitious projects
9. Factors impacting firm failure and technological development_ A study of three emerging-economy firms (Karabag, 2019)	(a) Political instability (b) Economic regime (c) Technology development (d) Industry dynamics (e) Ownership (f) Strategy (g) Enterprise technology management
10. Learning from Failure? The Heavy Toll of Stigma on Entrepreneurs (He & Krähenmann, 2021)	(a) Financial (b) Psychological (c) Social (d) Entrepreneurial experience (e) Entrepreneurial stigma (f) Entrepreneurial personality

While Table 1 shows the variables in each paper, Table 2 shows the indicators of the business failure variables in each paper.

Table 2
Business Failure Indicators

Related Variables	Paper no.	Indicators
Owner characteristics	1, 3, 4, 10	1. Middle age when started to do business. 2. Unsupportive personality/EQ.
Business environment	1, 2, 4, 5, 7	1. Poor market conditions. 2. Environmental culture and certain events that lead to fear of failure. 3. Insufficient support from customers, suppliers, banks, credit institutions, company characteristics (size, maturity, industry and flexibility) as well as negative influences from family and competitors.
Entrepreneurship education	1, 2, 3	1. No basic skills and formal education. 2. No internal training for employees.
Business capital	1, 2, 3, 4, 5, 6, 8, 9, 10	1. Too big entrepreneur's social and psychological pressure. 2. Macroeconomic instability, financial turbulence. 3. Unable to get financial support from local and national governments, credit from suppliers or clients, and loans from family and friends.
Resources	2, 4, 5	1. Recruitment of workers with poor qualifications. 2. Less supplier of resources.
Business experiences	2, 4, 10	1. Unable to predict the uncertainty. 2. Unable to find new opportunities.
Management competencies	5, 6, 7	1. Unable to identify failure. 2. Unable to provide the right solutions toward change and company growth. 3. Unable to manage time, resources, and finance.
Social relation	3, 7, 10	1. The breakdown of marriage. 2. Relationships between family members and cooperation between business partners are not harmonious.
Entrepreneurial psychology and emotions	4, 6, 7, 10	1. Experiencing depression and anxiety so that entrepreneurs experience a decreased quality of life. 2. Entrepreneurial dissatisfaction that increase the psychological pressure.

DISCUSSION

Table 2 contains variables, paper numbers and indicators for each variable from the results of the summary of indicators. The following describes the dependent and independent variables.

Dependent Variable

In this study, the dependent variable is business failure. The indicators are business closure, dissolution, termination of employees (Arasti, 2011), bankruptcy, being acquired by/merging with another company, and bankruptcy (Atsan, 2016).

Independent Variable

The dependent variable is influenced by the independent variables, which are various causes of business failure. Here are nine independent variables in this study, namely:

1. Owner characteristics
In entrepreneurship, the business owner's characteristics significantly affect the business' success and failure. There are indicators of owner characteristics, namely age (starting and failure), gender, personal values, marital status, locus of control, motivation, intelligence, insight, voluntary decisions, social ties and experience (Albuquerque, Filho, Nagano, & Junior, 2016).
2. Business environment.
The business environment is a condition that can affect the running of the business. Several indicators can measure the business environment, namely unsupportive family conditions, environmental culture, or specific events that can cause a fear of failure. Moreover, globalization and changes in technology and the environment may negatively affect the companies. Other indicators include customers, suppliers, competitors, banks, credit institutions, company characteristics (size, maturity, industry and flexibility), as well as the negative influence of family (Ooghe & Prijcker, 2008).
3. Entrepreneurship education
Entrepreneurship education is a lesson to teach students when facing the future regarding creating a business, teaching how to run a business, and managing a business (Fayolle, 2014). However, indicators that measure entrepreneurship education are no business education, no internal training for employees, and techniques that seem unprepared. For example, lacking basic skills and formal education will lead to the closing of small businesses (Arasti, 2011).
4. Capital
An indicator that measures capital is that entrepreneurs incur social costs and psychological costs. The social costs in question are costs for employment, costs for the environment, and product costs. Meanwhile, the psychological costs are motivational and emotional (Ucbasaran, Shepherd, & Lockett, 2013). Entrepreneurs also restrict imports of goods and face macroeconomic instability, such as financial turbulence. Business capital can come from personal money, financial support from local and national governments, credit from suppliers or clients, and loans from family and friends. Entrepreneurs will lose sources of income (such as salaries and profits), but in many cases, entrepreneurs will also lose investment money (such as personal savings and borrowed money).
5. Resources
The resources in question are resources in the form of goods and human resources. The indicator that measures the lack of external support is the lack of resources, and entrepreneurs can decide to close the business (Hall, 1992). In addition, good or bad human resources and workforce recruitment can determine business success and failure.
6. Business experience.
An indicator that measures experience is that most of the companies studied have no previous experience in running a business. Another indicator is that entrepreneurs cannot predict and find the current uncertainty. Experience can help entrepreneurs determine why and how failure occurs. Experience can broaden entrepreneur knowledge by increasing variety, broadening the search for new opportunities, and predicting the future (McGrath, 1999).
7. Management ability
The entrepreneur must have management skills. Be it time management, structure, finance and others. They can quickly fail if they cannot manage the company's structures, systems and

processes. Business failures that often occur are due to economic shocks. An indicator that measures management ability is the poor financial management of the company due to the inability to identify and provide appropriate solutions to achieve change and better company growth.

8. Social relations

Social relationship factors refer to the negative impact that comes from interpersonal relationships. Indicators that measure social relationships are the breakdown of marriages or relationships between family members and cooperation between business partners. Relationships between organizations need to be maintained, and increase cooperative ties to establish better relationships and develop a high sense of brotherhood (Baù, Sieger, Eddleston, & Chirico, 2017).

9. Psychology and emotional entrepreneurship

Indicators that measure psychology and emotional stress are entrepreneurs experiencing depression and anxiety. The emotional effects of business failure can lead to a significant decrease in the quality of life of entrepreneurs. The emotional pressure felt by the business owners can incur a high emotional cost (Jenkins, Wiklund, & Brundin, 2014). In addition to emotional, entrepreneurial satisfaction can also be a psychological measure of individual success that determines whether to succeed or not. Disrupted entrepreneurial psychology can cause entrepreneurs to distance themselves from friends and family and withdraw from society because of feelings of shame and guilt.

CONCLUSION

Business failure can be defined as a company that fails/goes bankrupt legally and stops operating, which results in losses. In addition, it was found that several entrepreneurs immediately closed their businesses, went bankrupt, were acquired by/merged with other companies, and dissolved and dismissed employees. Failure can occur when entrepreneurs perform poorly in critical processes or when desired targets are not achieved. The cause of failure often occurs because entrepreneurs' characteristics are often relatively poor due to a lack of insight, skills and inflexibility. Lack of insight is the same as a lack of education regarding knowledge of the business world and knowledge in financial management. Thus, business failure is essential to understand in the entrepreneurial world, both the causes and the risks to be taken.

This study obtained data from a literature study on the factors that cause entrepreneurs to experience business failure. Nine factors most often cause failure from any existing literature, namely owner characteristics, business environment, entrepreneurship education, capital, resources, business experience, management ability, social relations and psychological and emotional entrepreneurship.

REFERENCES

- Albuquerque, A. F., Filho, E. E., Nagano, M. S., & Junior, L. A. P. (2016). A change in the importance of mortality factors throughout the life cycle stages of small businesses. *Journal of Global Entrepreneurship Research*, 6(8), 1–18.
- Arasti, Z. (2011). An empirical study on the causes of business failure in Iranian context. *African Journal of Business Management*, 5(17), 7489–7495.
- Argenti, J. (1976). Corporate planning and corporate collapse. *Long Range Planning*, 9(6), 12–17.
- Atsan, N. (2016). Failure experiences of entrepreneurs: Causes and learning outcomes. *Procedia-Social and Behavioral Sciences*, 235, 435–442.
- Baù, M., Sieger, P., Eddleston, K. A., & Chirico, F. (2017). Fail but try again? The effects of age, gender, and multiple-owner experience on failed entrepreneurs' reentry. *Entrepreneurship: Theory and Practice*, 41(6), 1–47.
- Berryman, J. (1993). Small business failure and bankruptcy: A survey of the literature. *Small Business Research*, 2(1–2), 47–59.
- Fayolle, A. (2014). Entrepreneurship education in Europe: Trends and challenges. *Journal of European Industrial Training*, 30(9), 1–12.
- Filho, E. E., Albuquerque, A. F., Nagano, M. S., Junior, L. A. P., & Oliveria, J. (2017). Identifying SME mortality factors in the life cycle stages: An empirical approach of relevant factors for small business owner-managers in Brazil. *Journal of Global Entrepreneurship Research*, 7(5), 1–15.

- Franco, M. & Haase, H. (2010). Failure factors in small and medium-sized enterprises: Qualitative study from an attributional perspective. *International Entrepreneurship and Management Journal*, 6(4), 503–521.
- Hall, G. (1992). Reasons for insolvency amongst small firms – A review and fresh evidence, *Small Business Economics*, 4(3), 237–250.
- He, V. F. & Krähenmann, G. (2021). (Not) learning from failure? The heavy toll of stigma on entrepreneurs. G. Todt, J. Backmann, & M. Weiss (Eds.) *Work life after failure?: How employees bounce back, learn, and recover from work-related setbacks*, Bingley: Emerald Publishing Limited, 143–171.
- Hegarty, C., Stephens, S., Gallagher, P., & Cunningham, I. (2020). Entrepreneurs and business failure: Taking a second chance. *International Review of Entrepreneurship*, 18(4), 521–540.
- Jenkins, A. S., Wiklund, J., & Brundin, E. (2014). Individual responses to firm failure: Appraisals, grief, and the influence of prior failure experience. *Journal of Business Venturing*, 29(1), 17–33.
- Karabag, S. F. (2019). Factors impacting firm failure and technological development: A study of three emerging-economy firms. *Journal of Business Research*, 98(May), 462–474.
- Khelil, N. (2014). The many faces of entrepreneurial failure: Insights from an empirical taxonomy. *Journal of Business Venturing*, 31(1), 1–23.
- McGrath, R. G. (1999). Falling forward: Real options reasoning and entrepreneurial failure. *Academy of Management Review*, 24(1), 13–30.
- Ooghe, H. & Prijcker, S. De. (2008). Failure process and causes of company bankruptcy: A typology. *Management Decision*, 46(2), 223–242.
- Perry, S. C. (2001). The relationship between written business plans and the failure of small businesses in the U.S. *Journal of Small Business Management*, 39(3), 201–208.
- Rauch, A., Wiklund, J., Lumpkin, G. T., & Frese, M. (2004). Entrepreneurial orientation and business performance: An assessment of past research and suggestion for the future. *Entrepreneurial Theory and Practice*, 33(3), 761–787.
- Turner, I. (2013). Corporate failure. *International Journal of Finance & Banking Studies*, 2(3), 103–110.
- Ucbasaran, D., Shepherd, D. A., & Lockett, A. (2013). Life after business failure: The process and consequences of business failure of entrepreneurs. *Journal of Management*, 39(1), 163–202.

DERIVING EMPLOYEE ENGAGEMENT: THE DIVERSIFIED ROLE OF CORPORATE COMMUNICATION

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ABSTRACT

Communication with employees is becoming increasingly important to organizations. Role of corporate communication with employees is essential for cultivating an open culture among employer and employee. And it is also important in involving employees in the organization's goals. Corporate communication has a direct impact upon organization's success. Corporate communication must be clear and effective in order for an organization's transparency to flourish. Corporate communications must be clear, thorough, and accurate, especially as companies and their employees evolve as a result of variables such as digitization and flexible work schedules. The aim of the paper is to explore the role of corporate communication in employee engagement. The purpose of the study is to understand the corporate communication's wide-ranging role in employee engagement. To serve as a foundation for literature evaluation, this study presents a well-structured approach to assessing secondary data from high-quality data sources such as ScienceDirect research articles, Sage publications, and other secondary data sources. Organizations that want to boost employee engagement through corporate communication might apply the findings of this study.

Keywords: *Employee engagement, corporate communication, human resource.*

INTRODUCTION

Communication is a powerful tool that can have a significant impact on the performance of an organization. Effective communication may enhance employee engagement, workplace productivity, and company growth. Good communication is crucial for a motivated team.

Corporate communication is critical for fostering a culture of openness between management and employees, as well as engaging people in the organization's goals. A company's most significant investment is its people, and their success or failure is ultimately defined by them. Employees that are engaged are much more likely to exhibit the dedication and commitment that are required for any company's long-term success, no matter how large or small. One of the most difficult problems facing any organization today is finding effective ways to connect with employees. Managers and HR personnel can benefit from personalized and focused initiatives by staying abreast of employee engagement challenges, receiving continuing feedback from employees, and anticipating changing workforce demands. Corporate communicators strive to keep employees up to date at all times in order to avoid communication gaps that might lead to inefficiency.

