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Effect of Exchange Rate Path-through on Inflation: Recent Japanese Case

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Abstract

After the burst of the bubble economy in the mid-1990s, when stock and land prices plummeted in Japan, the country had been in a deflationary trend for about 30 years, with the inflation rate hovering around 0%. In 2022, however, sudden increases in the prices of food and utilities, coupled with little increase in wages, made life difficult for people. The beginning of the price increase is attributed to Russia's invasion of Ukraine in February 2022. This crisis in Ukraine caused food and energy prices to rise. In addition, the interest rate differential between the U.S. and Japan had widened, Japanese yen weakened, and import prices rose, leading to a broad-based price increase in Japan. Moreover, in 2022, the Japanese government announced the "With Corona" policy, which played a pivotal role in both preventing the spread of infection and promoting economic activity, leading to some recovery in economic activity and an acceleration of labor shortages. This was followed by a movement to raise wages. The purpose of this study is to examine the factors behind price increases in Japan. While many believe that the weak yen is the biggest factor behind the price increases, this study uses statistical analysis to test this view. Empirical analyses show that the depreciation of the yen led to higher prices in Japan, but no significant relationship was found between prices and the industrial production index, nor between prices and the policy interest rate. Furthermore, there was no evidence that wage increases caused price increases.

Keywords: Depreciation, Exchange Rate, Inflation, Japan, Yen

1. Introduction

In Japan, after the burst of the 'bubble' economy in the mid-1990s, when stock and land prices soared, the country had experienced deflationary pressures for about 30 years, with the inflation rate being around 0%. In 2022, however, it exceeded 2% year-on-year. Sudden increases in the prices of food and utilities, coupled with little increase in wages, made many people's lives difficult.

The beginning of the price increase is attributed to Russia's invasion of Ukraine in February 2022. This crisis in Ukraine caused food and energy prices to rise. In addition, the interest rate differential between the U.S. and Japan had widened (the U.S. and Europe raised their interest rates while Japan's remaining near zero), the yen weakened, and import prices rose, leading to a broad-based price increase in Japan, according to the prevailing view. Moreover, in 2022, the Japanese government announced the "With Corona" policy, which played a pivotal role in

both preventing the spread of infection and promoting economic activity, leading to some recovery in economic activity and an acceleration of labor shortages. This was followed by a movement to raise wages, especially in large companies, which continues to this day.

The purpose of this paper is to examine the factors behind price increases in Japan. While many believe that the weak yen is the biggest factor behind recent price increases, this study uses statistical analyses to examine this view. This study is organized as follows. Section 2 reviews existing studies that examine the relationship between prices and exchange rates. Section 3 presents empirical methods for investigating the causes of inflation/deflation. Based on these methods, empirical estimations are conducted and the results are examined in Section 4. Finally, section 5 provides a brief conclusion.

2. Existing Studies

The Bank of Japan (BOJ) ended its negative interest rate policy at the meeting on March 19. This will be the first time in 17 years, since February 2007, that the BOJ has raised the policy interest rate. The policy interest rate was adjusted to 0-0.1%. In a statement after the policy meeting, the BOJ said it would aim to keep the overnight average call rate to remain at around 0-0.1% from March 21. Until then, the BOJ had applied a negative interest rate of 0.1% to a portion of the current accounts deposited with the BOJ by banks and other financial institutions. As for long-term Japanese government bonds, the BOJ decided to continue to purchase them at roughly the same pace as in the past. The Bank also ended new purchases of exchange-traded funds (ETFs) and real estate investment trusts (REITs), which it began in 2010 and has significantly increased since 2013. The Bank also removed its forward guidance, which had stated, among other things, that it would take additional monetary easing measures without hesitation if necessary.

The BOJ aims to achieve its 2% price stability target with wage increases. Governor Kazuo Ueda stated like that once we reach a situation where the realization of the target is foreseeable, we will consider whether or not to continue with the easing measures. He had said that the spring labor negotiations were one of the main points for the decision to change its monetary policy. The 2012 spring labor negotiations, released by RENGO on March 15, showed a wage increase of 5.28 percent, the first time in 33 years since 1991 that it exceeded 5 percent.

There are a lot of studies that examine the relationship between prices and exchange rates. Shioji (2015) showed that exchange rate pass-through to prices, once thought to be almost extinct, has rebounded strongly in recent years. Lau & Yip (2020) found that exchange rate channels have a larger and more positive impact on inflation in the long run than in the short run. Sasaki et al. (2022) showed that exchange rate pass-through (ERPT) affects import prices, domestic producer prices, and consumer prices. Kurihara et al. (2022) found domestic prices in Japan rise due to the depreciation of the yen driven by an increase in crude oil and resource energy prices. Valogo et al. (2023) showed that the results of the theoretical ERPT model indicate that depreciation greater than 0.70% per month introduces a pass-through inflationary effect in Ghana. On the other hand, some studies do not confirm a relationship between prices and exchange rates. Cheng et al. (2006-2007) found no significant relationship between consumer prices and exchange rates.

There are several related studies on this issue. Ryou et al. (2019) showed that using Qual VAR and TVP VAR, the QE (quantity easing) and QQE (quality and quantity easing) policies are only successful in raising Japan's CPI (consumer price index) in the QQE period. Prasertnukul et al. (2010) showed that introducing inflation targeting helps achieve the goals of inflation stability by reducing ERPT and its variability.

However, there are few papers dealing with the recent situation in Japan. The main reason for this may be that inflation has only emerged from deflation in the past two years, and even this inflationary trend is not firm. In addition, while there seems to be a growing consensus that the weak yen is main the cause of price increases, other factors may contribute. Rising wages are one such factor. This paper provides answers to these questions.

3. Empirical method to examine the reason for inflation

First of all, the main variables that are used in this study are checked. The variables are consumer prices (2020=100), Exchange rate (yen per US dollar), and industrial production (2022=100) in Table 1. The data are sourced from International Financial Statistics (IMF). The sample period is from January 2020 to the latest October 2024. All of the data are monthly.

Table 1: Statistics descriptions

	Consumer price (Japan)	Consumer price (US)	Yen-Dollar Exchange rate	Industrial production (Japan)
Mean	102.9690	108.5870	127.1045	103.1741
Median	101.8000	107.3651	129.6114	103.9500
Maximum	109.5000	115.0642	157.8211	120.1000
Minimum	99.1000	104.5175	103.6961	80.0000
Std. Dev.	3.3037	3.4631	18.1969	7.6706
Skewness	0.4942	0.4777	0.1344	-0.3235
Kurtosis	1.7589	1.7185	1.4379	3.4330
Jarque-Bera	6.0831	6.1749	6.0711	1.4649
Probability	0.0477	0.0456	0.0480	0.4807
Sum	5972.2000	6298.0460	7372.0600	5984.1000
Sum Sq. Dev.	622.1241	683.6381	18874.4200	3353.8110
Observations	58	58	58	58

It would be necessary to check correlation coefficients among variables. The results are shown in Table 2.

Table 2: Correlation coefficients among variables

	Consumer price (Japan)	Consumer price (US)	Exchange rate	Industrial production	Policy interest rate
Consumer price (Japan)	1	0.9997	0.9403	-0.0233	0.6574
Consumer price (US)	0.9997	1	0.9420	-0.0254	0.6513
Exchange rate	0.9403	0.9420	1	0.0568	0.5091
Industrial production	-0.0233	-0.0254	0.0568	1	-0.0298
Policy interest rate	0.657	0.6513	0.5091	-0.029	1

The correlation coefficients between prices and exchange rates are high as expected. Interestingly the correlations between prices and interest rates are high. However, the correlation between prices and interest rates is negative which is unexpected. These issues are addressed in Section 4 below.

To examine the deterministic elements of inflation in Japan, this equation is regressed at first.

$$Price = a + b_1 \text{ industrial production} + b_2 \text{ industrial production}(-1) + b_3 \text{ exchange rate} + b_4 \text{ exchange rate}(-1) + b_5 \text{ policy interest rate} + b_6 \text{ policy interest rate}(-1) + \varepsilon \quad (\text{A})$$

This equation (A) is based on Aleem & Lahiani (2014) and Valogo et al. (2023), who examine the effect of exchange rate pass-through on inflation. The inclusion of industrial production explains the effect of domestic production fluctuations on prices. Pinto & Angelo (2005) found impulse response analysis showed the BOJ's sensitivity not only to inflation and the output gap, but also to the exchange rate. In this study, the US price is assumed to affect domestic (Japanese) prices through the exchange rate, so it is omitted. The policy rate is included in the equation. Lau & Yip (2020) showed that the inflationary impact of the interest rate channel is significant. The lags of the explanatory variables are included to evaluate how past movements influence domestic inflation.

ε is the error term, which is assumed to be normally distributed with a constant and mean zero. The sample period includes the full period from January 2020-October 2024, the period of negative policy interest rates from January 2020-January 2024, and the period of significant depreciation (over 140yen/dollar) from April 2023-April 2024.

Although the period following the shift to positive policy interest rates should be included for estimation, it is omitted due to the short length of the sample period.

Equation (A) is also used to examine the impulse response. In particular, the effects of exchange rate and policy rate on inflation should be noted.

This study focuses on the influence of the exchange rate on domestic inflation. Therefore, the inclusion of only one variable, the exchange rate, should be examined. The equation is specified as (B). The case of using GMM (generalized method of moments) is also examined.

$$Price = a + b \text{ Exchange rate}(-1) + \varepsilon \quad (B)$$

Causality is important in studying the relationship between price and exchange rate. It may be important to consider the theory of purchasing power parity. Granger causality is used to test the issue. In addition, this study is divided into three sample periods: The negative/positive interest rate period and large depreciation period. To take this issue into account, the Chow break point test is used.

Finally, wage is included to estimate the deterministic elements of prices. Regarding wage increases for FY2024 (starting April 2024), the labor organization RENGO announced that the average wage increase for 5,284 companies was 5.10%, the highest rate above 5% in 33 years since 1991. On the other hand, the average wage increase rate for 3816 small and medium-sized enterprises (SMEs) with less than 300 employees was 4.45%. This is also the first time in 32 years since 1992, but it is 0.79 percentage points lower than that of large enterprises with 1,000 or more employees. It has been pointed out that the reason for the lower rate among small and medium-sized enterprises compared to large enterprises is that they were not able to fully pass on price increases to their customers. The equation of this effect is regressed as the simple equation (C).

$$Price = a + b \text{ wage}(-1) + \varepsilon \quad (C)$$

According to these methods, empirical analyses are conducted and the results are examined in the following section 4.

4. Empirical results and the interpretations

The regression results of equation (A) are in Table 3, Table 4, and Figure 1. (1), (2), and (3) correspond to the sample periods explained in Section 3. Equations (4) and (5) represent the full sample period.

Table 3: Regression analyses (independent variable: Japanese consumer price)

	(1)	(2)	(3)
Sample period	2020.1-2024.10	2020.1-2024.3	2023.6-2024.10
C	86.9803*** (39.6880)	86.3167*** (39.6502)	96.5259*** (15.7159)
Industrial production	-0.0157 (-1.0527)	-0.0202 (-1.3428)	0.0029 (0.1138)
Industrial production(-1)	-0.0160 (-1.0780)	-0.0182 (-1.2077)	0.0052 (0.2282)
Exchange rate	0.0508 (1.4492)	0.0233 (0.5312)	0.0296 (0.8206)
Exchange rate(-1)	0.1051*** (2.9201)	0.1390*** (3.2515)	0.0369 (0.9897)
Policy interest rate	1.9608		1.8879

	(0.5391)		(0.6731)
Policy interest rate(-1)	5.4553		5.0040*
	(1.4311)		(1.8277)
Adjusted R-squared	0.9362	0.9081	0.8335
S.E. of regression	0.8373	0.8280	0.5081
Sum squared resid	35.0615	30.8563	2.5816
Log likelihood	-67.0300	-58.8798	-8.1014
F-statistic	138.0572	122.0703	14.3579
Prob(F-statistic)	0.0000	0.0000	0.0002
Akaike info criterion	2.5975	2.5551	1.7766
Schwarz criterion	2.8484	2.7463	2.1197
	2.6950	2.6280	1.8107
Hannan-Quinn criterion			
Durbin-Watson stat	0.3599	0.3732	0.6386

Note: ***, **, and * are significant at 1, 5, and 10% respectively. Parentheses are t-statistic. From 2020.1 to 2024.3, policy interest rate was same.

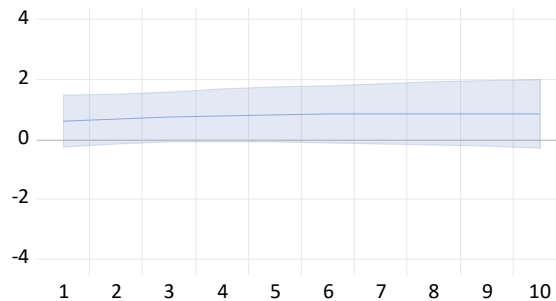
Table 4: Regression analyses

	(4)	(5)
Sample period	2020.1-2024.10	2020.1-2024.10
Variable	Consumer price	Exchange rate
Consumer price(-1)	0.8865***	0.4478
	(20.2982)	(0.8666)
Industrial production(-1)	0.0058	-0.023157
	(1.1495)	(-0.3846)
Exchange rate(-1)	0.023692***	0.9371***
	(3.3929)	(11.3444)
Policy interest rate(-1)	0.8695	-9.2618
	(1.5222)	(-1.3705)
C	8.2837**	-35.6258
	(2.1480)	(-0.7808)
Adj. R-squared	0.9927	0.9662
Sum sq. resids	4.1538	581.3857
S.E. equation	0.2826	3.3437
F-statistic	1914.6160	401.8141
Log likelihood	-6.2373	-147.0668
Akaike AIC	0.3942	5.3356
Schwarz SC	0.5735	5.5148
Mean dependent	103.0123	127.4171
S.D. dependent	3.3164	18.2009

Note: ***, **, and * are significant at 1, 5, and 10% respectively. Parentheses are t-statistic. From 2020.1 to 2024.3, policy interest rate was same.

Response to Cholesky One S.D. (d.f. adjusted) Innovations
95% CI using analytic asymptotic S.E.s

Response of EXCHANGERATEPERUSDOLLAR to CONSUMERPRICEINDEXJAPAN Innovation



Response of POLICYINTERESTRATE to CONSUMERPRICEINDEXJAPAN Innovation

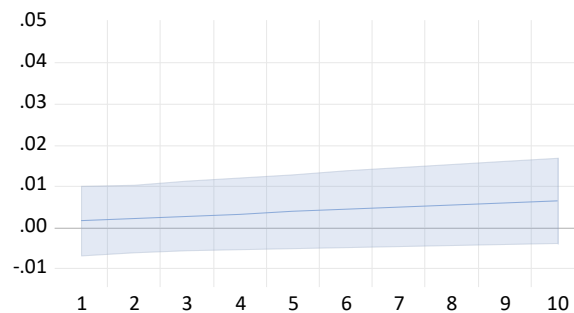


Figure 1: Impulse reaction

Most of the results are as expected. The exchange rate (with a one-month time lag) has significant influence on prices in Japan. Depreciation significantly impacts prices respectively. It is interesting to note that most of the coefficients of the policy interest rate are positive. There is a possibility that raising the policy interest rate may be seen as a 'positive sign' of the exit from deflation. Owing to the Impulse response, the effects persist for a long time. When implementing certain policies, this issue should be taken into account.

The regression results for equation (B) are shown in Table 5. The equations are (6) and (7). Both estimated equations yield expected results.

Table 5: Regression analyses

	(6)	(7)
Sample period	2020.1-2024.10	2020.1-2024.10
Method	Ordinary Least Squared	GMM
C	80.9233*** (83.4242)	80.9064*** (66.3688)
Exchange rate(-1)	0.1743*** (22.9988)	0.1751*** (16.2661)
Adjusted R-squared	0.9041	0.9033
S.E. of regression	1.0270	1.0311
Sum squared resid	58.0115	58.4846
Log likelihood	-81.3808	
F(J)-statistic	528.9473	4.5849
Prob(F(J)-statistic)	0.0000	0.0322
Akaike info criterion	2.9256	
Schwarz criterion	2.9973	
Hannan-Quinn criter.	2.9535	
Durbin-Watson stat	0.3120	0.3119

Note: ***, **, and * are significant at 1, 5, and 10% respectively. Instrumental variables are industrial production and policy interest rate for GMM. Parentheses are t-statistic. From 2020.1 to 2024.3, policy interest rate was same.

The results are robust, showing that the depreciation of the yen promotes inflation. The causality test between the exchange rate and prices is conducted and the results are shown in Table 6.

Table 6: Granger causality test

Null hypothesis	F-statistic	Prob.
Exchange rate does not cause Granger consumer price.	11.8062	0.0011
Consumer price does not cause Granger exchange rate.	0.07059	0.7915

The results are clear. The depreciation of the yen promotes inflation. No inverse relationship can be found. Table 6 presents the results of the break point test. In Japan, by the middle of March 2024, a negative policy interest rate had been in effect. Also, from 2020 to May 2023, the monthly average exchange rate remained lower than 140yen per US dollar. After that, the yen depreciates sharply. The two points are used for estimation. The Null Hypothesis assumes no breaks at the specified breakpoints. The results are shown in Table 7.

Table 7: Chow Breakpoint test

F-statistic	17.89158
Prob.F	0.0000
Log likelihood ratio	50.20098
Wald Statistic	71.56631

The results are clear. Breaking points exist for both periods.

Finally, the effect of wage on inflation is examined. The results are presented in Table 8 and Table 9. The estimated equations are (8) and (9). The causality test is performed only on equation (8) due to limited sample size.

Table 8: Regression analyses

	(8)	(9)
Sample period	2020.1-2024.10	2023.4-2024.10
C	101.8077*** (67.9016)	106.9482*** (94.0245)
Wage(-1)	0.0117 (0.8405)	0.0015 (0.1489)
Adjusted R-squared	-0.0052	-0.0574
S.E. of regression	3.3251	1.4103
Sum squared resid	608.1103	33.8137
Log likelihood	-148.3477	-32.4359
F-statistic	0.7064	0.0221
Prob(F-statistic)	0.4042	0.8833
Akaike info criterion	5.2753	3.6248
Schwarz criterion	5.3470	3.7242
Hannan-Quinn criter.	5.3032	3.6416
Durbin-Watson stat	0.0298	0.0747

Note: ***, **, and * are significant at 1, 5, and 10% respectively.

Table 9: Granger causality test

Null hypothesis	F-statistic	Prob.
Wage does not cause Granger causality consumer price.	4.79034	0.0330
Consumer does not cause Granger causality wage.	0.35402	0.5543

The coefficients are positive as expected, but they are not significant. The results of the Granger causality test also have the expected signs, but equation (8) does not have the expected results.

Finally, the spread of the new coronavirus has had a major impact on Japan. In Japan, which has a high ratio of exports to imports, the supply shortages all over the world resulting from this pandemic led to inflation. The increase in policy interest rates to control inflation in various countries led to a relative decline in the value of the yen, which in turn boosted the earnings of large corporations and other large firms, increased external demand, and led to higher employment and wages, while at the same time causing import prices, including utility costs, to rise. A shortage of labor due to a shrinking population also contributed to higher wages and prices. Consumers eventually became more willing to accept higher prices, and firms began to pass the higher prices on to consumers.

5. Conclusion

This study has examined the deterministic elements of the recent price increases in Japan. Empirical analyses show that the depreciation of the yen led to higher prices in Japan, but no significant relationship was found between prices and the industrial production index, nor between prices and the policy interest rate. In addition, there was no evidence that wage increases caused price increases. Most of the results are expected and similar to other excellent studies on these topics. The results appear to be robust. However, the relationship between inflation and wages is not as clear as expected. One reason may be the lack of data, but there is some room for further study.

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The Mediating Role of Brand Awareness in Social Media Marketing's Impact on Brand Image

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Abstract

Instagram is one of the most fashionable social media platforms for business promotion. As one of the coffee shops, Kopitagram also utilizes this platform to make people aware and have an image on their minds in the competitive market to be its consumers. Consequently, this research aims to prove three things. The first is the influence of social media marketing (SMM) on brand awareness (BA) and image (BI). The second is the impact of BA and BI. The third is the mediating effect of BA on the association between SMM and BI. Taking 203 customers of Kopitagram in Bandung as the sample, using a purposive sampling method and survey technique, this study analyzes their responses based on a covariance-based structural equation model to examine four hypotheses proposed with related statistical features. Finally, this study concludes that social media marketing effectively elevates the brand awareness and image of the consumers. Furthermore, BA can enhance BI. Finally, the mediating effect of BA is proven. This situation can increase revenue and profits for the related coffee shop.

Keywords: Brand Awareness, Brand Image, Social Media Marketing

1. Introduction

The culinary business has become the pillar of the Indonesian creative industry. Statistical Central Agency records that this sector contributed 34% of the gross domestic product in 2023. Additionally, this culinary business has a high opportunity because of the prominent market and potential profits (Purwanto & Pancawati, 2024). As one of the business types, a coffee shop functions to sell foods and beverages. Besides, it provides a place for relaxing, working, and networking (Ferreira et al., 2021), preferred by the millennial generation in the United States (Halff, 2016) and Generation Y and Z in Indonesia (Poerwanto, 2019).

In Bandung City, these coffee shops are utilized by higher-education students to drink coffee while doing their tasks from lecturers (Hanifah, 2024). Based on One Indonesian Data (2021), they have existed in this city since 2016, totaling 14 units, and this number in 2017 was still the same. For 2018 and 2019, the number was 41. Then, this number became 50 and 99 units in 2020 and 2021. According to Baye and Price (2022), the more companies in the same business sector, the more competitive the market is.

One of the strategies to promote the coffee shop is through social media (Getaruelas, 2019; Grossman &

Rachamim, 2024; Park & Namkung, 2022), such as Instagram (Getaruelas, 2019; Park & Namkung, 2022; Syehabuddin et al., 2022), Facebook (Getaruelas, 2019; Ibrahim et al., 2021; Syehabuddin et al., 2022), Twitter (Arhas et al., 2022; Getaruelas, 2019; Syehabuddin et al., 2022), TikTok (Sekarwangi et al., 2023), and YouTube (Getaruelas, 2019). Specifically, Kopitagram, one of the coffee shops in Bandung, utilizes Instagram (Purwanti, 2024) to promote Asian foods and beverages, including Indonesian and European ones (Permana & Hasbi, 2023). Instagram utilization can elevate its brand awareness and image among the competition with other coffee shops (Park & Namkung, 2022).

Some studies attempt to relate social media marketing to brand awareness (Ayuningtyas & Sijabat, 2022; Bilgin, 2018; Faisal & Ekawanto, 2022; Lim et al., 2024; Malarvizhi et al., 2022; Park & Namkung, 2022; Purwianti & Fionna, 2023; Salsabillah et al., 2024). Unfortunately, their outcome is contradictory. For instance, Bilgin (2018), Faisal and Ekawanto (2022), Malarvizhi et al. (2022), Park and Namkung (2022), Purwianti and Fionna (2023), Lim et al. (2024), Salsabillah et al. (2024) demonstrate a positive tendency. However, Ayuningtyas and Sijabat (2022), Malarvizhi et al. (2022), and Lim et al. (2024) document a pointless propensity.

Equally, some investigations try associating social media marketing with brand image (Bilgin, 2018; Faisal & Ekawanto, 2022; Hidayatullah et al., 2021; Malarvizhi et al., 2022; Park & Namkung, 2022; Salsabillah et al., 2024; Yanti & Muzammil, 2023). Regrettably, their outcome is opposing. For example, Bilgin (2018), Faisal and Ekawanto (2022), Park and Namkung (2022), Malarvizhi et al. (2022), Yanti and Muzammil (2023), and Salabillah et al. (2024) show a positive tendency. Unfortunately, Hidayatullah et al. (2021) and Malarvizhi et al. (2022) exhibit a meaningless inclination.

Although demonstrating a positive relationship between brand awareness and image, this related research is few, such as those conducted by Bilgin (2018) and Salsabillah et al. (2024). A similar situation happens with the studies proving brand awareness to mediate the association between SMM and brand image, like Bilgin (2018) and Salsabillah et al. (2024).

Based on these inconsistent proofs of the relationship of social media marketing with brand awareness (BA) and image (BI), the infrequent tendency of BA toward BI, and the rare studies proving the mediating effect of BA on the impact of SMM on BI, this study aims to test these relationships based on the perspective of Kopitagram customers in Bandung City. In this city, according to a Google Map, Kopitagram is on Cianjur Street No.3, Kacapiring Sub-District, Batununggal District. Using consumers of coffee shops in this investigation differs from Bilgin (2018), employing the customers of the top five brands; Faisal and Ekawanto (2022) and Ayuningtyas and Sijabat (2022), studying the customers of entrepreneurial products; Hidayatullah et al. (2021), learning about the tourists purchasing mementos; Purwianti and Fionna (2023) investigating the shoppers of fashion goods; Yanti and Muzammil (2023) with the customers of skincare; Malarvizhi et al. (2022), employing the users of portable tech gadgets; Lim et al. (2024) and Salabillah et al. (2024), surveying cosmetics customers.

Additionally, this study uses the structural equation model (SEM) based on covariance as Bilgin (2018), Faisal and Ekawanto (2022) and Park and Namkung (2022) utilize, differing from Hidayatullah et al. (2021) and Lim et al. (2024) employing the regression model, Ayuningtyas and Sijabat (2022), Malarvizhi et al. (2022), Purwianti and Fionna (2023), Yanti and Muzammil (2023), and Salsabillah et al. (2024) applying variance-based SEM. Indeed, this study is relevant for coffee shop owners or managers using social media to make customers aware of their brands and have a strong image in the competitive market by innovating their goods and services.

2. Literature Review and Hypothesis Development

Social media is the device for the marketing strategy utilizing the online platform to interact with consumers directly to enlarge the brand radius and awareness (Dwivedi et al., 2021). In their study, Malarvizhi et al. (2022) utilize five dimensions of social media marketing, i.e., entertainment (ENT), interactivity (INT), trendiness (TREND), customization (CUST), and electronic word of mouth (E-WOM) to be associated with brand awareness. As a result, ENT, TREND, CUST, and E-WOM positively affect BA, but INT does not. Using the exact dimensions, Lim et al. (2024) demonstrate that CUST, INT, and E-WOM positively influence BA.

Unfortunately, ENT and TREND do not. Through their investigation, Faisal and Ekawanto (2022), Park and Namkung (2022), Purwianti and Fionna (2023), and Salsabillah et al. (2024) demonstrate that marketing through social media marketing can elevate the brand awareness of the consumers. Based on this confirmation, the first hypothesis is like this:

H₁: The relationship between social media marketing and brand awareness is positive.

In their study, Malarvizhi et al. (2022) utilize five dimensions of social media marketing, i.e., entertainment (ENT), interactivity (INT), trendiness (TREND), customization (CUST), and electronic word of mouth (E-WOM) to be associated with brand image. As a result, TREND, CUST, and E-WOM positively affect BA, but ENT and INT do not. Through their investigation, Faisal and Ekawanto (2022) and Park and Namkung (2022) reveal that marketing through social media positively creates the brand image. Similarly, Yanti and Muzammil (2023) and Salabillah et al. (2024) affirm that using social media with engaging content will make the customer always remember the brand. Based on this confirmation, the second hypothesis is like this.

H₂: The relationship between social media marketing and brand image is positive.

Brand awareness is the salient reflection of the brand in the customer's mind and has six phases: (1) Consumers recognize the brand, (2) they can recall it, (3) make the brand in their top of mind, (4) mention the brand when asked by others, (5) understand what the brand is for, and (6) have the opinion (Aaker, 1996). In their study, Bilgin (2018) and Salsabillah et al. (2024) demonstrate that brand awareness positively affects brand image. Also, they prove that brand awareness can mediate the association between social media marketing and BI. Based on this evidence, this study proposes the third and fourth hypotheses like this:

H₃: The relationship between brand awareness and image is positive.

H₄: Brand awareness mediates the association between social media marketing and brand image.

3. Research Methods

This investigation has three variables. The first is social media marketing, which acts as the exogenous, where its items are from Park and Namkung (2022). The second and third are brand awareness and image, and their indicators come from Park and Namkung (2022). Furthermore, the details are in Table 1.