Employee retention is becoming increasingly influenced by effective communication between superiors and subordinates. Communication tactics about career growth and management, in particular, can be crucial in retaining current employees and motivating them to achieve at their highest levels. Personal, relevant, and engaging communication to employees, according to research, gives organizations a competitive advantage and has a direct influence on the end result. Employee engagement is often at the center of human resource (HR) and management activities, resulting in a plethora of surveys, talks, award schemes, and other novel programs. However, the simplest method to increase involvement is to begin with everyday communication.

Statement of Problem

Employee involvement is essential to enhancing the organization's performance. In order to achieve employee engagement, corporate effective communication is essential. It is essential to comprehend corporate communication's multifaceted role in sustaining employee engagement.

Objective

1. To understand the significance of corporate communication in the employee engagement.
2. To comprehend the different facets of corporate communication's impact on employee engagement.

Scope

The study's scope is confined to the role of corporate communication in employee engagement.

REVIEW OF LITERATURE

Direct communication with employees is, at best, an equal-opportunity activity. It enables participants to share ownership of the substance of the debate. As a result, people are able to contribute their own thoughts—and, more importantly, their hearts and souls—to the discussion. On the other side, organizational conversation encourages employees to participate in the creation of content that tells a company's story (Groysberg & Slind, 2012). The applicability of communications that are relevant and suitable to employees is critical to effective corporate communication (Welch, 2012). Corporate communication has the potential to boost employee engagement. Organizations that interact with employees effectively and honestly will have a greater level of organizational commitment, which is a determinant of employee engagement (Hayase, 2009). Increased productivity and profitability are just a few of the important bottom line results that corporate communication improves (Gallup, 2012). By streamlining organizational roles and responsibilities, corporate communication improves efficiency (Benner & Tushman, 2003). In all domains of activity and management, corporate communication has become a necessary for accomplishing organizational goals and sustaining a healthy atmosphere. Employee productivity, work satisfaction, dedication to the organization, and work performance improve as a result of effective management of the organizational communication process, and objectives of the organization are easily accomplished, tends to result in a significant advantage and continued to increase organizational efficiency and effectiveness (Zorlu, & Korkmaz, 2021).

According to Pounsford (2007), communication tactics like as storytelling, informal communication, and mentoring resulted in more employee engagement, higher levels of confidence in the firm, and higher revenue due to higher customer satisfaction. The stronger employee engagement, the more likely a workforce will be entirely immersed and motivated to work. A "engaged employee" is also enthusiastic about his or her job and believes that his or her performance will be outstanding, giving the company a competitive advantage (Jawah & Beretu, 2019). Rather than using corporate communication to directly increase employee engagement, organizational leaders and supervisors should use it to foster employee identification with the organization and a sense of supervisory support (Karanges, Beatson, Johnston, & Lings, 2014) symmetrical communication improves employee engagement while also influencing the components of organizational identity, with those who have a strong sense of belonging having more emotional, cognitive, and physical involvement, as well as doing better at work (Sulaiman, & Abdullah, 2019). Employees become more involved and recognize how valuable they are to the organization when they are given dedicated and meaningful work. Employee autonomy may be possible when SDT is used, according to Bolman and Deal (2014), and employees can also influence people around them. This impact extends to the advantages of intrinsic incentives. Employee participation will grow as a result of meaningful work; however, this does not guarantee that the employee will be engaged.

Corporate Communication

Because the globe has become a global community, efficient communication is essential. The relevance of global communications is manifested when people need to communicate across the globe. Instant communication has become the standard. Communication ability is important because it allows one to bring order to the chaos of human contact (Subhojit, 2018).

The sharing of information and culture within an organization for business goals is known as corporate

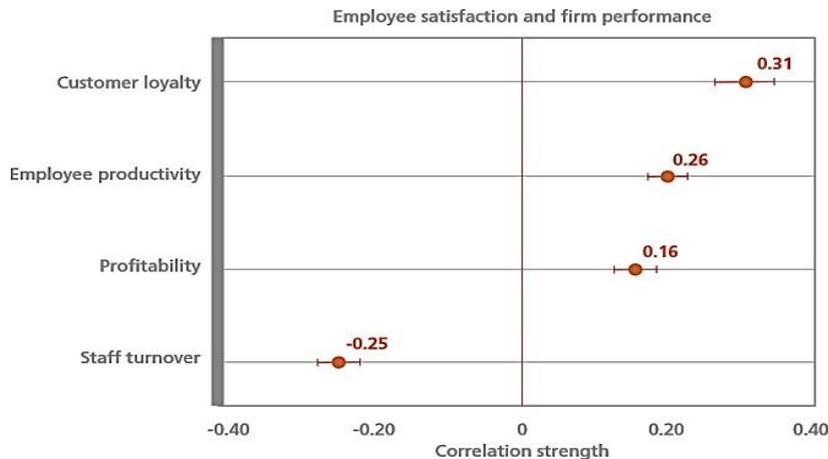
communications. Despite the fact that this is not the same as employee engagement, the two concepts are extremely similar. One of the most important tools for management to interact meaningfully with employees is effective corporate communication.

Kitchen and Schultz (2001) define corporate communication at its simplest is primarily a mechanism for developing and managing a set of relationships with public or stakeholders who could affect the overall performances. These relationships must be viewed in a long-term strategic fashion.” As a result, according to the definition above, corporate communication is utilized to improve a company's overall performance by enhancing its image among its target audiences.

Employee Engagement

In the 1990s, a professor at Boston University's Questrom School of Business, William Kahn introduced the term "employee engagement." His findings, published in the article "Psychological Conditions of Personal Engagement and Disengagement at Work," argued that the issue was less about employees having the correct "fit" or a lack of financial incentives, and more about how they feel. Mutual trust, integrity, two-way commitment, and communication are the foundations of employee engagement for both employers and employees. It can either be fostered and significantly increased, or squandered and discarded. Employees who are completely absorbed in and excited about their jobs are more likely to act in ways that help the company. Employee engagement is a metric that gauges an employee's emotional commitment to their job, colleagues, and company, and it has a big impact on their readiness to learn and succeed.

Employee engagement is linked to people's psychological experiences, which influence their work process and behavior. Employee engagement is multifaceted; engaged individuals are emotionally, physically, and cognitively invested in their jobs. Employees have the responsibility to provide for the needs of the company by providing sufficient training and creating a meaningful workplace environment; employees, on the other hand, have the responsibility to contribute meaningfully to the



organization.

Figure 1. Impact of satisfied employees on firms' performance

Source: Ward, DeNeve, and Krekel, 2019

Employee contentment has a substantial positive correlate with customer loyalty, whereas staff turnover has a strong negative correlation. The connection between productivity and happiness is strong and positive. Most importantly, a relatively positive association between employee happiness and profitability indicates that increased customer loyalty and employee productivity, as well as lower staff turnover, translate into improved business unit profitability (Ward, De Neve, & Krekel, 2019). It is clear from Figure 1 that there is a strong link between employee satisfaction and an organization's performance. This can be accomplished with the assistance of employee engagement.

The importance of traceability and clarity cannot be emphasized. Accessibility and transparency are

equally valued by managers and supervisors. They are the routes via which employees' thoughts and proposals are encouraged and received, as well as the channels through which information and instructions are transmitted. Employees benefit from their mentoring and conversations because they obtain a better understanding of their specific strengths, as well as where their skills are most suited at the organization and where they will face actual hurdles in their growth (Cowie, 2019).

The Diversified Role of Corporate Communication in Employee Engagement

By influencing how things are done at work, communicators hold a significant position. Employees benefit from a two-way flow of information, and effective communicators persuade managers and leaders to communicate more effectively, which leads to more employee engagement. In reality, effective communication can significantly improve employee engagement. Employee engagement is enhanced by effective communication, which leads to greater employee performance, employee retention, and employee well-being. Employees are more inclined to engage and contribute when an organization's culture is open (Figure 2).

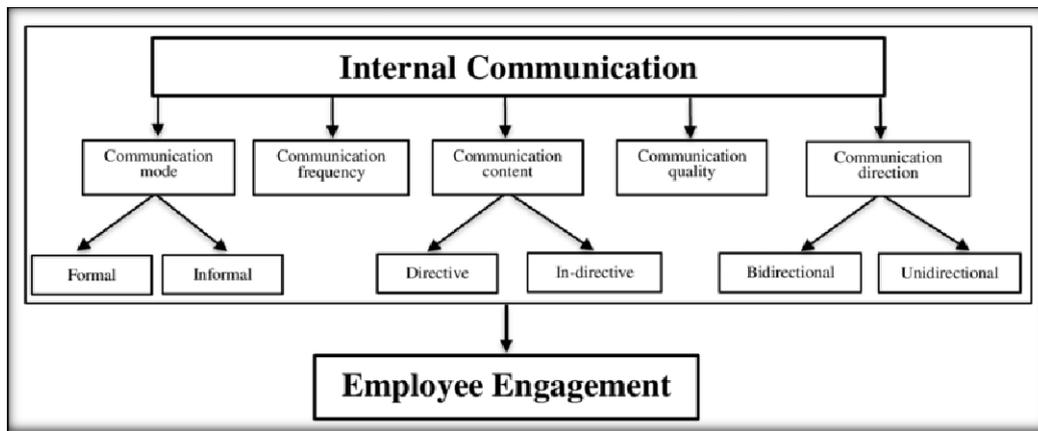


Figure 2. The determinants of corporate communication with employees

Source: Johlke and Duhan, 2001

Various internal communications aspects are involved in achieving employee engagement in the workplace, as shown in Figure 1. Corporate communication is undoubtedly playing an essential role in firms, positively increasing and enhancing employee engagement (Vora, & Patra, 2017). Employee communication allows employees to stay connected to their workplace, understand their organization's vision and strategy, identify with its values, and feel a sense of belonging by understanding how they contribute to the overall aim. Despite the notion that efficient communication should be at the top of any organization's priority list, there are barriers to it at all levels. Senior leaders often struggle to communicate effectively about where the organization is headed and how it will affect people when faced with change and complexity.

Communication, such as that with employees and partners, is referred to as corporate communication. It includes overseeing business publications for employees and partners, as well as planning internal activities for employees. Corporate communication aids in the dissemination of firm information so that employees may do their duties effectively. Corporate communications' role is to ensure an efficient flow of information between an organization's departments and co-workers, as well as employee engagement. Employees that are more knowledgeable about their company produce higher-quality work. Corporate communication can boost productivity, boost creativity, lower absenteeism, and lower costs.

FINDINGS

The following findings are based on secondary sources of information about the diversified role of corporate communication deriving employee engagement.

1. Corporate communication has the potential to boost employee engagement.
2. Fostering efficient employee communication can aid in the formation of a strong link between the organization and its personnel.

3. Leadership styles, personality qualities, and communication are all highly linked to employee engagement.
4. Corporate communication is undeniably important in businesses, positively growing and improving employee engagement.
5. Effective communication increases employee engagement, which leads to improved employee performance, retention, and well-being.
6. Customer loyalty has a large positive association with employee satisfaction, whereas staff turnover has a strong negative correlation.
7. Employee engagement is enhanced via two-way communication.
8. Corporate communication can increase productivity, increase innovation, decrease absenteeism, and save expenditures.

CONCLUSION

Employees have traditionally been seen as a company's most important stakeholder, not only because of their impact on the production workforce, but also because they serve as brand ambassadors. The importance of employees as communication assets for a firm should never be underestimated. Organizations currently can communicate with its internal stakeholders through a range of channels, ranging from conventional face-to-face interaction and printed media to digital media and social platforms. Among other things, these channels differ in terms of their complexity, formal, accessibility, affordability, and required to handle messages. Fostering effective employee communication can help organization and its employees form a strong bond. Employees begin to identify with the company's vision, beliefs, and goals as a result of effective communication. They are therefore motivated to improve and become more involved in all aspects of their professions.

Scope for further Research

According to the researcher, many areas of corporate communication and its diversified role on employee engagement should be investigated further in the future. Different types of elements which is having influence on employee engagement should be incorporated in the research. An avenue for future research is to use a different theoretical framework related to corporate communication, such as employee satisfaction, employee turnover, or productivity. And also, future research could focus on the implications of feedback in corporate communication and employee engagement and to provide further understanding.