Table 1: The indicators of social media marketing, brand awareness, and brand image

Variable	Indicators
Social Media Marketing	<ul style="list-style-type: none"> - Through Instagram, I can communicate with other customers (SCM1). - Through Instagram, It is effortless for me to communicate with other customers (SCM2). - The Instagram content of this coffee shop makes me interested (SCM3). - I enjoy watching the Instagram of this coffee shop (SCM4). - The Instagram of this coffee shop provides customized information (SCM5). - The Instagram of this coffee shop provides customized service (SCM6). - The up-to-date Instagram content of this coffee shop exists (SCM7). - The information shared through Instagram is fashionable (SCM8).
Brand Awareness	<ul style="list-style-type: none"> - I have always remembered Kopitagram (BA1). - I know the features of Kopitagram (BA2). - I am familiar with the products linked to Kopitagram (BA3).
Brand Image	<ul style="list-style-type: none"> - The Kopitagram prioritizes me as the customer (BI1). - The Kopitagram prioritizes high-quality products (BI2). - Unlike others, Kopitagram can create a unique brand image (BI3).

Source: Park and Namkung (2022)

This study uses purposive sampling by setting some criteria when taking the samples, as Hartono (2014) explains. The criteria are as follows. Firstly, customers must domicile in Bandung. Secondly, they access Kopitagram's Instagram account before buying the products. Finally, they must purchase Kopitagram-related products for at least three months. Based on these criteria, this study uses the survey to collect the responses with a five-point Likert scale, as Sugiyono (2022) explains. For theoretical verification, the samples collected are at least 200 (Ghozali, 2021b; Mariana et al., 2024).

Because of the survey, validity and reliability examination is needed (Mariana et al., 2021). Confirmatory factor analysis is utilized when testing validity by comparing the loading factor (LF) with 0.5. When LF exceeds 0.5, a valid response occurs (Ghozali, 2017). Composite reliability and Cronbach Alpha are employed to detect reliable responses by comparing them with 0.7. A reliable response happens if they are above 0.7 (Junaidi, 2021).

Following Park and Namkung (2022), this study uses covariance-based SEM with the AMOS program to analyze the data, where the model is in the first and second equations:

$$BA = \gamma_1 SCM + \xi_1 \text{ (Equation 1)}$$

$$BI = \gamma_2 SCM + \beta_1 BA + \xi_2 \text{ (Equation 2)}$$

When using the CBSEM, some measures exist to detect the goodness of fit: Chi-square divided by degree of freedom (CMIN/DF) (Dash & Paul, 2021), root mean square residual (RMSR) (Junaidi, 2021), parsimonious goodness of fit indexes (PGFI), parsimonious normed and comparative fit index (PNFI and PCFI) (Dash & Paul, 2021), where the cut-off points exist in Table 2.

Table 2: The cut-off point of some goodness of fit model measures

Measure	Cut-off Point	Source
CMIN/DF	Below 3 or 5	Dash and Paul (2021)
RMSR	Lower than 0.05	Junaidi (2021)
PGFI	Higher than 0.5	Dash and Paul (2021)
PNFI	Higher than 0.5	
PCFI	Higher than 0.5	

Finally, the first, second, third hypotheses are examined by comparing the critical ratio probability with a 5% significance level. Each hypothesis is acceptable if the probability is lower than 5% (Junaidi, 2021). For the fourth hypothesis, this study uses Sobel test, as suggested by Ghozali (2021a), by comparing the probability (2-tailed) of Z-statistic for Sobel with 5%. The mediating effect exist if this value is below 5% (Sahabuddin & Hadianto, 2023).

4. Results

4.1. Respondent Features

Based on a survey in July 2024, this study obtained 203 respondents, 100% all of whom meet the criteria, namely giving consent to fill out the questionnaire, having seen the Instagram account of Kopitagram in the past two years, and residing in Bandung. Table 3 displays the features of respondents buying coffee and its associated products in Kopitagram at least three times a month:

- The foremost respondents are male (51.23%), from 20 to 29 (81.28%), and undergraduate students (75.37%) based on gender, age, and current schooling level. Based on the occupation, the most is a private employee (45.32%).
- At the minimum, the respondents are female (48.77%), from 40 to 49 (2.56%), and senior high school (7.39%) based on gender, age, and current schooling level. By mentioning the occupation, the influencer (0.49%) and senior high school student (0.49%) are the least.

Table 3: The features of the respondents

Feature	Description	Frequency	Portion
Gender	Male	104	51.23%
	Female	99	48.77%
Age	Below 20	13	6.40%
	From 20 to 29	165	81.28%
	From 30 to 39	19	9.36%
	From 40 to 49	6	2.96%
Current schooling level	Senior high school	15	7.39%
	Vocational degree	36	17.73%

	Undergraduate degree	153	75.37%
Occupation	Public civil servant	3	1.48%
	Freelance	82	40.39%
	Housewife	6	2.96%
	Influencer	1	0.49%
	Private employee	92	45.32%
	Higher education student	3	1.48%
	Senior high school student	1	0.49%
	Tycoon	15	7.39%

4.2. The instrumental testing results

In the first step of confirmatory factor analysis (CFA), the response to IMA1 is inaccurate because their loading factor is lower than 0.5: 0.414. Thus, this indicator is removed. After that, the CFA is performed again; however, the loading factor of IMA2 is still lower than 0.5: 0.448; hence, IMA2 is deleted. Then, CFA is carried out again, and the result is in Table 4. In the fourth table, all loading factors exceed 0.5: 0.557, 0.633, 0.642, 0.613, 0.662, 0.610, 0.804, 0.789, 0.633, 0.654, 0.669, and 0.673 for SMM3, SMM4, SMM5, SMM6, SMM7, SMM8, BA1, BA2, BA4, BI1, BI2, and BI3. Fortunately, the accurate response is consistent, reflected by composite reliability and Cronbach Alpha above 0.7 for SMM: 0.789 and 0.793, BA: 0.788 and 0.781, and BI: 0.704 and 0.704.

Table 4: The loading factor, composite reliability, and Cronbach Alpha

Variable	Indicator	Loading factor	Composite Reliability	Cronbach Alpha
Social Media Marketing	SMM3	0.557	0.789	0.793
	SMM4	0.633		
	SMM5	0.642		
	SMM6	0.613		
	SMM7	0.662		
	SMM8	0.610		
Brand Awareness	BA1	0.804	0.788	0.781
	BA2	0.789		
	BA3	0.633		
Brand Image	BI1	0.654	0.704	0.704
	BI2	0.669		
	BI3	0.673		

4.3. The goodness of fit model detection results

Table 5 exhibits the acceptable result of the goodness of fit model, as demonstrated by CMIN/DF lower than 3 (Dash & Paul, 2021): 2.414 and RMSR below 0.05 (Junaidi, 2021): 0.023 and PGFI, PNFI, and PCFI higher than 0.5 (Dash & Paul, 2021): 0.595, 0.659, and 0.701.

Table 5: The result detection of CMIN/DF, RMSR, PGFI, and PCFI

Measure	Result
CMIN/DF	2.414
RMSR	0.023
PGFI	0.595
PNFI	0.659
PCFI	0.701

4.4. The model estimation results

Table 6 demonstrates the estimation results of CBSEM, i.e., the probability of critical ratio for SMM → BA, SMM → BI, BA → BI is 0.000, 0.000, and 0.000 with a positive coefficient. Because these values are less than 5%, the first, second, and third hypotheses are recognizable.

Table 6: The result of the CBSEM

Hypothesis	Causal relationship	Beta	Standard Error	Critical Ratio	Probability
One	SMM → BA	0.662	0.150	4.420	0.000
Two	SMM → BI	0.652	0.131	4.975	0.000
Three	BA → BI	0.317	0.070	4.539	0.000

Table 7 exhibits the Sobel testing result with probability (2-tailed) of 0.003. Because this value is lower than 5%, brand awareness can mediate the influence of social media marketing and brand image.

Table 7: The mediating testing result of brand awareness

Hypothesis	Causal relationship	Indirect effect	Standard error of Sobel	Z-statistic	Probability (2-tailed)
Four	SMM → BA → BI	0.210	0.067	3.122	0.003

5. Discussion

In this research, the first hypothesis is confirmed well. It indicates that social media marketing can effectively increase consumers' mindfulness of the brand. According to Kotler et al. (2022), this mindfulness enables customers to easily recognize the company's goods and services; hence, it can strengthen the relationship between consumers and the brand. Therefore, this study aligns with Park and Namkung (2022), using coffee shop customers as their samples. Although using different consumers as their objects, this study confirms Faisal and Ekawanto (2022), investigating the 311 customers of entrepreneurial products, Purwianti and Fionna (2023), after researching 360 shoppers of fashions in Batam City, and Salsabillah et al. (2024) after learning about 258 cosmetic consumers from Bandung, Jakarta, Semarang, Surabaya, Yogyakarta, and other cities.

Also, the second hypothesis is affirmed well. It indicates that social media marketing can make the customer always remember the brand in their mind. Brand image builds the customers' perspective on quality, satisfaction, and value (Raji et al., 2019). Therefore, this research aligns with Faisal and Ekawanto (2022) and Park and Namkung (2022), who reveal that the more aggressively the businesses utilize social media, the more aggressively the customers have the brand image. Similarly, Yanti and Muzammil (2023) and Salabillah et al. (2024) affirm that social media marketing can shape the brand image.

Additionally, the third hypothesis is acknowledged well. Consumers with the top level of brand mindfulness have a specific perspective that explains the brand benefits well. Indeed, they have a positive image. Therefore, this study confirms Bilgin (2018) and Salsabillah et al. (2024), revealing a positive association between brand awareness and image based on the viewpoint of 547 followers of the top five brands in Turkey and 258 customers of cosmetics in Indonesia, respectively.

Finally, the fourth hypothesis is well received: Brand awareness can mediate the effect of social media marketing on brand image. This circumstance means that marketing via social media, especially Instagram, effectively makes the customers mindful of the brand, leading to elevating its image. Thus, this evidence supports Bilgin (2018) and Salsabillah et al. (2024), proving the partial mediation effect of this brand awareness.

6. Conclusion

This study aims to prove two relationships. The first is the association between social media marketing (SMM) and brand awareness (BA). The second is the association between SMM and brand image (BI). Furthermore, this study applies 203 Kopitagram users in Bandung as the sample to answer this purpose. After statistically running and examining data, this study demonstrates a positive propensity of SMM toward BA and BI, indicating the effectiveness of SMM in enhancing BA and BI of the customers. Besides, BA mediates the impact of SMM and BI. By mentioning this evidence, this study suggests that Kopitagram facilitates social interaction among

customers through its social media marketing presence. Besides, Kopitgram should provide its Instagram with updated, informative, and beneficial content, such as special prices at special events, discounts, and live music. Academically, this research toughens the positive inclination of SMM toward BA and BI with large samples. However, there are still restrictions, such as the consequences of BA and BI. Thus, the following scholars should add brand trust, loyalty, and purchase intention and decision by keeping SMM as the exogenous variable in their model.

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Shaping Agribusiness in the New Digital Era: Bridging Tradition with Innovation, for the Agribusinesses in Thessaly Greece

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Abstract

Food industry is one of the most dynamic industries and always have been crucial for the economy, employment, culture and society. Companies operating in that sector are considered as innovators, because they tend to apply new technologies in their operation and process, but on the other hand, are considered as ‘tradition keepers’, because for them terms like ‘tradition’ and ‘traditional’, often tend to be a strategic option that brings or/and maintain competitive advantage. For that reason, integrating digital technologies and innovative solutions into agribusiness, marks a crucial evolution in the food sector within the new economy. That is the main research question of the present study, in order to examine the existence of a link between tradition and innovation in agribusiness, focusing on sustainability and strategic management. The methodology applied in this study, is based on focus groups, involving thirty agribusinesses from Thessaly, Greece, in different activities within the food market and aims to highlight the challenges and opportunities that these businesses face. Furthermore, the present research, offers insights into the strategic decisions and management applied by the agribusinesses in order to enhance innovation and sustainability. Finally, the research contributes to understand of how local unique characteristics and traditions can play a fundamental role in the formation of an innovative, resilient and sustainable agricultural sector, harmonized with global challenges.

Keywords: Agribusiness, Management, Innovation, Tradition, Development, Sustainability, Agri-Food Industry, Agri-Food Management

1. Introduction

1.1 Agri-Food industry

Food industry and agribusiness are considered as pillars of the economy for countries and society, influencing most of the sectors with their contribution to employment, trade and sustainable development. The European Commission (2007), defines the agri-food sector as the combination of the primary sector with the food industry. Agriculture and agri - food contribute about 4% of the world’s GDP globally (Gyamati, 2024). While Bombaj F., (2018), argues that 'food markets are characterized by non-linear, unregulated and heterogeneous self-organized food value chains'. According to Tell et al., (2016) agribusinesses are exposed to increasing competition and are in need of new ideas and approaches in order to remain competitive. For that reason, European Commission (2018),

defines the agri-food market as competitive and dynamic. Also, Goulas (2024), adds that rural communities and farmers, often face unique challenges, such as limited access to markets and global competition. The agribusinesses are also vulnerable to externalities, like energy crisis, climate change, consumer preferences. Furthermore, the agribusiness industry faces many challenges such as intense regulatory standards, time-sensitive supply chain demands, hygiene requirements, labor supply and cost constraints, and in most of the cases, pricing and margin pressures from highly elastic consumer demand (www.morrisanderson.com). While, the food industry holds a central position in policy debates around climate change, sustainability, food crises, hunger and food supply, still remains one of the main topics of the global news (Hansen, 2024; Sagit B., - S., and Erez B., 2024). Moreover, companies operating in the global and highly competitive market, need to develop unique capabilities and products, to gain competitive advantage, develop human resources and technology and try to be innovative (Kusnadar et. al., 2023). On the other hand, other academics, claim that agribusiness can develop innovation strategies based on tradition in the wake of sustainability (Palmi and Lezzi, 2020). And that is the main discourse in the recent years for the companies, to find the balance point between innovation, tradition and sustainability. Sustainability and the concept of sustainable development are related to industrial and agricultural production, which is integrated into environmental management (Schoor et al., 2023). Rey et. al., (2023), on their study, explore how agribusinesses can balance tradition and innovation to improve their operational, financial and social performance. In other words, the agribusiness sector, is crucial for facing global challenges and plays an important role in applying innovative solutions to its business process. In the following sectors tradition and innovation in the agribusiness sector will be presented.