REFERENCES

- Benner, M. J., & Tushman, M. L. (2003). Exploitation, exploration, and process management: The productivity dilemma revisited. *Academy of Management Review*, 28, 238–256.
- Bolman, L. G., & Deal, T. E. (2014). *How great leaders think: The art of reframing*. San Francisco, CA: Jossey-Bass.
- Cowie, K. (2019). Internal communication tactics that drive employee engagement. *Forbes*. Retrieved from <https://www.forbes.com/sites/forbescommunicationscouncil/2019/12/04/internal-communication-tactics-that-drive-employee-engagement/?sh=2669ea5b6027>
- Gallup. (2012). *Employee engagement*. Retrieved from <http://www.gallup.com/consulting/52/employee-engagement.aspx>
- Groysberg, B., & Slind, M. (2012). *Leadership is a conversation*. Retrieved from <https://hbr.org/2012/06/leadership-is-a-conversation>
- Hayase, L. K. T. (2009). *Internal communication in organizations and employee engagement*. Theses. Journalism and Media Studies, University of Nevada, Las Vegas. <http://dx.doi.org/10.34917/2583306>
- Johlke, M. C., & Duhan, D. F. (2000). Supervisor communication practices and service employee job outcomes. *Journal of Service Research*, 3(2), 154–165.
- Jowah, L. E., & Beretu, T. (2019). An evaluation of the impact of the management practices and how they impact on employee- engagement: Employees' perceptions. *African Journal of Business Management*, 13(8), 264–273. DOI: 10.5897/AJBM2018.8700
- Karanges, E. R., Beatson, A., Johnston, K., & Lings, I. (2014). Optimizing employee engagement with

- internal communication: A social exchange perspective. *Journal of Business Market Management*, 7(2), 329–353.
- Kitchen, P. J., & Schultz, D. E. (2001). Raising the corporate umbrella – the 21st-century need. In P. J. Kitchen, & D. E. Schultz (Eds.), *Raising the corporate umbrella* (pp. 1–22). Palgrave Macmillan, London. https://doi.org/10.1057/9780230554580_1
- Pounsford, M. (2007). Using storytelling, conversation and coaching to engage. *Strategic Communication Management*, 11(3), 32–35.
- Subhojit, R. (2018). Corporate communications: Global scenario, *Global Media Journal – Indian Edition*, 9(1), 1–14.
- Sulaiman, N. S., & Abdullah, Z. (2019). Conceptual exploration on internal communication and organizational identification as determinants of employee performance. *International Journal of Modern Trends in Social Sciences*, 2(9), 99–115.
- Vora, N., & Patra, R. K. (2017). Importance of internal communication: Impact on employee engagement in organizations. *Media Watch*, 8(2), 28–37. <http://dx.doi.org/10.15655/mw/2017/v8i1A/48933>
- Ward, G., De Neve, J.-E., & Krekel, C. (2019). It's official: Happy employees mean healthy firms. Retrieved from <https://www.weforum.org/agenda/2019/07/happy-employees-and-their-impact-on-firm-performance/>
- Welch, M. (2012). Appropriateness and acceptability: Employee perspectives of internal communication. *Public Relations Review*, 38(2), 246–254.
- Zorlu, K., & Korkmaz, F. (2021). Organizational communication as an effective communication strategy in organizations and the role of the leader. In H. Dincer & S. Yüksel (Eds.), *Management strategies to survive in a competitive environment, how to improve company performance* (pp. 302–320), Springer. https://doi.org/10.1007/978-3-030-72288-3_21

INSOLVENCY TO BANKRUPTCY: A CRITICAL REVIEW

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ABSTRACT

The paper attempts to make a critical review of the Code in the light of developments taking place in India and worldwide and its role in containing distressed assets of banks in India. “Judicial delay” was the main reason for the failure of the insolvency regime in India prior to the 2016. The Apex Court directed the company law tribunals to “strictly adhere” to the timelines under the new law and clear pending resolution plans. The main goal of the enactment of the Code is to consolidate and amend the laws relating to the reorganization and insolvency of corporations, partnership and individuals. IBC mandates a 330 days outer limit for completion of CIRP but the actual situation is precarious. It has been observed on the basis of data available, on average, 459 days were spent for approval of resolution plans while another 351 days were needed to secure liquidation orders. It is the need of the hour that the, NCLT and, the NCLAT must ensure timelines and delays should be avoided as inordinate delays cause commercial uncertainty, erosion in the value of assets and makes the insolvency process inefficient and expensive.

Keywords: *Insolvency, bankruptcy, liquidation, haircut, non-performing assets.*

INTRODUCTION

The Insolvency and Bankruptcy Code, 2016 was enacted with a view to bring together various legislations under a single umbrella to expedite the insolvency process as the delay erodes the value of the assets and resolution of the same in a time bound manner keeping in mind the interest of all the stakeholders. It also provides that if the insolvency process of the corporate debtor fails, then liquidation and that too in a time bound manner as delay in this also results in erosion of value of the assets and efforts need to be made to salvage the same as early as possible. The Adjudicating Authorities have dismissed the petitions where it is found that the action and intention of the petitioners have been recovery of their debt and not the resolution of the corporate debtors.

State of Law Prior to Enactment of the IB Code¹

The salient aspects which emerge from the state of the law prior to the enactment to the IBC can be formulated thus:

- i. There was a multiplicity of legislation dealing with insolvency and bankruptcy.
- ii. Multiplicity of statutes led to the creation of multiplicity of fora.
- iii. Provisions relating to insolvency and bankruptcy of companies were embodied in the SICA, the Recovery of Debts Due to Banks and Financial Institutions Act, 1993.
- iv. The above statutes provided for the establishment of multiplicity of adjudicating bodies including the BIFR, Debt Recovery Tribunal, NCLT, and Appellate Tribunal.
- v. While the liquidation of companies was adjudicated upon by the high court’s exercising company jurisdiction, individual insolvency was governed by the Presidency-Towns Insolvency Act, 1909 and the Provincial Insolvency Act.
- vi. The multiplicity of statute and fora in the regime prior to the IBC led to a framework for insolvency and bankruptcy which was inadequate and ineffective, and resulted in undue delay.
- vii. The underlying purpose and object of enacting the IBC was to ensure a timely resolution of insolvency and bankruptcy which would:
 - a) Maximize the value of assets,
 - b) Promote entrepreneurship.
 - c) Facilitate the availability of credit.

¹ Supreme Court of India in Gujarat Urja Vikas Nigam Limited vs. Amit Gupta, March 8, 2021

- d) Support the development of credit markets.
- e) Balance interest of all stake-holders.
- viii Bearing the above aspects in mind, the IBC, which is a consolidating and amending statute, came to be enacted.
- ix the IBC, in a clear departure from the past, separates commercial aspects of insolvency and bankruptcy proceedings from judicial aspects.

Legal Regime Existing Prior to the Enactment of IBC – Drawbacks of, Scope²

Some of the key drawbacks of the legal regime as it existed prior to the enactment of the IBC, were:

- i. The absence of a single legislation governing insolvency and bankruptcy.
- ii. A multiplicity of laws governing insolvency and bankruptcy of corporate entities.
- iii. The existence of multiple fora established to deal with the enforcement of diverse legislative provisions.
- iv. The complexity caused by a maze of statutes resulting in inadequate, ineffective and delayed resolution, occasioned by the (then) existing framework.

These inadequacies were noticed in the statement of objects and reasons accompanying the introduction of the bill. The IBC reflects a fundamental change in the erstwhile legal regime. A timely resolution of corporate insolvency was conceived as an instrument to support the development of credit markets, encourage entrepreneurship, enhance the ease of doing business and providing an environment conducive to investment, setting the economy on the path to growth and development. In resolving some of the issues which arise under the new legal regime envisaged under the IBC, it then becomes necessary to vacuum the cobwebs of the past. Interpreting the IBC in a manner which would facilitate the salutary objects which it is intended to achieve requires all stakeholders to shed concepts and notions associated with the earlier legal regime, which was largely a debtor's paradise. The earlier regime was one in which the debtor would largely remain in possession of the company and its assets and individual creditors were left to paddle their canoe in headwinds controlled by those in debt and default.

Need for Parity in Sections of IBC

Banks can pursue recovery of its debts under SARFAESI Act which allows them to auction mortgaged properties. Sometimes, lenders believe that they have a better chance of recovery through DRT rather than through the process of a protracted resolution process under IBC. It has been observed that inconsistency in Sections of IBC is creating hurdles in resolution plans of certain companies. Recently, Hon'ble High Court of Delhi has asked the Finance Ministry and the Reserve Bank of India to consider bringing parity in certain sections of the IBC which has created obstacles in the resolution plans of bankrupt Telcos such as Reliance Communications (RCom) and Aircel. UARCL, an asset reconstruction company filed a write petition before the high court against a show cause notice issued by the RBI in which the regulator had threatened to cancel its ARC license. It was also observed by the high court that mere submission of resolution plan cannot be held illegal and stayed RBI's proceedings in the matter. Asset reconstruction companies that take over stressed assets from lenders cannot infuse equity into an insolvent company at the resolution stage. They also cannot act as resolution applicants. It is the stance of the UVARCL that IBC which allows for such investments supersedes the rules stated in other laws.

IBC was introduced in December, 2016 with great hopes and it was considered to be a landmark enactment but the same on getting diluted due to various factors such as legal delays at various levels is losing its sheen and the creditors are exploring other options. Public sector banks and financial institutions are reluctant to approach Bankruptcy Courts as delays are helping the promoters to misuse and divert the funds and the financial creditors keep watching asset losing its value. Also due to one reason or the other, there is a decline in the appetite of investors for taking over the stressed assets. Committee of creditors consisting mainly of financial creditors i.e. banks and financial institutions are finding themselves helpless and have to accept the haircuts as high as 95% of the claim amount and

² Supreme Court of India in Arun Kumar Jagatramka v. Jindal Steel and Power Ltd on March 15, 2021

many stressed assets are being taken over like this and for some corporate houses such as Mukesh Ambani-led Reliance and Adani Group and others, this has become very good and lucrative business to take such assets at throw away prices at the cost of the lenders and public money is being looted through the process of IBC which clearly is not only bad but also reflects the way IBC is slowly and slowly turning into a failed legislation. It has been observed that the recovery ratio for lenders through the process of IBC is falling and has fallen to its lowest level ever. For the quarter ended March, 2022³, the lenders recovered 1287.58 crore out of admitted claims of Rs.12610.11 crore which comes to just 10.21%. It has also been found that due to low recovery in the quarter ended March, 2022 has also declined the overall recovery rate since the IBC was introduced and came into effect in March, 2022. The total admitted claims under IBC up to March, 2022 are Rs.6.84 lakh crore and recovery rate is just 32.89% which is lower than 33.10% which was at the end of December, 2021.

Corporate Processes & Sectoral Distribution of CDs under CIRP⁴

The provisions relating to CIRP came into force on December, 2016. Since then, a total of 5258 CIRPs have commenced by the end of March, 2022. Of these, 3406 have been closed. Of the CIRPs closed, 731 have been settled on appeal or review, 582 have been withdrawn; and 480 have ended in approval of resolution plans. 1609 have ended in orders for liquidation.

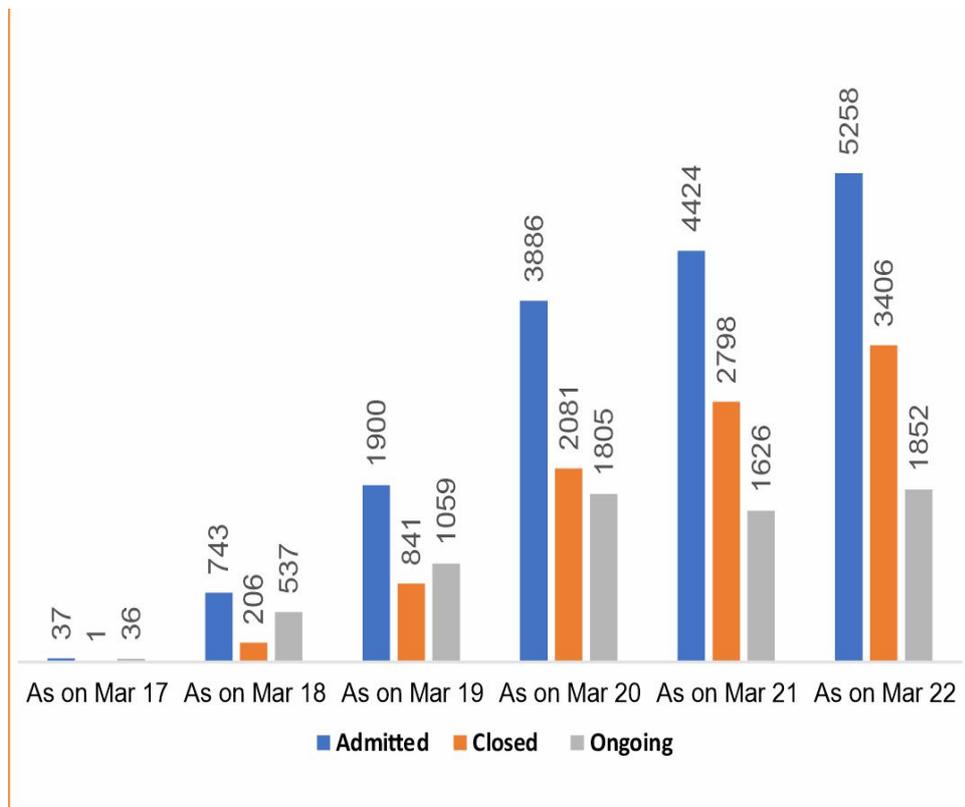


Figure 1. Corporate insolvency resolution process

³ IBBI Quarterly News Letter Jan-Mar 2022 Vol.22 page nos.15

⁴ IBBI Quarterly News Letter Jan-Mar 2022 Vol.22 page nos.12

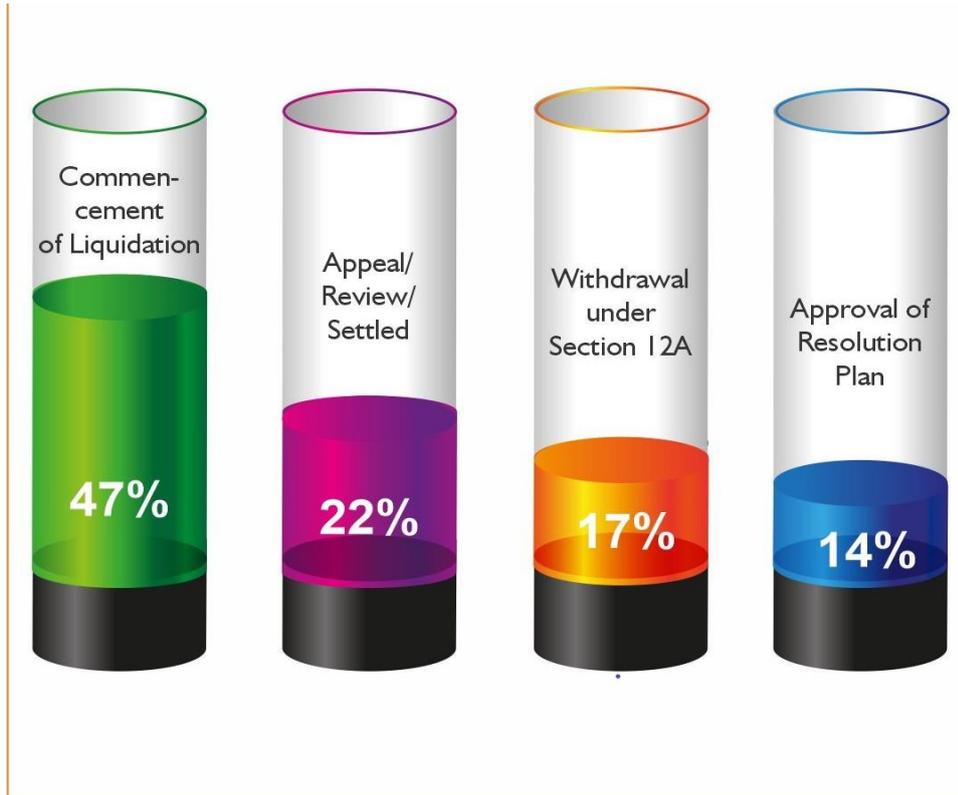


Figure 2. Mode of closure of CIRPs

Sectoral Distribution of CIRPs is presented in Tables 1 to 8⁵

Table 1

Sectoral Distribution of CIRPs Admitted

SECTORAL DISTRIBUTION OF CIRPs ADMITTED										
Sector	As On									
	31.12.2019	31.03.2020	30.06.2020	30.09.2020	31.12.2020	31.03.2021	30.06.2021	30.09.2021	31.12.2021	31.03.2022
Manufacturing										
Food, Beverages & Tobacco Products	174	196	204	208	218	228	236	241	255	268
Chemicals & Chemical Products	130	154	158	164	168	175	183	192	202	217
Electrical Machinery & Apparatus	100	112	115	118	125	136	141	145	151	157
Fabricated Metal Products	80	85	89	92	94	97	97	101	104	113
Machinery & Equipment	155	168	177	183	191	198	207	218	227	240
Textiles, Leather & Apparel Products	225	261	274	279	288	304	318	327	344	360
Wood, Rubber, Plastic & Paper Products	154	180	191	195	207	214	223	225	233	242
Basic Meals	232	266	277	286	296	308	314	323	339	355
Others	94	105	110	114	116	124	130	134	139	151
TOTAL	1344	1527	1595	1639	1703	1784	1849	1906	1994	2103
Real Estate, Renting & Business Activities										
Real Estate Activities	161	183	186	188	197	205	213	223	244	263
Computer and related activities	94	109	114	115	119	127	131	134	141	153
Research and Development	4	5	5	5	5	5	6	6	6	6
Other Business Activities	406	460	472	485	495	525	553	572	598	652
TOTAL	665	757	777	793	816	862	903	935	989	1074
Construction	362	408	421	428	439	458	478	510	538	578
Wholesale & Retail Trade	328	378	390	398	408	442	452	469	494	527
Hotels & Restaurants	85	88	89	93	95	99	102	104	107	112
Electricity & Others	100	117	120	124	128	134	140	143	148	156
Transport, Storage & Communications	94	112	117	119	123	132	134	136	144	150
Others	335	387	402	414	427	465	483	505	532	558
GRAND TOTAL	3313	3774	3911	4008	4139	4376	4541	4708	4946	5258

⁵ IBBI Quarterly News Letters Oct 2019-Mar2022

Table 2
Sectoral Distribution of CIRPs – Appeal/Review/Settled

SECTORAL DISTRIBUTION OF CIRPs - APPEAL / REVIEW / SETTLED										
Sector	As On									
	31.12.2019	31.03.2020	30.06.2020	30.09.2020	31.12.2020	31.03.2021	30.06.2021	30.09.2021	31.12.2021	31.03.2022
Manufacturing										
Food, Beverages & Tobacco Products	5	9	11	17	21	22	25	28	28	30
Chemicals & Chemical Products	9	10	13	16	19	21	22	26	28	31
Electrical Machinery & Apparatus	7	9	11	14	16	16	17	21	21	9
Fabricated Metal Products	3	5	7	8	11	12	12	12	12	17
Machinery & Equipment	18	20	22	25	32	33	35	35	36	34
Textiles, Leather & Apparel Products	10	16	20	27	35	36	38	42	42	39
Wood, Rubber, Plastic & Paper Products	7	10	14	17	21	24	26	28	28	30
Basic Meals	13	18	21	26	35	35	38	39	39	26
Others	6	8	11	13	15	15	15	17	17	20
TOTAL	78	105	130	163	205	214	228	248	251	236
Real Estate, Renting & Business Activities										
Real Estate Activities	16	22	30	36	46	46	48	51	53	23
Computer and related activities	11	14	13	15	18	19	20	22	22	23
Research and Development	0	1	1	1	1	1	1	1	2	1
Other Business Activities	42	50	59	71	90	93	99	106	107	94
TOTAL	69	87	103	123	155	159	168	180	184	141
Construction	39	45	56	70	89	90	94	99	102	68
Wholesale & Retail Trade	24	26	31	39	55	56	59	63	63	43
Hotels & Restaurants	8	10	11	15	17	17	19	20	21	16
Electricity & Others	4	4	8	11	15	15	15	15	15	7
Transport, Storage & Communications	5	9	12	15	17	17	17	18	19	14
Others	20	26	29	37	48	49	53	58	59	61
GRAND TOTAL	247	312	380	473	601	617	653	701	714	586

Table 3
Sectoral Distribution of CIRPs – Withdrawal under section 12

SECTORAL DISTRIBUTION OF CIRPs - WITHDRAWAL UNDER SECTION 12										
Sector	As On									
	31.12.2019	31.03.2020	30.06.2020	30.09.2020	31.12.2020	31.03.2021	30.06.2021	30.09.2021	31.12.2021	31.03.2022
Manufacturing										
Food, Beverages & Tobacco Products	5	7	9	10	19	22	24	25	27	30
Chemicals & Chemical Products	4	7	10	15	20	23	26	30	30	31
Electrical Machinery & Apparatus	2	3	4	4	4	4	6	8	8	9
Fabricated Metal Products	6	6	8	11	12	13	13	14	17	17
Machinery & Equipment	9	9	13	20	22	25	29	31	32	34
Textiles, Leather & Apparel Products	7	8	16	18	24	26	30	34	38	39
Wood, Rubber, Plastic & Paper Products	7	7	11	18	22	23	25	27	29	30
Basic Meals	5	6	7	11	15	16	20	23	25	26
Others	7	7	10	11	14	14	16	18	18	20
TOTAL	52	60	88	118	152	166	189	210	224	236
Real Estate, Renting & Business Activities										
Real Estate Activities	11	11	12	16	18	18	18	20	23	23
Computer and related activities	5	6	12	12	15	16	18	22	22	23
Research and Development	1	1	1	1	1	1	1	1	1	1
Other Business Activities	23	27	35	46	59	65	74	80	90	94
TOTAL	40	45	60	75	93	100	111	123	136	141
Construction	15	18	25	36	44	46	51	62	64	68
Wholesale & Retail Trade	11	12	16	22	32	35	36	42	42	43
Hotels & Restaurants	3	5	5	9	12	12	13	16	16	16
Electricity & Others	1	1	2	3	3	4	5	6	7	7
Transport, Storage & Communications	4	4	6	7	9	9	12	14	14	14
Others	9	12	16	21	33	39	44	54	59	61
GRAND TOTAL	135	157	218	291	378	411	461	527	562	586

Table 4
Sectoral Distribution of CIRPs Approval of Resolution Plan

SECTORAL DISTRIBUTION OF CIRPs - APPROVAL OF RESOLUTION PLAN										
Sector	As On									
	31.12.2019	31.03.2020	30.06.2020	30.09.2020	31.12.2020	31.03.2021	30.06.2021	30.09.2021	31.12.2021	31.03.2022
Manufacturing										
Food, Beverages & Tobacco Products	10	11	12	15	21	24	25	25	28	30
Chemicals & Chemical Products	16	18	19	19	21	23	23	24	27	31
Electrical Machinery & Apparatus	4	4	5	5	5	6	9	9	9	9
Fabricated Metal Products	2	4	4	4	6	6	10	10	10	17
Machinery & Equipment	8	9	10	10	14	15	18	18	20	34
Textiles, Leather & Apparel Products	9	13	16	19	20	21	21	23	27	39
Wood, Rubber, Plastic & Paper Products	12	15	17	20	22	26	28	29	30	30
Basic Meals	26	31	34	35	39	41	43	47	56	26
Others	8	10	12	13	13	16	17	22	23	20
TOTAL	95	115	129	140	161	178	194	207	230	236
Real Estate, Renting & Business Activities										
Real Estate Activities	5	6	5	5	6	8	9	9	11	23
Computer and related activities	0	0	0	1	2	2	4	4	5	23
Research and Development	1	1	1	1	1	1	1	1	1	1
Other Business Activities	20	20	26	27	32	35	40	41	42	94
TOTAL	26	27	32	34	41	46	54	55	59	141
Construction	15	18	21	26	28	32	39	42	45	68
Wholesale & Retail Trade	11	13	14	16	17	20	24	27	27	43
Hotels & Restaurants	9	9	9	10	12	12	14	14	14	16
Electricity & Others	7	7	9	10	13	13	14	20	23	7
Transport, Storage & Communications	4	7	7	9	9	9	10	10	11	14
Others	23	25	29	32	36	38	47	46	48	61
GRAND TOTAL	190	221	250	277	317	348	396	421	457	586

Table 5
Sectoral Distribution of CIRPs - Liquidation

SECTORAL DISTRIBUTION OF CIRPs - COMMENCEMENT OF LIQUIDATION										
Sector	As On									
	31.12.2019	31.03.2020	30.06.2020	30.09.2020	31.12.2020	31.03.2021	30.06.2021	30.09.2021	31.12.2021	31.03.2022
Manufacturing										
Food, Beverages & Tobacco Products	36	49	55	58	61	70	76	77	80	30
Chemicals & Chemical Products	28	34	36	38	42	52	53	55	60	31
Electrical Machinery & Apparatus	41	45	45	45	51	56	59	64	66	9
Fabricated Metal Products	26	24	25	28	30	34	35	38	41	17
Machinery & Equipment	31	36	42	45	49	54	57	61	66	34
Textiles, Leather & Apparel Products	76	88	91	98	104	119	124	126	133	39
Wood, Rubber, Plastic & Paper Products	29	34	34	38	46	55	55	59	64	30
Basic Meals	54	64	67	73	83	93	95	98	108	26
Others	19	22	23	26	31	33	34	35	36	20
TOTAL	340	396	418	449	497	566	588	613	654	236
Real Estate, Renting & Business Activities										
Real Estate Activities	12	17	17	18	20	23	23	24	29	23
Computer and related activities	20	23	24	29	34	40	40	46	51	23
Research and Development	0	0	0	0	0	0	0	0	0	1
Other Business Activities	94	108	116	119	134	151	164	170	184	94
TOTAL	126	148	157	166	188	214	227	240	264	141
Construction	57	66	66	76	84	94	98	101	105	68
Wholesale & Retail Trade	97	117	120	127	137	156	169	180	191	43
Hotels & Restaurants	18	18	18	20	21	24	25	27	27	16
Electricity & Others	16	18	19	22	25	32	36	41	43	7
Transport, Storage & Communications	32	37	40	40	42	48	51	54	57	14
Others	94	114	117	125	132	143	155	163	173	61
GRAND TOTAL	780	914	955	1025	1126	1277	1349	1419	1514	586