1.2 Tradition and innovation as pillars for the modern agribusiness

Tradition is one of the most important pillars in agribusiness, shaping the identity, sustainability and competitiveness of businesses. Many academics tried to describe tradition, one commonly used is the term ‘terroir’ combining natural and human factors, which characterize the geographical area (Riviezzo et. al., 2017). Traditional practices and values are closely linked to the way of life of local communities, the cultivation of the land and the production of products that maintain their authenticity and uniqueness. Local food markets typically involve small farmers, heterogeneous products, and short supply chains in which farmers also perform marketing functions, including storage, packaging, transportation, distribution and advertising (Martinez et al., 2010). That kinds of products, that are characterized as traditional, are at the center of consumer’s attention globally (Goulas, 2022). According to Gocci et. al. (2020), ‘attempts to define agri-food products are characterized by a paradoxical duality: on the one hand they must remain fixed in time, and on the other hand they can change their characteristics’. Indeed, despite the long-term global economic crisis, there is a growing interest in local productions and in the formality and provenance of food, especially by the middle and upper classes in developed countries, but also by some urban middle classes in emerging and developing countries (Sanz – Canada J., and Muchnik J., 2016). That demand from consumers globally for traditional flavors, traditional products and heritage, led many academics to support the idea of ‘tradition’ as a unique asset for competitiveness for the business (Goulas, 2021). Tradition in agribusiness is totally linked to the land and its history. Cultivation methods, harvesting techniques and processing are based on practices passed down from generation to generation. These traditions embody the wisdom of centuries, adapted to the local environment, and ensure high-quality products. There are many typical examples from cases around the world, like the dairy products, that became symbols of cultural heritage and synonyms for sustainability. And that is the unique asset those agri-businesses carry in the market, the tradition that passes from generation to generation and all the knowledge and culture that passes in the final product and makes its acquisition a unique experience.

On the other hand, recently, many scholars studied innovation in agribusiness. For instance, Nuvolari and Tartari, (2014), underlined the importance of innovation in agriculture as fundamental drivers for economic and social change. Kadriu et. al., (2019), consider innovation as a factor of economic development. Therefore, there is a prime importance to imbuing business acumen into agricultural production, through entrepreneurial activities, thereby making use of innovation to achieve better profit from farming (Banerjee et al., 2024). It is understood that, innovation plays a pivotal role in the process of economic and social transformation. The reasons are many and relate both to the globalized nature of the economy, which requires improved competitiveness, and to the need to address the social challenges that the economic crisis has created. The integration of innovation in the

agricultural sector is not only a tool for improving productivity, but also a means for enhancing competitiveness and addressing social and environmental problems. That hypothesis is supported by many academics, which claim that technological changes usually convey to industries, like agribusiness industry, innovative transformations (Tardelli et al., 2023; Drath and Horch, 2014; Gauss et al., 2019). Agribusiness can increase results by managing strategy, innovation, operations, and other competitive priorities (Sellitto and Hermann, 2016). What is needed is a shift in the production process and its modernization, the production of diversified products, and the promotion of agricultural products. Many European countries have been moving in this direction for years, looking to the future and investing in new technologies. There are many examples from international reality and experience. Perhaps the most typical example is the Netherlands, which has been described as the great modern agricultural miracle, managing to be the second largest food exporter on the planet, after the United States of America. Italy, with precision agriculture and the use of modern technologies, such as satellite mapping of crops, sensors and GPS systems for various agricultural machinery that allows farmers to improve management and save costs. Even Denmark has created an international center for innovation and knowledge exchange in the fields of agriculture and food. As is known, Denmark, small in area and population, already produces enough food to feed a population six times larger than its own. Even European Commission (2023) claims that 'research and innovation in the area of food and food-related matters can lead to the creation of new products and services. The rich cultural diversity and craftsmanship of local food products are highlighted in various documents as a source of local knowledge that needs to be nurtured and expanded. Innovation technologies, knowledge sharing and new agricultural technologies such as precision farming, are all areas that have gained in importance. The issue of training and providing workers in the food sector with new skills is addressed in documents also within the wider framework of enhancing opportunities and skills in the countryside. This can go hand in hand with advice from local universities and locally based experts. Enhancing opportunities and skills in the countryside through broadband connectivity, skilled personnel and research may bring new prospects to food-producing territories'. Investments in research and innovation are an investment in Europe's future (European Commission, 2019).

2. Methodology

Thirty agribusinesses located in the Region of Thessaly Greece and their executives participated in focus group discussions. With the term agribusiness for this study, is referred a company that operate in the various sectors of the agricultural sector, covering the entire value chain, from production to crop processing, distribution, sales and services. Regarding the executives, they were, owners of those agribusinesses, CEOs and executives from the top of the hierarchy participated in those focus groups. The methodology aimed to provide in-depth qualitative insights on how businesses operating in the agro-food industry are facing the new world trends of sustainability, balancing tradition and innovation at the same time.

Those thirty agribusinesses were of various sizes, small and medium-sized companies, all of them based in the wider region of Thessaly Greece. That way of selection guaranteed that a comprehensive representation of the industry was achieved. From each company participated in the focus groups executives, managers, CEOs, on some occasions owners of the businesses, each of them with a key strategic position in their organization. All of the participants, agribusinesses and executives, were willing to share their experiences and add to the topic their valuable information and insights.

Focus groups were conducted from December 2023 to September 2024, approximately over a period of nine months, in various locations in Thessaly, in order to make it more accessible for the participants. Each focus group session lasted approximately two hours and included 6 to 8 participants. Small and solid focus group participation, maintains and cultivates intimacy between the participants. At the beginning of each focus group session, an introductory to new EU policies was made, like Green Deal, Green Transition and Digital Transformation. After that, the discussions were structured on key themes like: Current challenges their organizations are facing, regarding the digital transformation, exploring their perception toward emerging technologies, examining how those agribusinesses balance between traditional methods and innovative solutions, discussing their attitude towards the development of an ecosystem based on collaboration and explore further their opinion about partnerships and government policies. Finally, at every focus groups session, participants were asked to express their vision of the future of their organization and of the sector they are operating. This results in the expression

of many different opinions regarding the issues explored in the present research paper. The main idea of all that structure of every focus group session is to examine with the present study, the existence of a link between tradition and innovation in agribusiness, focusing on sustainability and strategic management.

All focus group sessions were recorded, having participants' consent and additional notes were also taken. In order to analyze the data collected from the focus groups, qualitative descriptive analysis was used. After the data collection, three steps were followed in order to examine, analyze and present the collected data. The first step is to start coding and categorizing the entire data set. The second step is to identify patterns and themes and the third step is to interpret and present the findings.

3. Results

3.1 Agribusinesses profile

The thirty agribusinesses selected for the present research paper very carefully and cover the geographical borders of Region of Thessaly. More precisely the companies selected, are located in the four major cities of Thessaly, Larissa, Volos, Trikala and Karditsa. Some of the thirty selected companies are new in the market, e.g. 2024 as year of establishment or 2023, and some have operated in the market for approximately twenty-five years, e.g. 1998 as year of establishment or 1999 (Table 1). Those thirty companies, have significant presence in the agri-food industry, at local, national and even international levels, for some of them.

Table 1: Agribusinesses participated in the focus group discussion (related to the terms of GDPR, agribusinesses that participated in the study are coded as AB1, AB2, AB3, AB4, , AB30 – AB stands for Agribusiness)

AgriBusiness	year of establishment	Company's size
AB1	2000	small
AB2	2008	small
AB3	2015	small
AB4	2002	medium
AB5	2000	medium
AB6	2020	small
AB7	2016	small
AB8	2022	small
AB9	1998	medium
AB10	2023	small
AB11	2004	medium
AB12	2017	small
AB13	2019	small
AB14	2007	small
AB15	2010	small
AB16	2008	small
AB17	2023	small
AB18	2020	small
AB19	1999	medium
AB20	2010	small
AB21	2019	small
AB22	2006	small
AB23	2001	medium
AB24	2020	small
AB25	2024	small
AB26	2013	medium
AB27	2023	small
AB28	2019	small
AB29	2019	small
AB30	2000	medium

Source: own elaboration

As already mentioned before, the thirty agribusinesses selected for the research, were of various sizes, small and medium size companies, all of them based in the wider region of Thessaly Greece and are operating in the various sectors of the agricultural sector, covering the entire value chain, from production to crop processing, distribution, sales and services. The size classification for the agribusinesses based on the number of employees is shown in Table 2. Some of the executives that participated in the focus groups, claimed that size of a company is a matter of operational years in the market. Also, they claim, especially those from the newest companies, that from 2020 and on, they faced a number of crises, either international (e.g., COVID-19, energy crisis) or local (e.g., floods, rinderpest outbreak in goats and sheep).

Table 2: Company's size

Company's size	number of employees
small	<50
medium	50 - 249
large	>250

Source: own elaboration

Analyzing the size of the companies of the research, it can be told that the majority of those companies are of small and medium size. As small companies are listed even very small family businesses with less than ten employees. The overall analysis of company's size classification is with a total of twenty-two small companies and eight medium companies. Nevertheless, the size of the company, the impact on local society and economy, are undoubtable even for the very small, family agribusinesses operating on the market. They give jobs to members of the local community, they support the local market and they preserve the local tradition. That is quite important and cannot be measured easily.

Yet, another important information of those companies, is that all of them, at a specific time, received funding from EU or from national authorities. This highlights the importance given by the EU and the Hellenic state to the food sector, which is one of the most dynamic sectors worldwide. Also, financing may be a response to the challenges of the industry, such as the need to adapt into the new global market environment, global competitiveness etc.

Also, the executives who participated in the focus group discussions, where mostly men, with women presence at the top class hierarchy of those companies to be the minority. To be more precise totally participated 23 men and 7 women on the present research. It is indicative that the food industry and especially agribusiness is still dominated by men.

3.2 Key themes of focus groups

As already mentioned, the discussions of focus groups were guided by the following key themes:

- The current challenges faced by organizations concerning green and digital transformation.
- Participants' perceptions of emerging technologies.
- The balance between traditional practices and innovative solutions in agribusiness.
- Attitudes toward developing a collaborative ecosystem.
- Opinions on partnerships and government policies.

Each session concluded with participants sharing their vision for the future of their organizations and the broader agribusiness sector. This approach facilitated the collection of diverse perspectives on the issues explored in the research.

The primary objective of this structured approach was to examine the potential link between tradition and innovation in agribusiness, with a focus on sustainability and strategic management. These focus group sessions results are presented in this research paper.

3.3 Challenges in Green and Digital Transformation and on Emerging Technologies

Analysis of the focus groups discussion gave useful insights into the challenges in Green and Digital Transformation for the local agribusiness companies. It is quite crucial to analyze that parameter due to several academics' opinion claiming that the application and use of digital technologies also have negative impacts on organizations (Bednarcikova and Repiska, 2021).

“Using and investing in Green and Digital Transformation is a necessity, we all understand that, but the problem is, for us, small investors, that it costs too much for us to afford it. Can we apply those new technologies and methods in our company, or we will create another burden for our financial security? (AB14)” (The interview was conducted on 20 January 2024).

It is a fact that most of the participants on focus groups discussions claimed that on Green and Digital Transformation, they have insufficient financial resources, in order to decide to invest in them. But this is not the only claim they made.

“For our company is difficult to find workforce in general, imagine when we are talking about that kind of workforce that is needed to be trained in specific technical skills. It is not easy for a young person to leave a bigger city and a bigger company, with more perspectives, and join a small company in the county. Imagine that our accountant is on an outsourced contract and he is based in a city 30 kms away from our base. (AB3)”. (The interview was conducted on 10 February 2024).

Based on the above statements, small agribusinesses, that are located in smaller cities, face difficulties in finding the right workforce, especially when special technological skills are needed. A bigger city, or a city with a University based on, is more easy for the companies located there to find the right workforce.

3.3 Balancing between traditional practices and innovative solutions in agribusiness

On that topic, focus groups discussions revealed that most of the companies have a strong attachment to tradition and traditional methods. Those companies, tend to understand the importance of tradition, especially in terms of identity and quality. They have a crystal clear opinion that brings to their companies, competitive advantage that cannot easily imitated by competitors. On the other hand, they claimed that becoming innovators is a necessity for their sustainability.

“We keep doing our job, in our traditional way, the way our ancestors taught us. That is our identity, our companies dna and we cannot change it or neglect it. But, we realize the global context and the environmental aspect on producing. We are trying with technology, to find ways to do our products, more efficiently, and reduce our environmental impact. We have included new packaging for our products, aiming to reduce the volume of waste. (AB4)”. (The interview was conducted on 2 March 2024).

“Maybe it will sound funny, but for our company, we consider as the best strategic choice we ever take, the decision to expand on e-commerce and e-marketing. Entering the social media as a tool for promotion and marketing of our brand and our products, and start e-advertisement, boosted our recognizability and our products reached younger customers, from new generations, that are more keen into eating healthy, local products. Also, that new customers, are more sensitive regarding the environmental issues, and they are willing to award companies with such orientation, like our company. (AB22)”. (The interview was conducted on 3 February 2024).

3.4 Attitudes toward developing a collaborative ecosystem - Opinions on partnerships and government policies

For that part of the focus group discussion, many representatives emphasized the importance of creating strong alliances and partnerships with other companies in the agribusiness sector. They also, underlined that is crucial for those alliances to be embraced by local government bodies, in order to establish and secure a strong and solid bond for that. They claim that it is the nature of their business, that it is not just another market, but their industry, the agro-industry, is about tradition, culture, quality, biodiversity and preserving nature as well.

“In many cases, collaboration, can solve some of our problems, regarding costs, transport, training for our employees in new technologies etc. Also, that collaboration of our companies, will give us greater power in discussions with government and national and local levels. We will achieve more that way. (AB15)”. (The interview was conducted on 3 February 2024).

“Our industry needs clear and sound policies. But those policies should be drawn from the base and not from top to down. Those policies should fix the unfair trading practices that we are facing. We are trying to be sustainable and produce with less environmental footprint, but at the same time, competition is not facing the same obligations. That is something that should be fixed. (AB11)”.