Table 6
Sectoral Distribution of CIRPs - Ongoing

SECTORAL DISTRIBUTION OF CIRPs - ONGOING										
Sector	As On									
	31.12.2019	31.03.2020	30.06.2020	30.09.2020	31.12.2020	31.03.2021	30.06.2021	30.09.2021	31.12.2021	31.03.2022
Manufacturing										
Food, Beverages & Tobacco Products	118	120	117	108	96	90	86	86	92	30
Chemicals & Chemical Products	73	85	80	76	66	56	59	57	57	31
Electrical Machinery & Apparatus	46	51	50	50	49	54	50	43	47	9
Fabricated Metal Products	43	46	45	41	35	32	27	27	24	17
Machinery & Equipment	89	94	90	83	74	71	68	73	73	34
Textiles, Leather & Apparel Products	123	136	131	117	105	102	105	102	104	39
Wood, Rubber, Plastic & Paper Products	99	114	115	102	96	86	89	82	82	30
Basic Meals	134	147	148	141	124	123	118	116	111	26
Others	54	58	54	51	43	46	48	42	45	20
TOTAL	779	851	830	769	688	660	650	628	635	236
Real Estate, Renting & Business Activities										
Real Estate Activities	117	127	122	113	107	110	115	119	128	23
Computer and related activities	58	66	65	58	50	50	49	40	41	23
Research and Development	2	2	2	2	2	2	3	3	2	1
Other Business Activities	227	255	236	222	180	181	176	175	175	94
TOTAL	404	450	425	395	339	343	343	337	346	141
Construction	236	261	253	220	194	196	196	206	222	68
Wholesale & Retail Trade	185	210	209	194	167	175	164	157	171	43
Hotels & Restaurants	47	46	46	39	33	34	31	27	29	16
Electricity & Others	72	87	82	78	72	70	70	61	60	7
Transport, Storage & Communications	49	55	52	48	46	49	44	40	43	14
Others	189	210	211	199	178	196	184	184	193	61
GRAND TOTAL	1961	2170	2108	1942	1717	1723	1682	1640	1699	586

Time taken on Ongoing CIRPs⁶

If we have a look at the time taken in the Ongoing CIRPs as on March, 31, 2022, we come to know that in 66% of the cases, it is more than 270 days, in 9% of the cases, it is more than 180 days but less than or equal to 270 days. In 12% of the cases, it is more than 90 days but less than or equal to 180 days and in 13% of the cases, it is less than or equal to 90 days.

The status of ongoing CIRPs as on March, 31, 2022 in terms of time taken is presented in Figure 3.

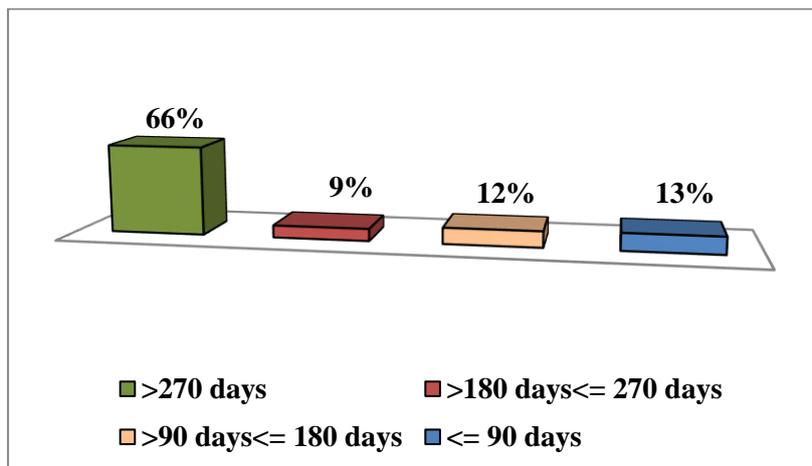


Figure 3. Timeline - ongoing CIRPs

⁶ IBBI Quarterly News Letter Jan-Mar 2022 Vol.22 page no 14

Time Taken on Ongoing Liquidation⁷

If we have a look at the time taken on the Ongoing Liquidations as on March, 31, 2022, we come to know that in 51% of the cases, it is more than 2 years, in 24% of the cases, it is more than one year but less than or equal to 2 years. In 6% of the cases, it is more than 270 days but less than or equal to one year. In 5% of the cases, it is more than 180 days but less than or equal to 270 days, also 8% in cases more than 90 days but less than 180 days and also 6% of the cases, it is less than or equal to 90 days.

The status of ongoing Liquidation as on March, 31, 2022 in terms of time taken is presented in Figure 4.

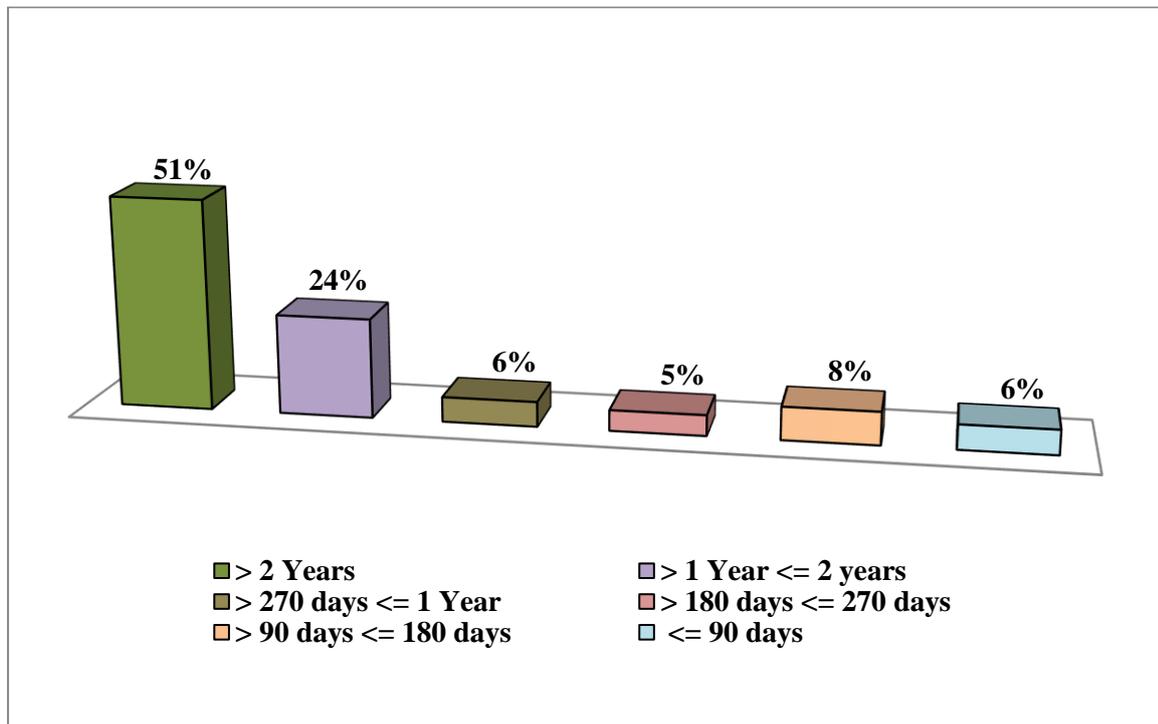


Figure 4. Ongoing liquidation

Time Taken on Ongoing Voluntary Liquidations⁸

If we have a look at the time taken on the ongoing voluntary liquidations as on March, 31, 2022, we come to know that in 35% of the cases, it is more than two years, in 20% of the cases, it is more than one year but less than or equal to two years. In 5% of the cases, it is more than 270 days but less than or equal to one year. In 11% of the cases, it is more than 180 days but less than or equal to 270 days. In 11% in cases more than 90 days but less than 180 days and also 18% of the cases, it is less than or equal to 90 days.

The status of ongoing voluntary liquidation as on March, 31, 2022 in terms of time taken is presented in Figure 5.

⁷ IBBI Quarterly News Letter Jan-Mar 2022 Vol.22 page no 15

⁸ IBBI Quarterly News Letter Jan-Mar 2022 Vol.22 page no.17

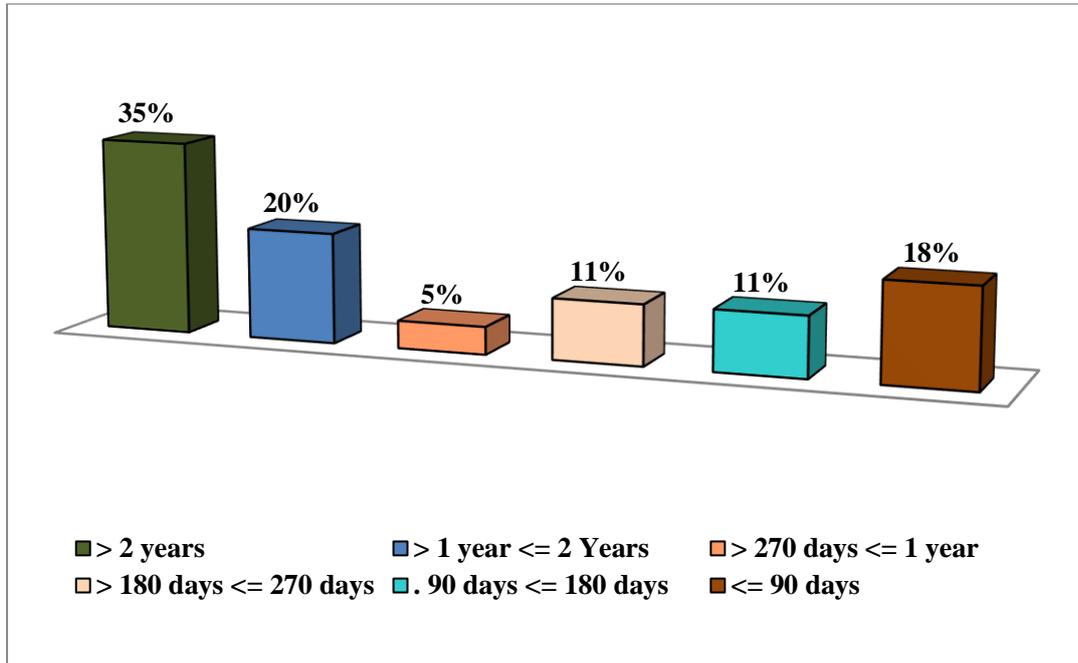


Figure 5. Ongoing voluntary liquidation

Liquidation

As per data released by IBBI⁹ 1609 orders for commencement of liquidation have been passed. Out of these, in 1019 cases are where committee of creditors decided to liquidate the corporate debtor during CIRP. In 533 cases, adjudicating authority did not receive any resolution plan for approval. In 47 cases, the Adjudicating Authority rejected the resolution plan for non-compliance with the requirements of IBC and still in case 10 cases, the corporate debtor contravened the provisions, resolution plan. The details of liquidation in these circumstances are presented in Figure 6.

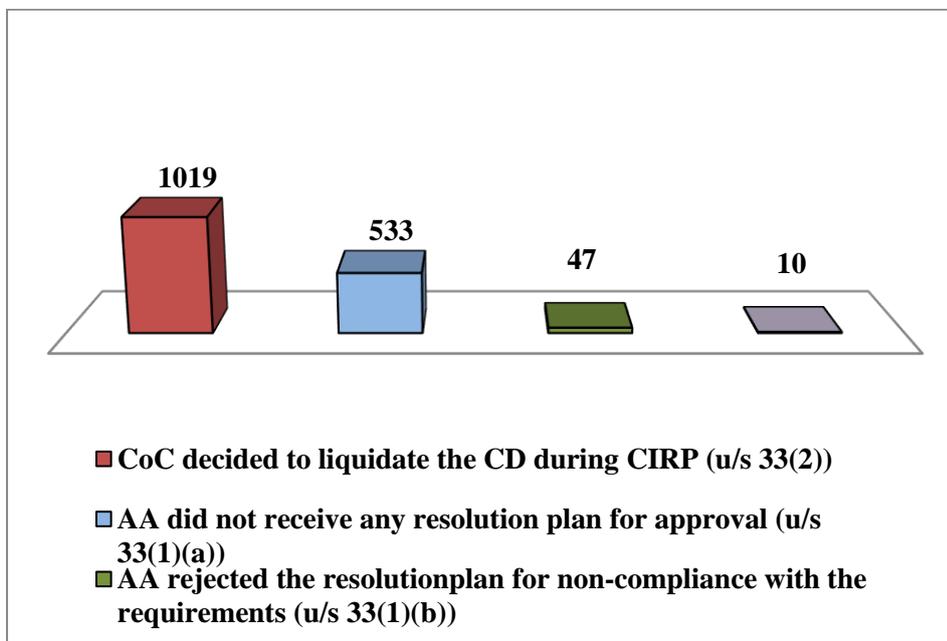


Figure 6. Reasons for liquidation

Out of the aforesaid 1609 orders for commencement of liquidation excluding 13 cases where liquidation orders have been set aside by NCLT/NCLAT/HC/SC. Of these final reports have been submitted in 328

⁹ IBBI Quarterly News Letter Jan-Mar 2022 Vol.22 page nos.16

cases. There are 1281 ongoing liquidation processes. In respect of 228 liquidations where final report has been submitted, number of claimants are 5534 with admitted claims of 66381.23 crore which has liquidation value of Rs.2804.01 crore. Amount realized is Rs.2696.77 crore out of which a sum of Rs.2691.79 crore was distributed to stakeholder. In respect of ongoing 1109 liquidations, number of claimants are 2179537 with admitted claims of Rs.884432.20 crore which has liquidation value of Rs.42083.06 crore. Out of 1281 ongoing cases, liquidation value of 1220 CDs is available. Liquidation value of 826 CDs taken during liquidation process is Rs.39279.05 crore and liquidation value of rest of the 394 CDs captured during CIR process is Rs.9070.95 crore.