4. Discussion

Thessaly brings a long tradition in agri - food sector, and the agribusinesses of that region are considered as dynamic. They compete in the global market waving their traditional products. However, that is not enough in the new era, and modern markets, need diversity and innovative approaches. Climate change, globalization and sustainability created a shift in consumer behavior, and modern agribusiness management require a dynamic approach that bridges and brings together tradition with innovation. New, digital technologies have the potential to transform the agribusiness sector in Thessaly. Products from those companies, have the quality to compete in the global market. All that is needed is the right policy mix to bridge those technological gaps with tradition and boost competitiveness of those companies. It is crucial, for those companies to have the chance in training programs, supported by local authorities and local government.

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Social Presence in Live Streaming, Consumer Trust, and Flow Experience: Catalyst of Impulsive Buying

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Abstract

The appearance of e-commerce as a platform to introduce goods and services is one of the tools business people use to achieve their preferred marketing objective. For this reason, e-commerce integrates live streaming into its existing features; therefore, streamers can utilize it well to attract people to watch it. Moreover, this study uses the stimulus-organism-response model to accommodate the consequences of live-streaming creating social presence. After identifying the related variables, this study selects customer trust and flow experience as the outcomes expected to influence impulsive buying. Based on this circumstance, this study aims to prove and analyze the influence of social presence in live-streaming (SPLS) on customer trust (CT) and flow experience (FE) and the impact of CT and FE on impulsive buying (IB) by employing people purchasing goods during live-streaming as population. By utilizing purposive sampling and survey techniques, this study can get 240 respondents. After examining the causal relationship by variance-based structural equation model, this study demonstrates a positive inclination of SPLS towards CT and FE. Additionally, this positive mark is obtainable when investigating the tendency of CT and FE towards IB. By mentioning this fact, the streamer needs to communicate with its viewers; therefore, they trust and enjoy interacting, leading to impulsively buying the offered goods and services.

Keywords: Social Presence in Live Streaming, Customer Trust, Flow Experience, Impulsive Buying

1. Introduction

Impulsive buying is an unplanned purchase without numerous considerations. It is caused by spontaneous desire and emotion (Hausman, 2000). In the offsite context, its factors cover visual merchandising, store atmosphere, and display (Kertiana & Artini, 2019). This action is famous among Generation Y, orienting trend, mode, and instant satisfaction (Faber, 2010). By aligning with technology, *online* marketing appears (Sawarsa et al., 2023); therefore, marketers can promote their goods by live-streaming social media (Rodrigues et al., 2021), for instance, TikTok (Cui et al., 2022; Salsabila & Dewi, 2024; Zhang & Liu, 2021), Facebook, Kuaishou (Cui et al., 2022), Shopee, and Tokopedia (Agatha et al., 2023).

According to Chen and Lin (2018), live streaming enables real-time visual and auditory information transmission. Furthermore, Lee and Chen (2021) explain that this streaming creates a purchasing experience similar to a physical store, allowing consumers to communicate with a streamer and other buyers via live chat, which can provide a

sense of real-life interaction. Therefore, the streamer acting as the host can elevate the number of audience joining the room.

Based on the stimulus-organism-response model, social presence in live-streaming (SPLS) becomes a customer trust determinant, as confirmed by Rashid et al. (2022), Ratnawati and Hanoky (2023), Sawarsa et al. (2023), Thesia and Aruan (2023) and Hoang and Dang (2024). However, this tendency does not always exist; for example, Calysta and Suade (2024) exhibit no association between SPLS and CT. By mentioning the same S-O-R model, SPLS becomes the determinant of flow experience (FE), as affirmed by Rashid et al. (2022), Ratnawati and Hanoky (2023), and Sawarsa et al. (2023), Thesia and Aruan (2023), and Hoang and Dang (2024). Fortunately, consistent results for this relationship appear.

The relationship between customer trust and impulsive buying during live-streaming is also detected by mentioning the same S-O-R model. However, the results of the related investigation are still contrary. Several studies prove a meaningful tendency (Darmawan & Gatheru, 2021; Hoang & Dang, 2024; Salsabila & Dewi, 2024; Sawarsa et al., 2023; X. Sun et al., 2023). Budiarti et al. (2024) demonstrate a meaningless inclination between customer trust and impulsive shopping using the pay-later application. Lastly, the association between flow experience and impulsive buying also happens based on the S-O-R model of Swarsa et al. (2023). Nevertheless, the related research results are still various. In their study, Wu et al. (2020), Cui et al. (2022), Huo et al. (2023), Husada et al. (2023), Sawarsa et al. (2023), and Hoang and Dang (2024) demonstrate that flow experience is the antecedent of impulsive buying but Agatha et al. (2023) exhibit a pointless propensity.

Based on three gaps, this study intends to examine four relationships based on the users of various e-commerce platforms in Bandung, one of the large cities in Indonesia. Indonesia has the potential to become a profitable market for e-commerce development, including live-streaming shopping: Around 83.7% of its population buys the product during live-streaming (Annur, 2022). By investigating these relationships, this study expects to enrich the literature review of consumer behavior in the context of live-streaming.

2. Literature Review and Hypothesis Development

2.1. Stimulus-Organism-Response Model (S-O-R model)

The S-O-R model, developed by Mehrabian and Russell in 1974, is a critical concept in environmental physiology, consumer behavior, organizational culture, and leadership. According to this model, external stimuli come to internal processing, leading to emotional response and decision-making (Hochreiter et al., 2023). According to Xu et al. (2020), the SOR model refers to personal emotion and mental mediates the relationship between input and reaction. In their study, Kirman et al. (2021) demonstrate that socialization through media or friends can shape individual behavior. Therefore, the strong social presence in live-streaming can stimulate consumers to buy goods impulsively.

2.2. The relationship between social presence in live-streaming and customer trust

Social presence in live streaming is communication media to raise human interaction friendliness, warmth, and sensitivity (M. Li et al., 2022). This streaming can affect customers' understanding of the contents of streamers and establish intimate personal relationships, fostering calm and security for the individual and reducing worry and negative perceptions of others (Zhang & Liu, 2021). In their research, Rashid et al. (2022) demonstrate a positive association between social presence in live-streaming and customer trust. Similarly, Ratnawati and Hanoky (2023) and Sawarsa et al. (2023) confirm this propensity. Thesia and Aruan (2023) and Hoang and Dang (2024) affirm this tendency. Based on this information, hypothesis 1a is formulated below.

H_{1A}. The relationship between social presence in live streaming and customer trust is positive.

2.3. The relationship between social presence in live-streaming and flow experience

Besides affecting customer trust, social presence in live streaming (SPLS) positively influences the flow experience (FE). This statement is supported by Dong et al. (2023) using three components of SPLS: (1) coexistence, (2) communication, and (3) emotion to be associated with FE. According to Csikszentmihalyi (1975) cited by Dong et al. (2023), the flow experience occurs when the person is fully engaged in, focused on, and involved in activities at a specific time. Using a single construct of SPLS, Huo et al. (2023), Sawarsa et al. (2023), and Hoang and Dang (2024) demonstrate a positive association between SPLS and FE. Based on this information, hypothesis 1b is formulated below.

H_{1B}. The relationship between social presence in live streaming and flow experience is positive.

2.4. The relationship between consumer trust and impulsive buying

For customers, trust reflects their belief in the promises of streamers related to the products they offer. Furthermore, to implement it, the streamers must understand and meet customer desires by providing extraordinary service (Wongkitrungrueng & Assarut, 2020). The positive online comments from the buyers during live-streaming bring confidence to the other candidates to buy the products (M. Li et al., 2022). In their study, Darmawan and Gatheru (2021), Sawarsa et al. (2023), Hoang and Dang (2024), and Salsabila and Dewi (2024) confirm this explanation by demonstrating a positive association between customer trust and impulsive buying during live-streaming. Similarly, Sun et al. (2023) and Tian et al. (2023) prove this tendency regarding purchasing behavior and intention, respectively. Based on this information, hypothesis 2 is formulated below.

H₂. The relationship between customer trust and impulsive buying is positive.

2.5. The relationship between flow experience and impulsive buying

Flow experience is the situation created by the streamers to show their creativity and result in more exciting content during live streaming (Huang & Li, 2022). Flow experience, according to Wu and Li (2018), acts as a catalyst for impulsive buying. It happens because customers enjoy live-streaming (Sağtaş, 2023) and are involved in discussions on live chat (Dong et al., 2023). In their investigation, Wu et al. (2020), Cui et al. (2022), Huo et al. (2023), Husada et al. (2023), Sawarsa et al. (2023), and Hoang and Dang (2024) prove this argument by demonstrating a positive propensity of flow experience toward impulsive buying. Based on this information, hypothesis 3 is formulated below.

H₃. The relationship between flow experience and impulsive buying is positive.

2.6. Research Model

By mentioning hypotheses 1A, 1B, 2, and 3, the research model is obtainable in Figure 1. Because of social presence in live streaming, customer trust, flow experience, and impulsive buying behavior are unobservable variables; the oval is utilized by mentioning Ghozali (2021b).

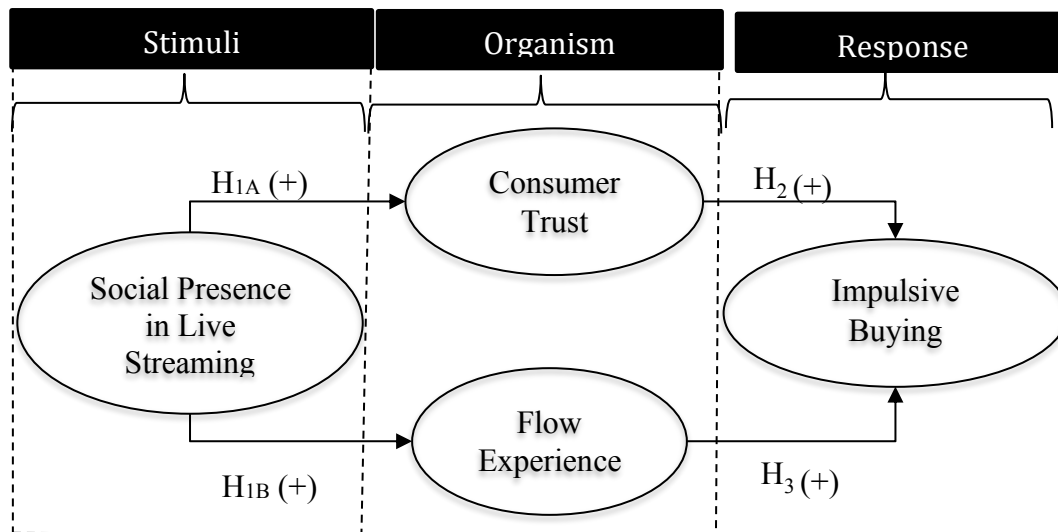


Figure 1: Research Model

Source: The research results in Sections 2.2, 2.3, 2.4, and 2.5

3. Methods

This study design is quantitative. According to Sugiyono (2019), this design aims to examine the hypothesis. In this context, the hypothesis type is causal, declaring the cause-and-effect relationship, as Hartono (2014) explains. Moreover, this study uses a survey with a questionnaire to collect the data, as Hartono (2014) explains. The indicators of social presence in live streaming (SPLS) come from Li et al. (2024). Additionally, consumer trust (CT), flow state (FS), and impulsive buying behavior (IBB) indicators come from Sawarsa et al. (2023), where a five-point Likert scale quantifies their item. One and five describe strong disagreement and agreement, respectively. The related items are in detail in Table 1.

Table 1: Variable Definition

Variable	Definition	Item	Scale	Source
Social presence in live-streaming	The presence and engagement of the customer with others create a community sense and personal connection between the streamer as the host and viewers (Lu et al., 2016).	<ul style="list-style-type: none"> - When interacting with streamers and other viewers, I exist in the correct live-streaming room (SPLS1). - The streamer pays attention to my interactive action (SPLS2). - The streamer pays attention to the interaction of the other viewers (SPLS3). 	Likert	Li et al. (2024)
Consumer trust	Consumer beliefs on integrity and reliability of host during live-streaming (Sun et al., 2019).	<ul style="list-style-type: none"> - The information through live-streaming is trustable (CT1) - The streamer can be trusted (CT2). - The streamer cannot benefit me (CT3) - The received goods will be similar to the goods I view in live streaming (CT4) 	Likert	Sawarsa et al. (2023)

Table 1: Variable Definition

Variable	Definition	Item	Scale	Source
Flow experience	The situation created by the streamers to show their creativity and result in more exciting content during live streaming (Huang & Li, 2022).	<ul style="list-style-type: none"> - I do not divert my attention when viewing LS (FS1). - I disregard what is happening when viewing live streaming (FS2). - I forgot everything to do when viewing live streaming (FS3). - I am comfortable with viewing live streaming (FS4). - I am interested in viewing live streaming (FS5). - I am glad when viewing live streaming (FS6). 	Likert	Sawarsa et al. (2023)
Impulsive buying behavior	Spontaneous purchase because of the intense stimulation from sellers continually (Faber, 2010).	<ul style="list-style-type: none"> - I quickly receive offers during live streaming (IBB1) - I thoughtlessly buy goods when watching live streaming (IBB2). - I spontaneously buy goods offered during live streaming (IBB3). - I cannot postpone shopping for goods when viewing live streaming (IBB4). 	Likert	Sawarsa et al. (2023)

The population is the live-streaming users of e-commerce in Bandung. The samples are taken using purposive sampling with some criteria. Firstly, domicile in Bandung. Secondly, they have an e-commerce platform integrated with the live-streaming feature. Thirdly, they buy goods without consideration. Based on three criteria, this study sets the number of samples based on theory verification, i.e., at least 200 people, as Ghazali (2021b) requires, trailed by Mariana (2024).

Validity and reliability measure the accuracy and consistency of response (Sugiyono, 2019). Furthermore, to conduct them, the confirmatory factor analysis based on the variance-based structural equation model through SmartPLS software is utilized (Ghozali, 2021b). Moreover, this study uses confirmatory factor analysis to validate the response, where the loading factor becomes a benchmark. When items with a loading factor below 0.5, they must be eliminated to make all loading factors and average variance extracted (AVE) exceed 0.5 (Hair Jr. et al., 2019). Finally, Cronbach Alpha and composite reliability are used to test reliability. If both values exceed 0.7, the respondent's answer has met this reliability test (Ghozali, 2021a; Sholihin & Ratmono, 2020).