In respect of closed liquidations, amount of admitted claims as on March 31, 2022 is Rs.49161.99 crore which has liquidation value of Rs.1935.75 crore and sale proceeds are Rs.1876.08 crore out of which a sum of Rs.1801.74 crore was distributed.

Siva Industries & Holdings – An Example of Steep Haircut¹⁰

Sometimes lenders and corporate debtor wish to settle the matter even after initiating and admission of the application by NCLT for the Corporate Insolvency Resolution Process (CIRP). Section 12A of the Insolvency and Bankruptcy Code, 2016 empowers the lenders to withdraw the application pending with NCLT provided 90% of the lenders agree on the same. IDBI Bank has agreed to accept an out-of-court offer from Siva Industries and also agreed to withdraw bankruptcy proceedings against him and the majority of the creditors have voted in favour of the resolution plan under section 12A of the Code.

This is a case in which the lenders settled with promoter with an offer of Rs.328 crores against the unpaid loan amount of Rs.4864 crore resulting in deep haircut of 93%. An application under Section 12A of IBC was moved by RCK Vallal, father of Sivasankaran and shareholder of the company for withdrawal of insolvency proceedings as there is one-time settlement and 90% of the committee of creditors agreed on the proposal. The application was made as per law but the NCLT rejected the resolution plan submitted by Vallal with observation that the same was just a business restructuring plan and it did not meet the requirements of Section 12A of IBC. NCLT had ordered the liquidation of the company with an observation that the resolution plan was submitted to the Bankruptcy Court after 330 days as IBC allows 330 days as the maximum time to resolve a case. The order of NCLT was upheld by NCLAT and liquidation process got started. However, the case went to Supreme Court of India which stayed the order of liquidation passed by the NCLAT. The lenders got worried and they opine that they are back to square one. They had tried to settle with the promoters under Section 12A of IBC using their commercial wisdom on the understanding that this was a good price based on totality of circumstances. The application filed by the resolution professional before NCLT for withdrawal of CIRP was allowed by Supreme Court of India vide order dated June 3, 2022

It is not expected for lenders to accept a settlement from promoters once a company has been admitted for bankruptcy proceedings as it is usually a last resort and secured creditors exhaust all options before they take a company to court. It is observed that the acceptance of offer of Siva Industries by the lender differs from the usual practice of rejection by creditors of such deals proposed by promoters seeking to withdraw their companies from bankruptcy proceedings. Atul Punj of Punj Lloyd, Videocon's Venu-gopal Dhoot, Sanjay Singhal of Bhushan Power and Steel had all made offers to creditors to persuade them to drop bankruptcy proceedings. All were rejected.

CIRP of Dewan Housing Finance Ltd, (A Large Bankrupt Non-Bank Mortgage Lender) – A Case of Complex and Protracted Resolution¹¹

Dewan Housing Finance Limited (DHFL), a mortgaged lender is the first Indian financial services company and is among the largest IBC proceedings sent to the bankruptcy court after the Government of India notified the rules for referring Financial Services Providers (FGPs) on 15th November, 2019. Unlike insolvency proceedings for companies from other sectors, an FSP creditor or debtor cannot

¹⁰ Supreme Court of India (3 June, 2022) Vallal Rck vs M/S Siva Industries and Holdings

¹¹ Piramal Capital Gets NCLT Nod to Take Over DHFL (June 8, 2021). *The Economic Times*

approach the bankruptcy court without being referred by a regulator. DHFL is the first large non-bank lender to be resolved under IBC.

The corporate insolvency resolution process of debt-laden Dewan Housing Finance Limited which had dues about Rs. 91,158 crores were initiated by Reserve Bank of India after it found that company has failed to meet its liabilities and promoters came under investigation for fraud. In June, 2021, a dedicated bankruptcy court at Mumbai allowed Piramal Capital and Housing Finance's Rs.37,250/- crore resolution plan (all inclusive). The resolution of DHFL is the first of its kind as prior to this, no other FSP was taken to bankruptcy court and had the CIRP completed. Mr. Kapil Wadhawn, former promoter of DHFL attempted to take over the stressed mortgaged lender but the bankruptcy court rejected the same on the ground that the insolvency law prohibits the promoter of any bankrupt company from attempting to re-acquire it. As per Section 29A of IBC, there is a prohibition on submission of resolution plan by the promoters of a bankrupt corporate debtor and Section 12A of the Code deals with withdrawal of the bankruptcy proceedings from bankruptcy court if 90% of the financial creditors agree on the settlement arrived with the promoters.

Srei Infrastructure Finance (SIFL) and Srei Equipment (SEFL) – A Case of Consolidated CIRP of Non-Banking Finance Companies (NBFCs)

The process of CIRP of Srei Group began when a consortium of lenders led by UCO bank sought RBI directions for recovery after the loans became NPAs. As the aforesaid entities are NBFCs, the lenders concerned need RBI approval to take these entities to NCLT for insolvency proceedings.

The Reserve Bank of India, on finding glaring corporate governance issues superseded the Boards of the aforesaid companies for insolvency against which the two promoters of Srei Group Challenged before Bombay High Court and on dismissal of the same, it initiated insolvency petitions at Calcutta High Court which paved the process by NCLT-Kolkata in October, 2021 and appointed an Administrator who admitted claims of Rs. 23,000 crores against them. 17 companies have submitted Expressions of Interest (EOIs) to buy the troubled duo through the consolidated corporate insolvency resolution process. The administrator, inter alia, is expected to maximize the value of assets underlying the loans disbursed by these companies and his efforts are also directed to make the most out of their investments in equity.

CIRP of Reliance Capital Limited

Reliance Capital Limited, the Anil Ambani controlled company, is the third financial services company to face insolvency proceedings after the IBC was amended to include NBFCs also for CIRP. Payments defaults and serious corporate governance issues which could not be addressed, have led to the superseding by the board of directors by Reserve Bank of India. It is observed that the Reserve Bank of India has taken this decision after default of dues of Yes Bank amounting to Rs.1417 crore as a key default. An administrator was appointed and an application was also made to bankruptcy court, NCLT, to appoint the administrator as the insolvency resolution professional. NCLT admitted the insolvency proceedings of the finance company controlled by Anil Ambani.

Yes Bank submitted the report of Reserve Bank of India's Central Repository of Information on Large Credits (CRILC) which indicated that its exposure to the company has been classified as doubtful. It is to be noted that the doubtful assets are those that have been classified as NPAs for more than 12 months. The CIRP is different as most of the value lies in its investment in operating group companies including financial services and insurance. The consolidated debt is Rs. 40,000 crores. The action of Reserve Bank of India has come more than two years after the company was declared a defaulter by care ratings for failing to meet its payments obligations. The delay in resolution is due to the complexity of litigation initiated by secured and unsecured lenders leading to the pendency of over 10 cases in various courts.

CIRP of RCom

CIRP of RCom was initiated and no approval from the bankruptcy court for the resolution plan of the corporate debtor even after passing of two years. Efforts are being made by the resolution professional to find buyers for non-core assets of the defunct telecom company and after obtaining fresh valuation,

endeavouring to auction the assets, similar to the process followed under the Securitization and Reconstruction of Financial Assets and Enforcement of Security Interest Act. It is observed that the CIRP has crossed the maximum of 330 days that is allowed under the IBC, the lenders are apprehensive that the bankruptcy court will not allow them to restart the resolution process. Efforts are being made to the piecemeal sale of assets. About two years back, in March, 2020, the committee of creditors had unanimously voted for the UV ARC's resolution plan for two corporates, RCom and Reliance Telecom and also unanimously approved a resolution plan for Reliance Infratel by Reliance Digital Platform & Project Services, a Reliance Industries group company. It has also been observed that the insolvency proceedings against the three Anil Ambani group companies started in May 2018 but the process was stopped for a year for the lenders to try an out-of-court settlement which could not be reached.

CONCLUSIONS & SUGGESTIONS

The Code has helped in improvement in the recovery but there has been delays due to excessive litigation also which is a serious cause of concern for lenders. The Code was enacted to give a quicker, time-bound alternative for recovery of bad loans for banks. As on 31.03.2022, 5258 CIRPs have commenced under the IBC since the fourth quarter of fiscal 2017, when courts started to function. 3406 of the aforesaid cases have been closed. 1609 (47%) have ended in liquidation, 586 (17%) have been withdrawn and 731 (22%) have been settled on appeal or review and 480 (14%) have ended in approval of resolution. As on March 31, 2022 claims of Rs.6.85 lakh crore of Financial Creditors were admitted which had liquidation value of Rs.1.31 lakh crore. The amount realizable by the Financial Creditors is Rs.2.25 crore which comes to 32.89% of the admitted claims, however, the same is 171.39% of the liquidation value. It has been held by the Apex Court in a plethora of judgments that acceptance of the proposal submitted by the resolution applicants should be left to the commercial wisdom of the Committee of Creditors (CoC). The Adjudicating Authorities should not substitute their judgments in accepting or rejecting the proposals approved by the CoC. There is need for code of conduct for CoC but the Government of India is averse to Insolvency Board regulating the CoC. The Ministry of Corporate Affairs have favoured an inter-regulatory and co-ordination based mechanism. There is need for making the CoC accountable for its actions as it has been felt in the wake of steep haircuts taken by the lenders, banks and financial institutions. It has also been noticed that the Adjudicating Authorities have made strong observations on the function of CoC. Standing Committee on Finance of Parliament has also made observations on the functioning of IBC and has suggested for overhaul of the IBC otherwise the very purpose of the enactment shall be defeated. This observation has been made after the steep haircuts taken by the Banks and Financial Institutions in approving the resolution plans of the resolution applicants. It is the need of the hour that corrective steps are taken so that IBC is not diluted further as Banks and lenders are looking for options other than available under IBC as enough time is taken by the Adjudicating Authorities even to admit the CIRP and declare moratorium. IBC is being diluted with excessive litigation which is a cause of concern for lenders as delay erodes the value of distressed assets. IBC mandates a 330 days outer limit for completion of CIRP but the actual situation is precarious. It has been observed on the basis of data available, on average, 459 days were spent for approval of resolution plans while another 351 days were needed to secure liquidation orders.

REFERENCES

- Apex Court Stays NCLAT Order to Liquidate Siva Industries (March 17, 2022). *The Economic Times*.
CIRPs yielding Resolution (Jan-Mar 2022 Vol.22). IBBI Quarterly News Letter p. 15.
Corporate Insolvency Resolution Process (Jan-Mar 2022 Vol.22). IBBI Quarterly News Letter p. 12.
Ongoing CIRPs (Jan-Mar 2022 Vol.22). IBBI Quarterly News Letter p. 14.
Ongoing Liquidation (Jan-Mar 2022 Vol.22). IBBI Quarterly News Letter p. 15.
Ongoing Voluntary Liquidation (Jan-Mar 2022 Vol.22). IBBI Quarterly News Letter p. 17.
 Piramal Capital Gets NCLT Nod to Take Over DHFL (June 8, 2021). *The Economic Times*.
Reasons for Liquidation (Jan-Mar 2022 Vol.22). IBBI Quarterly News Letter p. 16.
Sectoral Distribution of CIRPs (Oct-Dec 2019 Vol.13). IBBI Quarterly News Letter.
Sectoral Distribution of CIRPs (Jan-Mar 2020 Vol.14). IBBI Quarterly News Letter.
Sectoral Distribution of CIRPs (Apr-June 2020 Vol.15). IBBI Quarterly News Letter.
Sectoral Distribution of CIRPs (Jul-Sep 2020 Vol.16). IBBI Quarterly News Letter.
Sectoral Distribution of CIRPs (Oct-Dec 2020 Vol.17). IBBI Quarterly News Letter.