After achievable validity and reliability testing, the next phase estimates the path coefficient based on *bootstrapping* to produce the t-statistical probability. After that, the blindfolding must be performed to result in the predictive relevancy of this model (Ghozali, 2021b). By mentioning Figure 1, three sub-structures of the model exist in equations one, two, and three:

$$CT = \gamma_1 SPS + \xi_1 \text{ (Equation 1)}$$

$$FE = \gamma_2 SPS + \xi_2 \text{ (Equation 2)}$$

$$IBB = \beta_1 CT + \beta_2 FS + \xi_3 \text{ (Equation 3)}$$

Notes: γ and β are the path coefficients for exogenous and endogenous variables, respectively, and ξ is the error for latent variables.

4. Results

Based on a survey conducted from June to October 2024, this study obtained 240 respondents who had watched a live stream in the past two years. Frequency and portion are based on gender, age, education, job, and the platform to watch live streaming, as shown in Table 2: Most respondents are women (30.83%) and from 15 to 25 years old (60.83%). Additionally, they have a high academic school degree (43.25%), job as senior high school and

undergraduate students (42.5%), and utilize the TikTok platform to watch live streaming. The least respondents are men (30.83%), above 45 (0.83%). Also, they have higher vocational degrees (16.25%), jobs as dentists (0.42%), and housewives (0.42%). Furthermore, 0.84 % of them are job seekers and fresh undergraduate students.

Table 2: Respondent Profile

Profile	Description	Frequency	Portion
Gender	Man	74	30.83%
	Woman	166	69.17%
Age	From 15 to 25	146	60.83%
	From 26 to 35	71	29.58%
	From 36 to 45	21	8.75%
	Above 45	2	0.83%
Education	Senior high school	90	37.50%
	Higher vocational school degree	39	16.25%
	Higher academic school degree	111	46.25%
Job	Dentist	1	0.42%
	Fresh graduate	1	0.42%
	Housewife	1	0.42%
	Job seeker	1	0.42%
	Private employees	12	5.00%
	Civil servant	55	22.92%
	Senior high school and undergraduate student	102	42.50%
	Businessperson	67	27.92%
Platform to watch live-streaming	Facebook	7	2.92%
	Instagram	41	17.08%
	Lazada	7	2.92%
	Shopee	72	30.00%
	TikTok	88	36.67%
	Tokopedia	24	10.00%
	YouTube	1	0.42%

Table 3 shows the results of convergent validity and reliability tests for the statement items used. The loading factors of SPLS1, SPLS2, SPLS3, CT1, CT2, CT3, CT4, FS1, FS2, FS3, FS4, FS5, FS6, IBB1, IBB2, IBB3, and IBB4 exceed 0.5, i.e., 0.861, 0.889, 0.889, 0.882, 0.858, 0.781, 0.854, 0.781, 0.544, 0.599, 0.800, 0.798, 0.813, 0.845, 0.859, 0.878, and 0.911. Thus, the respondent's answers are convergently valid. The AVE exceeding 0.5 for SPLS: 0.774, CT: 0.713, FS: 0.534, and IB: 0.763 confirms this circumstance. In the reliability testing context, composite reliability and Cronbach Alpha exceed 0.7: 0.911 and 0.854 for SPLS, 0.908 and 0.865 for CT, 0.871 and 0.820 for FS, and 0.928 and 0.896 for IBB. Therefore, the answer meets this reliability test.

Table 3: Validity and Reliability Testing Result

Variable	Item	Loading factor	AVE	Composite Reliability	Cronbach's Alpha
Social presence in live-streaming	SPLS1	0.861	0.774	0.911	0.854
	SPLS2	0.889			
	SPLS3	0.889			
Customer trust	CT1	0.882	0.713	0.908	0.865
	CT2	0.858			
	CT3	0.781			
	CT4	0.854			
Flow experience	FE1	0.781	0.534	0.871	0.820
	FE2	0.544			
	FE3	0.599			
	FE4	0.800			

	FE5	0.798			
	FE6	0.813			
Impulsive buying behavior	IBB1	0.845	0.763	0.928	0.896
	IBB2	0.859			
	IBB3	0.878			
	IBB4	0.911			

Table 4 presents the estimation results of the variance-based structural equation model with probability t-statistics of 0.000 to prove the first hypothesis at parts a and b and the second and third hypotheses. All research hypotheses are accepted because these values are lower than 5%. Apart from that, the existing models, i.e., CT=f(SPLS), FE = f(SPLS), and IBB = f(CT and FE), can predict because the Q-square exceeds 0 as Ghozali (2021b) explains: 0.522, 0.387, and 0.366. By corresponding the R-square for the CT and FE models of 0.739 and 0.735. It indicates that SPLS strongly contributes because it exceeds 0.67, as Ghozali (2021b) requires. Meanwhile, the R-square for the IBB model is 0.488 This circumstance means that CT and FS contribute moderately because their values are between 0.33 and 0.67, as explained by Ghozali (2021b).

Table 4: The Estimation of Variance-Based Structural Equation Model

Hipotesis	Causal Direction	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	Probability	Q-square	R-square
H _{1a}	SPLS → CT	0.860	0.018	46.998	0.000	0.522	0.739
H _{1b}	SPLS → FE	0.857	0.016	54.364	0.000	0.387	0.735
H ₂	CT → IBB	0.310	0.085	3.654	0.000	0.366	0.488
H ₃	FE → IBB	0.922	0.066	13.991	0.000		

5. Discussion

Part A of the first hypothesis is satisfactory. Therefore, a positive relationship between live-streaming social presence and customer trust is proven. Live-streaming success depends on a host being trusted by the audience joining the room. To be trusted, the host must guarantee that the promises are the same as the reality. By having a positive tendency, this evidence supports Rashid et al. (2022) investigating 334 people in Pakistan during the COVID-19 pandemic and Hoang and Dang (2024) after researching 291 respondents in Vietnam. Finally, this propensity aligns with Ratnawati and Hanoky (2023), Sawarsa et al. (2023), and Thesia and Aruan (2023), studying 258, 166, and 200 respondents in Indonesia, one-to-one.

Part B of the first hypothesis is adequate. Thus, a positive relationship between live-streaming social presence and flow experience is proven. Live-streaming success depends on the host being friendly and polite with the audience joining the room. By having a positive tendency, this evidence supports Dong et al. (2023) and Huo et al. (2023) after investigating 268 and 375 users in China, respectively. Besides, this inclination affirms Sawarsa et al. (2023) and Hoang and Dang (2024) utilizing 166 Indonesians and 291 Vietnamese as their samples one-to-one.

Hypothesis two is acceptable. Hence, there is a positive association between customer trust and impulsive buying. Trust is essential for online transactions. Without online trust, customers find it impossible to buy goods during live streaming. Therefore, a streamer must ensure that the offered goods are the same as those received in the customers' hands. With this positive proof, this study aligns with Darmawan and Gatheru (2021), Sawarsa et al. (2023), Salsabila and Dewi (2024), researching 100, 166, and 189 people in Indonesia, Hoang and Dang (2024) studying 291 people in Vietnam; Sun et al. (2023) and Tian et al. (2023), investigating 675 and 361 people in China.

Finally, hypothesis three is admitted. Henceforth, a positive association between flow experience and impulsive buying is accepted. Enjoying life-streaming is essential for viewers. Indeed, the viewers in this situation will buy

goods spontaneously because of the host's friendliness. With this propensity, this study affirms Wu et al. (2020), Cui et al. (2022), Huo et al. (2023), Husada et al. (2023), Sawarsa et al. (2023), and Hoang and Dang (2024), declaring that the better the flow experience, the more tendency the spontaneous purchase.

6. Conclusion

This study aims to investigate and analyze the effect of social presence in live streaming on consumer trust and flow experience and the influence of consumer trust and flow experience on impulsive buying. After examining 240 responses from life-streaming viewers joining the survey, this study demonstrates the positive causal relationships based on four hypotheses testing results. By mentioning this fact, this study recommends that the streamer communicate with its viewers during life-streaming; therefore, the viewers trust and enjoy interacting, leading to impulsively buying the offered goods.

Academically, this study has limitations, such as (1) the number of consequences of flow experience and customer trust and (2) the location. Therefore, by mentioning the first and second limitations, the succeeding scholars may use satisfaction and loyalty as the consequences of flow experience and customers besides impulsive purchases and enlarge the location scope, not only in Bandung but also the other most prominent cities in Indonesia like Jakarta, Surabaya, Medan, Bekasi, Semarang, Tangerang, Depok, Palembang, and Makassar.

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“Yes, they are Important, But Being Trapped in Debt to Loan Sharks, Kills them from Within”: A Narrative Analysis of the Exclusion of Women Fishmongers in Fishing Communities

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Abstract

The ability to manage family finances, especially controlling debts, is the main issue that hampers the economy of fishing families. This article aims to construct the situation behind women fishmongers' choice to borrow money from moneylenders. It also involves exploring the role of community presence in overcoming dependence on high-interest loans. Qualitative research was conducted in Lewoleba town, involving women fishmongers, their husbands, and capital owners. Data was collected through in-depth interviews, observation, and utilization of local online media news. In the narrative analysis, this study found that the orientation of maintaining the trust of capital owners, as well as a lack of understanding of managing family finances, are the main reasons why women fishmongers make repeated loans to moneylenders. As a result, they remain economically disadvantaged. On the other hand, the community lost its role in creating a collective sense of care, which became the beginning of rampant illegal loans. This happens as the orientation of social interaction changes, where the community's role to create a common concern - the welfare of members - turns into an impersonal relationship that distances itself from each other - by making the act of borrowing money from a moneylender an individual right and family privacy. Empowerment program planners can begin considering

Keywords: Women Fishmongers, Loan Sharks, Community Roles, Family Finance, Human Resources

1. Introduction

In small-scale fisheries, the presence of women working as fish sellers is an important part of driving the economy (Salmi & Sonck-Rautio, 2018). Some of the characteristics of small-scale fisheries according to Salagrama (D'Souza, 2020) are community-based activities, high dependence on intermediaries, use of simple non-mechanized fishing gear, and the purpose of fishing is mostly for family consumption and sale in traditional markets. Generally, fishing activities are carried out close to home, where fishing skills are passed down from generation to generation in fishing families. One thing that stands out in the work of small-scale fisheries, referring to the characteristics initiated by Salagrama, is the neglected role of women even though their presence is an

integral part. In the marketing of their catches, women fishmongers face many difficulties in getting their foot in the door. Burdened by the demands of traditional responsibilities in the domestic sphere of the family (Lwenya & Ernest, 2012); (Cezar & Theis, 2020), the gender division of tasks that limits their involvement as workers in the public sphere (Koralagama, et al., 2017); (Hauser, et al., 2013), the lack of trust from formal financial services to provide credit facilities for working capital (Kizito, et al., 2017), limited access to credit (Oloko, et al., 2022); (Haque, et al., 2015) and exclusion from the realm of technological and financial empowerment (Meetei, et al., 2016), 2017), limited access to credit (Oloko, et al., 2022); (Haque, et al., 2015) and exclusion from the realm of technology and financial empowerment (Meetei, et al., 2016) are some of the conditions experienced by women fishmongers and make them increasingly excluded.

One of the difficulties experienced by women fishmongers in Lewoleba City, Lembata district, Indonesia, is the lack of family financial literacy, especially regarding the management of daily income so that they can be financially independent. The importance of financial literacy, according to Brown, emerges as it relates to an individual's ability to manage finances, including managing debt and saving (Kalwij, et al., 2019). The proliferation of moneylenders who offer the convenience of borrowing money quickly, albeit with high interest rates, without administrative requirements and collateral (Kebelen, 2022), has become a favorite choice of women fish sellers when experiencing financial difficulties. As a result, they are getting worse economically because they cannot escape from debt bondage (Koku & Jagpal, 2015); (Pomeroy, et al., 2020). According to the Indonesian Financial Services Authority (OJK, 2020), the term loan shark is one of the models of illegal informal credit entities or illegal fintech lending. They are generally not supervised by legal institutions or officially licensed by the financial services authority, so the loans provided to the public are also illegal.

Being involved in high-interest loan debt experienced by women fishmongers is not a simple matter (Ashwathy & Kalpana, 2018). In practice, there are two categories of women fishmongers: first, those who sell fish caught by the family and the second group, those who sell fish owned by financiers based on trust given to be sold first, after being sold, the women fishmongers will pay according to the agreed price beforehand. Whatever way they get the fish has consequences for the selling price (Danso-Wiredu, 2018). The first group considers the determination of the selling price of fish as their right and therefore they do not need to consider the market price. This group tends to ignore the operational costs required for their family members to obtain the fish, which results in them setting the selling price relatively lower than the market price. The second group, on the other hand, prioritizes a competitive market price, as they want the proceeds from the sale of fish to meet the need to pay back the financiers for the price of the fish and to make a profit for themselves to take home. The lack of a mechanism to create and maintain market prices ultimately backfires on women fishmongers, no matter how they obtain fish to sell. For the financier-owned fish-selling group, for example, if they do not have enough profit to pay the price of the fish, the only option is to borrow from a moneylender. This is done so that they can still pay the price of the fish according to the previous agreement because if they fail to fulfill the payment agreement with the owner of the capital, they will certainly no longer be trusted to sell fish the following day. The same is true for the women who sell fish caught by their families. Selling fish at a low price below the market price makes it difficult for them to cover the operational costs of their family members to get the fish. Borrowing from moneylenders has again become an option to overcome the urgent economic demands of fishing families.

Previous research shows the range of issues faced by women fishmongers. For example, related to the marketing work chain (Ayanboye, et al., 2015); (Gunakar, et al., 2016); (Alosias, 2019) and gender relations in fisheries marketing (Yumriani, et al., 2016); (Lokuge & Hilhorst, 2017); (Gissi, et al., 2018). This research specifically explores the issue of women fishmongers being trapped in high-interest loans, especially when they are part of the fishing community where they live and earn a living. Generally, they live in fishing villages, where all members, i.e. fishing families, work by relying on the sea as their main source of livelihood. These include fishermen, fishmongers, searchers, and sellers of seashells or other marine life (Kleiber, et al., 2014).