- Sectoral Distribution of CIRPs* (Jan-Mar 2021 Vol.18). IBBI Quarterly News Letter.
- Sectoral Distribution of CIRPs* (Apr-June 2021 Vol.19). IBBI Quarterly News Letter.
- Sectoral Distribution of CIRPs* (Jul-Sep 2021 Vol.20). IBBI Quarterly News Letter.
- Sectoral Distribution of CIRPs* (Oct-Dec 2021 Vol.21). IBBI Quarterly News Letter.
- Sectoral Distribution of CIRPs* (Jan-Mar 2022 Vol.22). IBBI Quarterly News Letter.
- Supreme Court of India, (March 8, 2021). *Gujarat Urja Vikas Nigam Limited vs. Amit Gupta*. Retrieved July 7, 2022 from <https://indiankanoon.org/doc/75443134/>
- Supreme Court of India (March 15,2021). *Arun Kumar Jagatramka v. Jindal Steel and Power Ltd.* Retrieved July 7, 2022 from <https://indiankanoon.org/doc/54725749/>
- Supreme Court of India (3 June, 2022). *Vallal Rck vs M/S Siva Industries and Holdings*. Retrieved July 7, 2022 from <https://indiankanoon.org/doc/132801550/>

ANALYSIS OF CONTENT MARKETING IMPLEMENTATION THROUGH FACEBOOK AND INSTAGRAM TO BUILD BRAND AWARENESS ON SIXPACK BREADTOLOGY

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ABSTRACT

The COVID-19 pandemic certainly has affected our society lifestyle. This lifestyle shift also influences the on current buying and selling activities that can be done online through social media that requires good marketing. Marketing activities on social media must have content published as a marketing purpose. Sixpack Breadtology is a small scale company producing baked goods in the city of Semarang. Sixpack Breadtology does not yet have a good content plan which results in poor brand awareness of the company. The purpose of this study is to build company's brand awareness, create good marketing content based on content marketing steps, and find out the best social media in establishing company brand awareness. The data needed to create the content was obtained through interviews with the owner of the Sixpack Breadtology. Content that has been created is distributed organically on Instagram and Facebook accounts of Sixpack Breadtology as well as through paid media channel such as Facebook Ads Manager. The content marketing step with distribution through Facebook Ads Manager succeeded in building brand awareness of the Sixpack Breadtology company to 29,190 people.

Keywords: *Marketing, brand awareness, content marketing, distribution.*

INTRODUCTION

The COVID-19 pandemic that occurs globally bring an impact, one of which is the social impact on society in the form of a shift in the pattern of human life. This shift was followed by a digitalization process that also occurred in buying and selling activities that took place in the community. This digitalization process has several business opportunities, one of which is market expansion using social media as a marketing medium.

Marketing on social media certainly requires effective steps to attract the attention of customers and definitely contain content to be published. Therefore, the eight steps of content marketing written by Kotler, Kartajaya, and Setiawan (2017) can be a good approach as a means of effective product promotion. Rapid digitization requires the role of social media to market products and build brand awareness. Examples of social media that can be used are Facebook and Instagram.

Sixpack Breadtology itself is a company engaged in the manufacture of bread and cakes in the city of Semarang. Through interviews, it is known that Sixpack Breadtology was founded in 2020, hence it requires building brand awareness. In addition, Sixpack Breadtology does not have a good content planning including planning where the content will be uploaded, therefore marketing content that does not have good planning results in low brand awareness and this is supported by the distribution of questionnaires to the Sixpack Breadtology target market. which results in data that Sixpack Breadtology brand awareness is still low.

Based on the background, it can be seen that the formulation of the research problem is that poor content marketing planning and lack of knowledge about good content distribution sites make the content produced less attractive. According to Nguyen and Nguyen (2021), the attractiveness factor in content can result in marketing activities on social media not being able to run effectively so that the brand awareness built by the company is still low.

In this study, there are three research objectives, namely building brand awareness of the Sixpack Breadtology company, creating good marketing content for Sixpack Breadtology based on eight content marketing steps, and knowing the best social media in establishing brand awareness of Sixpack Breadtology.

LITERATURE REVIEW

Brand

According to de Chernatony (2010) a brand is a group of functional and emotional values that make a promise of a unique and friendly experience. Another definition from Neumeier (2006) writes that a brand is a person's hunch on a product, service, or company. A company's brand is ultimately defined by individuals and each individual can have a different perception. Different perceptions in each individual are things that cannot be controlled but companies can influence by communicating the values that distinguish one product or company from another. A brand is a strong entity because rationally, a brand combines functional values and emotional values. De Chernatony (2010) suggests that with a clear brand vision, functional values and emotional values can be conveyed. Brand vision is important because it can help develop the company's positioning statement in conveying functional values and as a personality that can communicate emotional values.

Brand Visioning

Brand visioning is a process to consider how a brand can benefit stakeholders in the long term. A brand can emerge because of a vision. Brand vision can be communicated internally or externally. According to de Chernatony (2010), internally brand vision can be imbued with all levels of employees so that it can be a direction and motivation at work. Externally, brand vision can be the basis for communicating functional and emotional values. It is known that there are three components that build a brand vision, which is future environment, brand values, and the purpose of the brand.

Brand Functional Value and Emotional Value

Brand is a strong entity because it combines rational, functional, performance-based values with emotional values. According to de Chernatony (2010) functional value is a technical thing that customers get from a product or company, while emotional value is a feeling how a brand is received by customers. Technically unique functional values can be easily understood and imitated by competitors so that to differentiate, the emotional values offered by the company are needed. Embedding emotional values in a brand can not only attract the attention of a group of customers but can also become a sustainable company base for the long term. Examples of functional values are safety, comfort, simplicity of use, and ease of adaptation. Examples of emotional values are integrity, self-esteem, pride, sense of belonging and independence. De Chernatony (2010) revealed that customers choose brands based on values that match the customer's lifestyle and enable them to meet their needs.

Brand Awareness

According to Kotler *et al.* (2017), brand awareness is the ability of consumers to recognize and remember a brand under certain conditions in a category with sufficient detail to make a purchase. In terms of brand awareness, recognizing a brand is easier than remembering a brand. For companies, the ability of consumers to remember brands is important outside the store, and the ability of consumers to recognize brands is important inside the store. Brand awareness is a fundamental for brand equity.

Content Marketing

Content Marketing according to Kotler *et al.* (2017) is a marketing approach that involves creating, curating, distributing, and strengthening interesting, relevant, and useful content for a clearly defined audience in order to create comments about the content. Content marketing or so-called content marketing can also be considered as another form of brand journalism and brand publication that can create deep connections between brands and consumers. Companies that implement good content marketing can present quality original content by telling interesting stories about their company in the process. Content marketing also causes a shift in the role of marketer to storyteller. There are eight steps in content marketing that have been written by Kotler *et al.* (2017). These steps include goal setting, audience mapping, content ideation and planning, content creation, content distribution, content amplification, content marketing evaluation, and content marketing improvements.

Goal Setting

In the goal setting stage, marketers must clearly define the goals or final goals to be achieved. Kotler *et al.* (2017) write that without the objectives to be achieved content creation and distribution cannot run properly. The purpose of content marketing can be divided into two (2) categories, namely sales-related goals and brand-related goals. Sales-related goals can consist of lead generation, cross sell, up sell, sales, and sales referrals. The brand-related goals category can consist of developing brand awareness, brand association, and brand loyalty.

Defining the goals of content marketing helps the market to create better content marketing strategies. The sales-related goals category requires marketers to ensure that the content distribution channels match the sales channels. The category of brand-related goals requires marketers to be consistent with the character of the brand they want to form.

Audience Mapping

In the audience mapping step, it is necessary to know who the target audience is. Marketers need to define specific audiences to create sharper and deeper content. Specific audiences can be determined by segmenting the market by geographic, demographic, psychographic, and behavioral. After segmentation, it is necessary to do market targeting in order to produce more specific results.

Content Ideation and Planning

In the content ideation and planning step, marketers must find the right theme. The theme must have value so the audience doesn't miss the content. Effective content must have values that reflect the character of a brand and help customers get what they want. A piece of content can mean for a brand to make a difference and leave a value in the minds of customers. Marketers need to think deeply about the value proposition.

As a marketer it is necessary to know the format of the content created. A content can be presented in a written format such as articles, newspapers, books, press conferences, newsletters, and case studies. A content can also be made in visual form such as comics, interactive graphics, presentation slides, games, videos, short films, or feature films.

Content Creation

Content creation is something that requires a commitment in terms of time and budget. According to Kotler *et al.* (2017) if the content is not of high quality, original, and meaningful, then all content marketing steps are a waste of time and can have a negative impact on the company. Content creation can be a separate service business for companies in need. Companies can also have workers as content creators. Content creation has no start and end date. Content creation is an ongoing process that requires consistency, therefore the company must be sure that the company has the internal ability to create content in the long term or the company can use content creation services externally.

Content Distribution

In the content distribution step, marketers must ensure that the content created can be known by customers through good content distribution. There are three broad categories of media channels that marketers can use, namely owned, paid, and earned media. Owned media consists of channel assets owned by a brand that can be fully controlled such as websites, company events, company publications, social media accounts, mobile phone notifications, and mobile applications owned by the company. Paid media is a paid channel that companies use to distribute content such as print media, banners, publisher networks, mobile advertising media, paid placements on social media, and search engine listings. The company's earned media is the coverage and exposure obtained by the brand through word of mouth.

Content Amplification

Content amplification is a stage to strengthen the effect of media distribution on customers. When a piece of content reaches the main influencers in a target audience group, the content has a higher chance of becoming famous. The first step that must be done is to determine the intended influencer. A good influencer is a figure who is respected by society and has a large number of followers. After the content created has gone through the amplification stage, marketers must look at the response and response of customer groups to the content.

Content Marketing Evaluation

The evaluation stage of content marketing is an important stage after distribution. Evaluation is based on strategic and tactical measurements. Strategically, marketers must evaluate whether the content marketing strategy has achieved the final goals that have been determined at the goal setting stage. According to Kotler *et al.* (2017) strategic evaluation should be easy and can be integrated into the overall measurement of overall brand performance. Tactically, marketers must evaluate content marketing measurement metrics based on the format and media distribution channel. In general, there are five categories of measurement metrics that can be used, such as visible, relatable, actionable, shareable, and searchable.

The visibility metric is a metric that measures reach and awareness. The metrics commonly measured in visibility are impressions, unique viewers, and brand recall. Impressions are the number of times the content has been viewed. Unique viewers are the number of individuals who viewed the content. Brand recall is the percentage of individuals who can remember the brand name.

Relatability is a metric to measure how well content can attract interest. The metrics commonly measured in relatability are page views per visitor, time on site, and bounce rate. Page views per visitor is the number of pages visited while on a content site. Bounce rate is the percentage of people who leave the site after viewing one page. Time on site is the length of visit.

Search is a metric to measure how easily content can be found using search engines. The metrics commonly measured in search metrics are search engine positions and referrals. Search engine position is the position of content in search engines when searched for certain keywords. Search engine referrals is how many visits to the company's website are generated from search results on search engines.

Action is a metric to measure whether the distributed content has succeeded in encouraging customers to take action. The metrics commonly measured in action metrics are click-through-rate and call-to-action conversions. Click-through-rate is the ratio between the number of clicks and the number of impressions. Call-to-action is the percentage of the audience that has completed several actions such as registering and purchasing.

Share is a metric that measures share ratio and engagement rate. Share ratio is the ratio between the total market share and the number of impressions. Engagement rates may change according to the social media used. Engagement rates can be measured by dividing the number of followers by the share act.

Content Marketing Improvement

After evaluating the content that has been created and distributed, marketers must determine what improvements can be made and determine when to change the content marketing approach that has been created. A marketer can also experiment with themes and content formats along with new distribution channels based on the measured and analyzed evaluation results.

RESEARCH METHOD

Preliminary Research

Preliminary research is conducted to determine the background of the problem and the formulation of the problem to be solved. Preliminary research was conducted by conducting direct interviews with Sixpack Breadtology owners and distributing questionnaires to the Sixpack Breadtology target market.

Problem Formulation

After conducting preliminary research, the next step is to formulate the problem based on the information that has been obtained. The main problem in this research is the planning in making marketing content that is not good which causes the content produced to be less attractive so that marketing activities on social media cannot run effectively which consecutively causes brand awareness of the Sixpack Breadtology company which is still low.

Formulation of Research Objectives

There are three research objectives in this study, namely building brand awareness of Sixpack Breadtology companies, creating good marketing content for Sixpack Breadtology based on content marketing

steps written by Kotler *et al.* (2017) and knowing the best social media in building brand awareness in Sixpack Breadtology companies

Literature Study

Literature study was conducted to find relevant references to assist this research. This literature study was conducted by searching for national and international journals to strengthen the background of the problem and the research methods to be carried out. E-books are also searched and used to search for relevant theories to support research. Literature study was also conducted to find out the material about branding. In the literature study, information was also searched from other sources such as the official Facebook Ads Manager website.

Data Collection, Analysis and Discussion

In this study, the data collection stage will be carried out to meet the primary and secondary data required. The primary data needed in this study includes the conditions for using social media in Indonesia, the three components of brand vision, brand functional values, brand emotional values, the company's target market, the condition of Instagram Sixpack Breadtology before and after the implementation of content marketing, as well as the results of advertising from Facebook Ads. Managers. The secondary data referred to in this study are company profiles and company organizational structures.