The existence of women in the fishing community does not occur in a vacuum but has its meaning. The presence of women represents two entities, namely the community and the family, both of which have the potential for national development resources (Rahim & Rossali, 2021). According to Scott & Marshall, a community can be understood as "a particularly constituted set of social relationships based on something that the participants have

in common - usually a common sense of identity" (Rapaport & Lurie, 2018). The background of common interests as marine and fisheries business actors forms a unique relationship among its members. In these relationships, the emotional strength that binds community members together is built (Tracy, 2009). For Tracy, the community is driven by communication, where experiences of being together in various activities are shared and learned until they become part of the community itself.

The problem arises when individual community members need a relationship with the wider community, namely the state, which has the responsibility to improve the welfare of the fishing community. As a wider community, the state provides the resources needed by fishing communities, with women fishmongers in them, to develop and have a better quality of life (Beninger & Francis, 2022). For example, the availability of trade facilities and infrastructure, provision of working capital, and training in skills and technology for catching, processing, and marketing fishery products, which ideally support the implementation of the small-scale fisheries economy. However, the realization has yet to show meaningful involvement for the fishing community. Several challenges have emerged through various research on empowerment in the fisheries sector. For example, the urgency of state intervention through more appropriate policies to match the success of empowering women fisheries workers in Manipur, India (Meetei, et al., 2016). Likewise, research findings in Tanzania (Vitukawalu, 2020) show that empowerment challenges are still related to representative markets, strengthening access to information about city regulations, and expanding access to fisheries work-based skills training. Interestingly, Vitukawalu found that women fisheries workers are uncomfortable voicing their interests.

This article offers a community perspective to understand women fishmongers' dependence on moneylenders and high-interest loans. Tracy's (2009) concept of community contains five ideas: first, community refers to a group of people who inhabit a certain geographical area, with whom, second, they share a common cultural identity. Thirdly, they generally share a common interest or activity, which in their daily lives builds and maintains a positive sentiment that binds them together, this being the fourth idea. But that positive sentiment of togetherness can be endangered by the inability to create care for the togetherness itself. Tracy particularly emphasizes the importance of communication within communities to build a sense of caring among them. Finally, community refers to a political contradiction of values. On the one hand, commitment to the common good fosters interdependence among members, but on the other hand, respect for individual rights creates conflict with one another. Making the community an entry point finds its urgency mainly because in communal interaction, there is a space for sharing information and knowledge between pp and all community members, which Arns calls the human element. The space also involves non-human elements, namely work facilities and accompanying activities (Arns & Strauhs, 2022).

The main questions of this article are:

- 1) How are women fishmongers involved in high-interest loan debt?
- 2) How does the community help women fishmongers cope with the pressures of economic hardship?

The main idea offered is to look at the issue of trapped fishmongers in high-interest loans from the perspective of fishmongers and not make them merely passive recipients in empowerment programs. Based on that, this article aims to construct the situation of women fishmongers' entrapment in high-interest loans and explain the community's contribution to that situation.

2. Method

The philosophical perspective in this qualitative research is framed constructivistically (Guba & Lincoln, 2009). Ontologically, the reality of women fishmongers' entrapment in high-interest loans is the result of mental constructions built based on experiences of relationships with various groups, including husbands, in their daily work. This construction can change with the dynamics of reality in relationships. In basic epistemological beliefs, the reciprocal relationship between researchers and the phenomenon of women fishmongers is subjective. What is the value background believed by researchers, women fish sellers, and various other elements involved in this study, presents the subjective nature of knowledge about women fish sellers who are in debt to loan sharks. Meanwhile, basic methodological beliefs are built through dialogue and discussion with groups of women fishmongers to find various intersections that mark the reasons behind the choice of borrowing money from

moneylenders. Emic data on these issues is used to build interpretations and construction of the meaning of the involvement of women fishmongers as members of the fishing community.

The case study design that guides this research is mainly at the macro level (Schwandt & Gates, 2018) because it involves a fishing community with the involvement of various actors, including women fishmongers, husbands, and capital owners. The research was conducted in Kubur Cina fishing village in Lewoleba city, involving ten women fishmongers, five husbands and one capital owner. Using a purposive sampling technique, they were selected as informants because of their direct experience of being tied to high-interest loans. Data balance was sought through the use of snowball techniques to obtain informants who sold both family-caught and financier-owned fish.

In-depth interviews, observation, and data tracking in the form of online local media news were the preferred means of data collection (Marshall & Roosman, 2016). In-depth interviews were conducted face-to-face with unstructured and open-ended questions, to obtain views, opinions, and historical information from women fishmongers about the choice to go into debt with moneylenders. Husbands were involved not only because they were part of the family's financial planning, but also because they were part of the community who were aware of the high-interest loan debt problems faced by the wives/fishmongers living in the community. Capital owners were involved because they were directly related to the daily work of women fishmongers. Meanwhile, observation was conducted in a combination of participant as observer and complete observer models, to obtain information about the variations in the forms of involvement of women fishmongers in work activities and how they have to deal with other individuals or groups who are also involved in small-scale fisheries businesses.

Data analysis and interpretation were conducted using a narrative analysis strategy (Neumann, 2014). The pre-recorded interviews were presented in transcript form to facilitate the determination of analytic themes according to the community concept. By the narrative analysis framework, the depiction of the situation when women fish sellers are trapped in high-interest loans is presented from their perspective. The depiction involves the situation before and after the choice of borrowing money from a moneylender, which also involves reciprocal relationships with husbands, fellow fishmongers, and capital owners. Narrative analysis helped to find the coherence of each action segment and the reasons behind the choice of action. In the interpretation, some basic concepts about community were operationalized according to research needs. First, the meaning of the existence of women fishmongers who inhabit the fishing village community. Secondly, the same cultural identity as members of the fishing village community is identified through the process of working as fishmongers, housewives, and workers in the public sphere who intersect with the capital owners of the fish they sell. Thirdly, it explores the aggregates of care that are built among members of the fishing community, especially about the choice of action of women fishmongers who use moneylenders as a shortcut to overcome economic difficulties. Finally, the identification of conflicting poles in the daily life of living together as members of the fishing community is related to the goal of achieving common welfare and respect for personal rights in making decisions. The quality of this research data was maintained through member reflections (Tracy, 2013; Neumann, 2014), which involved informants discussing the accuracy of the qualitative findings, based on interviews that had been conducted previously. This was done to avoid the negative bias of the researcher's monopoly of interpretation, by providing a wider space for informants to comment, respond, or even criticize the findings based on the interviews.

3. Results

3.1 Informant Profile

The following is the demographic data of the informants. Table 1 contains detailed data on women fish sellers, while Table 2 contains data on husbands and capital owners. The identities of the informants, both the female fishmonger and the husband, are presented anonymously to respect the informants' wishes. The female fishmonger is disguised with the marker "#" while the husband is disguised by the use of the capital letter "H." They are part of the Kubur Cina fishing village community in Lewoleba City, the capital of Lembata Regency, located on the island of Lembata, East Nusa Tenggara Province, Indonesia. Generally, the fisheries sector is the mainstay of the livelihoods of most residents in Lewoleba, especially due to its characteristics as an archipelago.

Table 1: Demographic Data of Female Fishmonger Informants

Informant	Age	Education level	Marital status	Source of fish sold
#1	48	Not completed elementary school	Married	Family catch & financier-owned
#2	46	Not completed elementary school	Widow	Investor-owned
#3	48	Not completed elementary school	Widow	Family catch & financier-owned
#4	42	Not completed elementary school	Widow	Investor-owned
#5	42	Completed junior high school	Married	Family catch & financier-owned
#6	47	Graduated from senior high school	Widow	Investor-owned
#7	27	Completed junior high school	Married	Family catch & financier-owned
#8	63	Not completed elementary school	Married	Investor-owned
#9	46	Completed elementary school	Married	Investor-owned
#10	37	Completed junior high school	Married	Family catch

Source: field data

Table 2: Demographic Data of Husband and Capital Owner Informants

Informant	Age	Education level	Status nelayan
H1	60	Graduated from senior high school	Part-time fisherman
H2	57	Completed junior high school	Paruh waktu
H3	44	Graduated from senior high school	Full-time fishermen & fishing boat owners
H4	54	Not completed elementary school	Full-time fisherman
H5	43	Completed junior high school	Full-time fisherman
Investor-owned	44	Graduated from senior high school	Fishing boat owner

Source: field data

The low education level of female fishmonger informants, as shown in Table 1, can be used as initial information to understand the background of individual decision-making. Similarly, for husband and capital owner informants, as shown in Table 2, their status as full-time or part-time fishers will determine their perspective on small-scale fisheries work activities, including those involving women.

Four major themes emerged in the interviews, each of which constructed the issue of women fishmongers' entrapment in high-interest loans.

3.2.1. Recurring loans: a quick solution with a long impact

Generally, women fishmongers realize that the decision to borrow money from moneylenders makes it even more difficult for them, as the amount of debt increases every day. Some can firmly refuse to borrow money from moneylenders. However economic pressure, limited access to formal sources of financing, and a strong desire to repay the price of the fish according to the agreement with the owner of the capital made most of them end up borrowing money from moneylenders. As informant #1 said:

"We are forced to borrow from moneylenders because if we owe the fish owners, they no longer trust us to sell their fish."

To fulfill daily needs, borrowing money from moneylenders is the main choice, as informant #5 revealed:

"When the need is urgent, for example, to pay the children's school fees or rent, I am forced to borrow from a moneylender".

Being marginalized in the utilization of formal sources of financing, in the end, makes women fishmongers even more connected to moneylenders, who are considered saviors of the financial difficulties they face every day. This is evident from informant #3's statement:

"If we are billed by the fish owner, where else can we get money other than from moneylenders who we already consider as a family".

Similarly, informant W4 considered that they were no longer trusted by formal and legal institutions to obtain financial assistance. Nevertheless, they also admitted that they often experienced unpleasant treatment during loan collection, especially if they did not have the money to pay the loan installments. On the other hand, some of the women fishmongers emphasized the importance of establishing communication with moneylenders to get concessions if they cannot pay the installments according to the maturity agreement. For example, informant #1 stated:

"Sometimes if we do not have the money to pay the loan installments, we are forced to run and hide from the moneylender".

Meanwhile, informant #6 expressed his fear of being rudely collected by moneylenders or debt collectors.

Observations show that there is a tendency for debt collectors to use psychological pressure to force indebted women fish sellers to pay their daily bills. Debt collectors are often seen unobtrusively sitting near women fishmongers, either in the market on the side of the road or wherever they sell fish. Debt collectors will not move, even into the night, until they get their daily payment from their borrowers. If they are unable to meet the borrower in person, then they do not hesitate to go to their homes or to places where the women fishmongers are usually located. Often, women fishmongers receive yells and expressions of anger if they are unable to pay their daily installments. In a cornered situation, the woman fishmonger would usually choose to remain silent, while letting the debt collector continue to express his anger. Meanwhile, other women fishmongers who happened to be in the same location would act as if they were unaware of the incident. They usually choose not to interfere with the problems that their friends are facing.

3.2.2. Absence of state aid: the dilemma of demanding administrative requirements

Interview questions were also directed to find out how the personal experiences of women fishmongers led them to have an assessment of the state's presence to help improve the quality of life of fishing families. Some of the responses that emerged included complaints about administrative demands accompanied by processing fees that were considered burdensome, misdirected assistance, and suspicions of nepotism in the distribution of fisheries assistance. The difficulty of obtaining fisheries assistance, at a certain point, creates limited conditions for women fishmongers to work optimally. Applying for loans to moneylenders is again an option that is considered as a way out of overcoming financial difficulties and limited work facilities. This situation was revealed in several quotes from informants' statements, for example:

Informant #2 "How can we get fisheries assistance if there is no information?".

Similarly, informants #7 and #8 expressed disappointment that they had never received fisheries assistance despite fulfilling all the administrative requirements. Meanwhile, informant #10 openly expressed his preference to borrow money from moneylenders to increase his capital so that he could buy more fish to sell.

3.2. Husband's perspective: wife's responsibility to manage family finances

From the husband's perspective, the tendency of women fishmongers to be trapped in high-interest loans is more of an excuse for the difficult living situation they experience as fishing families with uncertain incomes. It begins with the choice to allow their wives to work as fish sellers. As informant H1 expressed:

"I support my wife to work because of the family's growing economic needs".

Generally, husbands know that wives borrow money from loan sharks with the consequence of paying very high interest rates. But for the husbands, all of this is entirely the wife's responsibility. This is evident from the statement of one husband, informant H2:

"We do borrow money from moneylenders, my wife knows the most about it because she manages the family finances".

Husbands generally expect their wives to understand that their work as fishermen is very dependent on the catch so it takes time and process to earn money every day. As informant H3 expressed:

"As fishermen, we must first try to catch fish in the sea, then we can bring it home to sell to our wives, and all of that takes a process. That's why we don't necessarily have money every day".

Observations show that limited funds to meet family needs are often the reason for arguments and quarrels between husbands and wives. In conversations between them, it appears that the husband assumes that his wife has savings or other financial resources, which can be used to fulfill the family's needs. His wife refuted this assumption by reminding him that even for their daily needs, they were struggling to meet them.

3.3. Capital owners' point of view: the importance of maintaining trust

In this study, what is meant by capital owners are people who trust women fish sellers to buy fish without money capital, only based on mutual trust between them. Usually, these people are the owners of fishing boats. But some people have the power of capital, so they can buy fish in large quantities, then entrust the women fishmongers to sell their fish based on an agreement on price and payment time. For the owners of capital, trust and long-standing relationships based on knowing each other are the main benchmarks for sorting out who they will trust. In this study, there was only one capitalist/fish owner who was willing to share his experience of building relationships with women fishmongers. The following statements show the dynamics of the relationship between them:

"I already have subscriptions but if they don't pay the agreed price for fish for too long, I usually don't trust them anymore".

Even regarding the involvement of women fish sellers with loan sharks, capital owners also have their considerations:

"If I know that she has a lot of debts at the moneylender, often avoiding the moneylender because of default, I also do not want to give her the trust to sell my fish, because we are both looking for a living, we should not break promises".

4. Discussion

4.1 Construction of the situation of women fishmongers trapped in debt to loan sharks

The content of the conversation about high-interest loans experienced by women fishmongers exists in several situational settings. For example, a strong desire to maintain the trust of the owners of the capital or the owners of the fish they sell. In addition, the proliferation of high-interest loan providers, which makes it easier for women fishmongers to get money loans in a short time, is also part of the explanation for the economic pressure they experience.