Primary data covering three components of brand vision, brand functional values, brand emotional values, and the company's target market will be collected through interviews with company owners. The conditions for using social media in Indonesia will be collected through an internet search, while the results of Facebook Ads Manager advertising will be collected through the official Facebook Ads Manager website. Data regarding the condition of Instagram Sixpack Breadtology before and after implementation were obtained directly from the Instagram application. Secondary data needed in this study such as company profile and company organizational structure will be collected through interviews with company owners.

After the content is loaded on the Facebook Ads Manager, the results of the ad performance can be obtained so that you can find out the performance of the content marketing could be measured. From this data, the results will also be analyzed according to the content format and ad placements to find out the best social media to build company brand awareness. The comparison of Instagram Sixpack Breadtology social media before and after implementation will also be discussed in this step.

Conclusions and Suggestions

In the final stage, there is a conclusion statement which is a brief description of all the research results that have been achieved. At this stage, suggestions are also given to Sixpack Breadtology and to future researchers with relevant research topics.

FINDINGS AND DISCUSSION

Company Profile

Sixpack Breadtology is a business, micro, small and medium enterprise (MSME) which was founded in 2020 by Desy Novita Hidajat. Sixpack Breadtology company is a company engaged in the manufacture of bread and cakes. The products offered by Sixpack Breadtology includes shredded bread, brownies, wheat bread, marble bread, Japanese milk buns, beef stromboli and fruit pie. Sixpack Breadtology currently has seven employees with Desy as the owner and director of the company. The Sixpack Breadtology company does not yet have physical outlets and only relies on Instagram and Facebook social media as product marketing media. Every celebration of a certain month, Sixpack Breadtology develops and releases new products to take advantage of the market. These celebrations include Eid al-Fitr, Easter, and Christmas.

Content Marketing - Goal Setting

The first step in content marketing is goal setting, in preliminary research it was found that the brand awareness of the Sixpack Breadtology company was still low so that brand building objectives or brand-

related goals were chosen which have the aim of building company brand awareness in the implementation of content marketing.

In fulfilling the goals of building a brand, of course, the characteristics of the brand itself are needed, such as brand vision, brand functional values, and brand emotional values to be communicated to the target market. In creating content, it is necessary to know the brand vision, functional value, and emotional value obtained through interviews.

From interviews, it is known that the functional values in the products produced include practicality, guaranteed quality from raw materials to final products, softness, lots of bread content, and made fresh from the oven every day. For emotional value, Sixpack Breadtology wants customers to feel happiness with the best taste from home-made bread anywhere.

For brand vision, it needs to be formed through three elements obtained which are envisioned future, the purpose of the brand, and the brands values. For the envisioned future, it was revealed through interviews that Sixpack Breadtology wants to be the market leader in the Semarang city area. For the second component regarding the purpose of the brand, it is known that Sixpack Breadtology wants to present the taste of home-made and old-fashioned bread typical of Semarang that can be enjoyed practically. For the third component, namely brand values, Sixpack Breadtology wants to provide the main value of happiness for consumers.

From these three elements, a brand vision of Sixpack Breadtology was born with "Giving you the full potential of the city of Semarang by producing the best home-made old-fashioned bread for your happiness."

Content Marketing – Audience Mapping

From the initial interview, it is known that Sixpack Breadtology's target market is productive age in Central Java, but for the audience mapping step, the target market must be more detailed so that it goes to the psychographic and behavioral segments. To complete the data, interviews were conducted again by asking more specific characteristics of market segments. For psychographics Sixpack Breadtology wants to have consumers who have busy lifestyles such as office workers. In terms of consumer behavior, Sixpack Breadtology wants to have a target market of individuals who have an interest in the culinary field.

Therefore, from the demographic, geographic, psychographic, and behavioral segments, a new target market or audience is determined, namely individuals of productive age who live in Central Java with a busy lifestyle and an interest in the culinary field.

Content Marketing - Content Ideation and Planning

The third content marketing step is content ideation and planning. With a clear target market from the audience mapping step, content that is relevant to the target market and in accordance with the characteristics of the Sixpack Breadtology brand which has been discussed in the goal setting step.

There is a rustic theme that was created because it is identical to the company's brand vision, where Sixpack wants to present the best home-made old-fashioned bread. The second idea is an idea with a colorful theme because it is identical to the brand values of happiness. Of the two themes, each content will definitely contain some functional values and emotional values from Sixpack Breadtology. Content will be made in the form of photos and videos with a total of 15 pieces.

Content Marketing – Content Creation

In the content creation step, it is necessary to know the content producers that have been planned along with the content creation schedule. Through interviews, it can be seen that Sixpack Breadtology has a marketing division whose job is to create content to be published on the company's social media. From this information, content creation will be carried out together with the marketing division of the company

Sixpack Breadtology.

Table 1
Content Production Schedule

Date	Job Description
10–15 October 2021	Content Ideation and Planning
18 October 2021	Product Photo Session
19–25 October 2021	Editing
21 October 2021	Video Production
27 October 2021	Upload Contents to Sixpack Breadtology

In the content creation step, product photo sessions, product video making sessions, and editing processes are carried out using rustic and colorful themes in accordance with the planning in the content ideation and planning steps.

Content Marketing – Content Distribution

For the fifth step, namely content distribution, content will be uploaded to Sixpack Breadtology's owned media channels such as Instagram and Facebook.

For paid media channels, loading is done through the Facebook Ads Manager. In the Facebook Ads Manager, there are five main steps that must be taken in the process of placing ads on the Facebook Ads Manager. The steps in sequence are choose your objective, set your budget and schedule, select your audience, decide ad placements, and select ad format and media. The installation of Sixpack Breadtology ads on Facebook Ads Manager was carried out four (4) times.

Table 2
Content Distribution on Facebook Ads Manager

Code	Content Format	Social Media	Starting Date	Ending Date
1	Photo	Instagram	10/11/2021	17/11/2021
2	Photo	Facebook	10/11/2021	17/11/2021
3	Video	Instagram	17/11/2021	24/11/2021
4	Video	Facebook	17/11/2021	24/11/2021

The choose your objective step is the first step in advertising. This step is used to determine the final destination of the advertisement. According to data processing in the first step in content marketing (goal setting), it is known that the ultimate goal of content marketing is brand building objectives, one of which is building brand awareness. Therefore, in Facebook Ads Manager, the final goal is chosen, namely brand awareness.

The second step is to set your budget and schedule. The set your budget and schedule step is a step to determine the budget and schedule for advertising on Facebook Ads Manager. For each ad that will be installed, a maximum budget per day is determined at IDR 35,000.00. Ads that have a photo format will run from November 10, 2021 to November 17, 2021. Ads that have a video format will run from November 17, 2021 to November 24, 2021.

The select your audience step is the third step in the Facebook Ads Manager which is useful for determining the intended ad audience. The targeted advertising audience is the target market of Sixpack Breadtology which was discussed earlier in the content marketing (audience mapping) step, namely

individuals of productive age who live in Central Java with a busy lifestyle and an interest in the culinary field.

In determining the audience there are several things that must be considered. According to the Central Bureau of Statistics, the productive age is individuals aged 15–64 years. In order to be able to select a specific audience, Facebook Ads Manager determines the minimum age of the audience is 21 years so that the age of the selected audience is 21–64 years. The selected audience also has an interest in culinary fields such as pie bread, bakery, wheat bread, pastry, bread or food industry. Advertisements are also directed at individuals who have busy lifestyles, therefore the selected audience also includes individuals who are most likely to work in offices such as in the field of administration (administrative services).

The fourth step, namely decide ad placements, is a step to determine where the ad will be installed. In this fourth step, manual placements are selected so that ad placements can be selected manually and not based on the Facebook algorithm.

Each photo and video format will be placed on both social media, namely Facebook and Instagram. On Facebook, it can be seen that ad placements are on the Facebook news feed, marketplace, and video feeds. On Instagram, it can also be seen that ad placements are on Instagram feeds and explore. Both are placed in the feeds category to increase the visibility of the ad

The last step is to select ad format and media. The final step before the ad is installed is the selection of the format and loading of the content to be loaded. The formats that will be used are photos and videos so the single image or video option is selected. Content that is used as an advertisement is chosen randomly according to the content format and only one photo and video will be selected. One photo and video will eventually occupy placements on Instagram and Facebook according to the specified advertising period.

Content Marketing – Evaluation

The next step after the content has been distributed is the evaluation step. Kotler *et al.* (2017) write that a marketer can evaluate content marketing based on measurement metrics that exist in the format and media of distribution channels. The distribution channel that is primarily used to build brand awareness is Facebook Ads Manager. Facebook Ads Manager has a specific measurement metric for the brand awareness objective in the form of an estimated ad recall lift. Please also note that all ad results from Facebook Ads Manager are estimated numbers from the results of Facebook Ads Manager machine learning.

Table 3
Facebook Ads Manager Ads Result

Code	Ad Name	Results(EARL)	Reach	CPR	AmountSpent	EARL Rate
1	Photo Formaton Instagram	9.350	98.735	IDR 26	IDR 245.000	9,47%
2	Photo Formaton Facebook	6.620	59.750	IDR 37	IDR 244.815	11,08%
3	Photo Formaton Instagram	2.620	30.783	IDR 101	IDR 264.458	8,51%
4	Video Formaton Facebook	10.600	75.792	IDR 25	IDR 263.595	13,99%
Total/Average		29.190 people	265.060	IDR 47	IDR 1.017.868	10,77%

From the table above, it can be seen that advertisements with photo formats on Instagram succeeded in building brand awareness to 9,350 people. The total number of individuals who have seen an ad at least once (Reach) is 98,735 people. Expenditure for each result obtained (cost per result) is IDR 26 so the total cost for this ad is IDR 245,000. This expenditure is still within the budget limit of IDR 245,000 (IDR 35,000/day for 7 days). The estimated ad recall lift rate is the percentage of the estimated ad recall lift divided by the total reach. In this first advertisement, the estimated ad recall lift rate percentage is 9.47%.

The second ad, which is an ad in a photo format on Facebook, has built brand awareness to 6,620 people with a reach of 59,750 people. The cost per result for the second ad is IDR 37 and the total advertising expenditure is IDR 244,815. Spending on the second ad is still within the specified budget limit. In the second advertisement, the estimated ad recall lift rate percentage is 11.08%.

The third ad, which is an ad with a video format on Instagram, succeeded in building brand awareness to 2,620 people with a reach of 30,783 people. The cost per result for this ad is IDR 101. Total expenditure for this third advertisement is IDR 264,458 which means it has exceeded the budget of IDR 19,458. It has been informed by Facebook that the total expenditure can exceed the budget by 25% to increase the search effectiveness of the ad audience. The third ad managed to get an estimated ad recall lift rate of 8.51%.

The fourth ad is an ad with a video format on Facebook. This ad succeeded in building brand awareness of the Sixpack Breadtology company to 10,600 people with a reach of 75,792. The cost per result for this ad is IDR 25 with a total expenditure of IDR 263,595. This fourth advertising expenditure has also exceeded the budget by IDR 18,595 and still limited to 25% which has been notified by Facebook (IDR 61,250). This fourth ad has an estimated ad recall lift rate of 13.99%.

Content Marketing – Improvement

The content marketing improvement step is the last step to determine improvements that can be made in the entire series of content marketing that has been done. From the data that has been obtained in the evaluation step, it is known that there are differences in the estimated ad recall lift for each advertisement. In this case, it can be analyzed that each content format can have more optimal placements. For photo content formats, it can be seen that the number of estimated ad recall lifts for placements on Instagram (9,350 people) is higher than that of Facebook (6,620 people), therefore ads that have a photo content format are better placed on Instagram. For video content formats, it can be seen that the estimated ad recall lift for placements on Instagram (2,620) is much lower when compared to Facebook (10,600). In conclusion, the video content format is better if it is installed on Facebook social media.

CONCLUSION

In this study, seven steps of content marketing have been carried out as a guide in content creation to build brand awareness of the Sixpack Breadtology company. Through the paid distribution channel of Facebook Ads Manager, it can be seen that the seven content marketing steps carried out succeeded in building brand awareness of the Sixpack Breadtology company to 29,190 people. In this study, there were 15 content that was successfully created by planning in accordance with the content marketing steps for the Sixpack Breadtology company. The plan also includes creating a brand vision and clarifying brand functional values and emotional values as the basis for content creation. This research also concludes that to build brand awareness through advertisements, it is better to load content with photo formats on Instagram, while uploading content with video formats is better done to Facebook social media.

REFERENCES

- De Chernatony, L. (2010). *From brand vision to evaluation – The strategic process of growing and strengthening brands*. Massachusetts: Elsevier,
- Kotler, P., Kartajaya, H., & Setiawan, I. (2017). *Marketing 4.0: Moving from traditional to digital*. New Jersey, NJ: John Wiley&Sons.
- Nguyen, C., & Nguyen, D. (2021). A study of factors affecting brand awareness in the context of viral marketing in Vietnam. *International Journal of Advanced Science and Technology*, 29(05), 5401–

5411.

Neumeier, M. (2006). *The brand gap, how to bridge the distance between business strategy and design*. Berkeley, CA: AIGA.

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