First, about the great desire to maintain trust. This item seems simple, just about how individuals give and receive trust as part of their togetherness. Moreover, it is related to the ability of individuals to interpret togetherness as part of the communication process in relationships that they need. In doing activities together, individuals will base their understanding and acceptance of the joint activity on the information they receive, turning it into something meaningful, that contains local social reality (Kashima, 2014). In this research, the relationship between the women fish sellers and the owners of capital is built and unified through information about what the owners of capital demand - the price of fish according to the previous agreement - and the consequences that accompany this demand (no longer gaining trust if they do not pay according to the agreement). Repeated buying and selling activities eventually build a new environment that becomes the basis for building meaning in the relationship between them.

How is the meaning of maintaining trust built between them? Referring to Kashima, meaning in the context of ideas refers to declarative knowledge that contains information about how they will relate to each other. The capital owner has fish that the women fishmongers without capital need. They can get the fish only if they comply with what is agreed upon in the conversation between them about the price. But the meaning is not just limited to the narrow sense of 'knowing' but also involves the procedures of judgment and evaluation, followed by the subsequent handling of the information they share in the relationship. This is what Kashima calls meaning in the practical sense, which contains procedural knowledge concerning information on how to do something. Women fishmongers know that there are social responsibilities that come with relationships with fish owners. What happened to fellow women fishmongers who failed to maintain the trust of the fish owners and were therefore no longer trusted, became the subject of evaluation among them. The form of evaluation is to justify the further action needed.

In this context, they choose to prioritize their responsibilities to the fish owner by borrowing money from moneylenders, even though they have to pay very high interest rates. The moneylenders are the only ones who can immediately provide loans to the needs of the women fish sellers. This condition then developed into an established pattern of behavior as a result of the interpretation of a subjective reality (maintaining the trust of fish owners) into an objective reality (borrowing money from moneylenders) which eventually became common property in the relationship between them (Cocjin, 2021). For Cocjin, it is the repetitive pattern of behavior that is then considered a certain standard or even considered a normal thing in the community.

Second, the proliferation of high-interest loan providers increases the opportunity for women fishmongers to easily and quickly obtain loans. The involvement of fishmonger women, both in their status as fishermen's wives and as female heads of households (without husbands) to improve the family economy (Szymkowiak, 2020) is observed in many variations. Not only are they actively involved in providing material income in the form of money, but they are also responsible for managing the fishermen's family finances. The problem arises when with limited income, they have to fulfill their economic needs as well as other social costs that accompany their existence in their respective family clusters. In such situations, high-interest money lending services are then considered as a quick solution to get money.

4.2. The role of the community in helping women fishmongers cope with the pressures of economic hardship

The proliferation of money lending services, both legal and illegal, seems to be a problem faced by many countries, which initially targeted low-income communities (Banks, et al., 2014). Understanding the background of the situation experienced by women fishmongers in the context of this research, it is found that most fishermen households are generally trapped in high-interest loans that make their lives even more miserable. On the other hand, in every conversation, they will admit and tend to defend themselves behind the argument that it is the presence of moneylenders that saves the difficult situation they experience every day. This is what Banks calls "the expensive solution to maintaining the poor".

In such a situation, the central role of the community is needed. Living in the same geographical area with the same routine activities as small-scale fisheries workers in fishing families has provided a set of values that are accepted as common property. Values that move individual community members, which Tracy (2009) describes

as complementary meanings in the concept of community. This research found that community as a place, identity, and interest can in fact experience a shift in meaning along with the dynamics shown by the community members themselves. Referring to Durkheim (Rapaport & Lurie, 2018), the characteristics of traditional communities that generally exist in rural areas are homogeneity followed by high social trust and collective identification. The shift in meaning found in this study mainly concerns the social ties that mark relationships within the community. The shift in meaning is confirmed by using Tönnies' idea of the shift from *Gemeinschaft*, social interaction based on friendly values, to *Gesellschaft*, relations based on indirect interaction with impersonal roles. If the measure of a community's success is to foster mutual care among its members, as recommended by Tracy (2009), then it is not apparent in the fishing community where this research was conducted. The head of the family, who works as a fisherman, the wife who works as a fishmonger, community leaders, or even religious leaders, seem to tend to treat the choice of borrowing money from moneylenders as a private matter and the autonomous territory of each family. There is no mechanism built collectively to raise the awareness of fishing families to avoid loans from moneylenders. Each party avoids talking about loan sharks and their negative impact on fishing families. The absence of such a collective awareness sensor is fertile ground for moneylenders to increasingly control the economy of fishing families. This means that as a traditional community, social ties that should be full of friendship (*Gemeinschaft*) and mutual protection (community as a positive sentiment) turn into impersonal and alienated relations (*Gesellschaft*) on the grounds of respect for individual rights (Tracy's concept of community as a commitment to group welfare contrasted with individual rights). In such a situation, for Robert Putnam (Tracy, 2009), it is difficult to find people who have a sense of community and care about the social good, because their orientation is more individualistic.

5. Conclusions

The findings of this study show that women's choice to continue borrowing money from moneylenders is not without reason. The lack of knowledge about family financial management, exacerbated by the absence of assistance from the state or non-governmental organizations, causes this difficult situation to become repetitive for them. The economic inequality experienced by fishing communities also shows the face of the problem of fluctuating income, especially the consequences of income uncertainty as a fisherman (Pomeroy, et al., 2020). The finding of the absence of the community to create a common concern that can save fishing families from repeated loans to moneylenders indicates the need for transformational leadership (Kariuki, et al., 2022). It takes the presence of individuals in the fishing community who can mobilize members to jointly pursue actions to save the interests of individuals, families, and fishing communities. Both findings show the urgency of human resource-based empowerment to overcome poverty (Ewubare & Mark, 2018). This means that the focus of empowerment activities is directed at involving the human resources of the community, both individuals and groups (Cardona, et al., 2021). All of this aims to create a resilient community. This research has limitations in realizing this idea. Recommendations for further research are directed at systemically involving individuals in the community, to find out how strengthening should be done while adjusting to the characteristics of each community.

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Bibliometrics Analysis of Forensic Accounting Research

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Abstract

This study uses bibliometric analysis method to see the development and trends of Forensic Accounting research from 1990 to 2025. We conducted the analysis using data from Scopus database and VOSviewer software for network visualisation and statistical analysis in Forensic Accounting. The findings show fluctuations in forensic accounting publications influenced by the complexity of financial crimes, adoption of digital technologies, transparency needs, changes in law, cross-disciplinary collaboration, and demands for strengthening internal controls. The dominant type of article publication indicates that this topic has attracted significant academic attention on a global scale. The research also identified global contributions to Forensic Accounting from developed and developing countries such as the United States, China, India, the United Kingdom and Australia. Top publication channels such as Journal of Financial Crime. Leading authors such as Alshurafat with the highest number of publications, and including the dominance of affiliation by Hashemite University showcase international interdisciplinary collaboration. Themes include Risk Control, Fraud Detection, Digital Forensics, Financial Crime, Fraud Analytics, Risk Monitoring, Digital Compliance and Financial Governance. The research emphasised the importance of continuous study to meet the challenges of detecting and preventing fraud through Forensic Accounting, leveraging an understanding of global trends, disciplines and collaborations to formulate more effective strategies in fraud disclosure, foster synergies between researchers and institutions, and raise overall awareness to support financial integrity and transparency.

Keywords: Forensic Accounting, Financial Fraud, Investigative Accounting, Accounting Fraud

1. Introduction

Along with the increasing complexity of global financial transactions and the rise of fraud cases in various sectors, forensic accounting is becoming increasingly important in ensuring transparency and accountability of financial statements. Forensic accounting is a field of accounting that plays a role in investigating finance in order to identify, prevent, and uncover acts of fraud and violations of finance-related laws (Guellim et al., 2024). According to Honigsberg (2020), Forensic Accounting is an important tool in detecting and preventing financial reporting errors that can have a significant impact on individuals, companies, and the economy as a whole. This discipline integrates expertise in accounting, auditing, and investigations to detect and prevent illegal or unethical financial activities, such as fraud and white-collar crime committed by internal and external actors (Kaur et al., 2023). In addition, this practice is not only used to detect and prevent fraud, but also plays a role in litigation, dispute resolution, and investigative audits within companies and government agencies. Forensic accounting not only serves to detect fraud, but also provides litigation support through comprehensive data analysis (Akinbowale et

al., 2020). Furthermore, Forensic Accounting has an important role in assisting law enforcement agencies, courts, and companies in uncovering unauthorised financial practices and providing admissible evidence in the litigation process (Mandal & Amilan, 2023).

With increasing cases of fraud and demands for transparency from stakeholders, the need for forensic accountants is also on the rise. Hence, organisations should hire forensic accountants to address fraud and help with early detection. Audits are not the solution as they focus more on error detection and prevention. Meanwhile, forensic accountants require specialised skills, including critical thinking, deductive analysis, unstructured problem solving, analytical proficiency, investigative flexibility, oral-written communication, negotiation and conflict resolution, research, economic loss calculation, business valuation, and money laundering investigation skills (Umar et al., 2020). This makes practitioners indirectly encouraged to develop tools and techniques, which can help detect and prevent fraudulent activities and increase the importance of forensic accountants. According to Alharasis et al. (2023), policies and regulations can play an important role to support the development of Forensic Accounting and its integration into the university curriculum so as to create accountants who are better prepared through education and professional practice in detecting and preventing fraud in the public sector. According to Alshurafat (2022), there is also a need to support the autonomy and commitment of a specialised professional body that regulates the standards of practice and code of ethics of forensic accounting in the formal recognition of this profession that is widely recognised.

The implementation of a strong internal control system relies heavily on the existence of good governance mechanisms and expertise in forensic accounting to detect and address financial statement discrepancies. Forensic accounting is useful in detecting and exposing weak internal control systems so that existing gaps can be closed to prevent fraud in the future (Afriyie et al., 2023). In addition, Alzoubi (2023) in his research explained that the combination of forensic accounting and corporate governance could increase the effectiveness of internal control in an organisation by involving the use of accounting, auditing, and investigative skills to detect and prevent financial fraud. Furthermore, this integration can also result in a more effective internal control system, reduce the risk of fraud and mismanagement, and encourage transparency and accountability in financial reporting (Wahyuni-TD et al., 2021). Wahyuni-TD et al. (2021) in his research also explained that by implementing forensic accounting, zakat institutions can develop a better internal control system, ensure the distribution of funds in accordance with the principles of justice, and build public trust in zakat management institutions. In the context of banking, Forensic Accounting aims to detect, prevent, and investigate fraud involving parties within the bank, both management and employees, which can harm financial institutions and disrupt economic stability (Gangwani, 2021).

While Forensic Accounting has demonstrated effectiveness in uncovering financial offences, the biggest challenge is measuring the extent to which undetected offences still occur. Therefore, the use of increasingly sophisticated modern technologies, such as artificial intelligence (AI), big data analytics, and blockchain, can help forensic accountants to improve future detection capabilities, uncover financial crimes, support transparency, and maintain public trust in an increasingly complex financial system (AL-Raggad & Al-Raggad, 2024). Traditional methods in Forensic Accounting focus on the analysis of numerical financial data and behavioural characteristics of executives involved in misconduct. However, technological developments have enabled the incorporation of big data techniques with psychological intuition to improve detection accuracy. According to Rezaee & Wang (2019), big data in the context of forensic accounting is used to detect and prevent technology-based fraud, such as money laundering, financial statement manipulation, cybercrime, corruption, and other offences through advanced analytical techniques, such as predictive analysis, data visualisation, and text mining.

The increasing incidence of various forms of corporate financial scandals has underscored the importance of forensic accounting because forensic accounting provides various corporate fraud investigation tools that can prevent corporate fraud incidents or at least reduce the risk of fraud (Akinbowale et al., 2020). In addition, Forensic Accounting research provides significant benefits to society, including upholding tax justice, increasing public trust, encouraging legal compliance, and increasing investor confidence (Ozili, 2023). Forensic Accounting also ensures that financial statements provide credible information to various stakeholders to make important business decisions and defend stakeholder interests (Zeytinog̃lu & Anadolu, 2020). According to Kaur et al. (2023), greater

adoption, growth, and development of forensic accounting will lead to greater detection of fraud in society, which is beneficial to society.

The development of forensic accounting as a discipline has undergone significant transformation, driven by advances in information technology, regulatory changes, and demands for professional integrity and ethics. With a multidisciplinary approach and collaboration between regulators, financial investigators, and technology professionals, forensic accounting can become a more effective tool in ensuring transparency, accountability, and integrity in the global financial system (AL-Raggad & Al-Raggad, 2024). Various studies have been conducted to explore the concepts, methods, and applications of forensic accounting in different contexts. However, to understand how this research trend is evolving, a comprehensive analysis of the existing literature is needed. The bibliometric analysis method is a relevant approach to identify publication patterns, relationships between topics, as well as a map of the development of forensic accounting research globally. The purpose of this study is to analyse the trends and contributing factors in Forensic Accounting related publications over time. This research evaluates the subject areas of interest, the types of publications, as well as the global networks that support the development of the topic. In addition, the analysis covers the volume of publications, the channels and forms of dissemination, the scholarly fields involved, as well as the countries that show interest in Forensic Accounting. The research also focuses on the authors, their collaboration patterns, as well as the main issues frequently discussed in Forensic Accounting studies.

Although Forensic Accounting is gaining increasing attention in uncovering cases of financial fraud and supporting the integrity of financial reporting, the number of publications in this field has fluctuated over the past few decades. Understanding the factors that cause this variation is crucial to foster more effective follow-up research, broaden insights in the field of forensic accounting, as well as assist in the implementation of anti-fraud policies globally. In addition, identifying key topics and relevant publication channels can assist stakeholders and policymakers in understanding the scope of the literature on forensic accounting and focusing their efforts on developing fraud prevention and detection strategies. The research objectives to be addressed in this study are as outlined below:

- 1) Analyse the publication trends of Forensic Accounting from 1990 to the first half of 2025 and identify the factors influencing these developments.
- 2) Explore various types of publications in Forensic Accounting research and understand their relevance and implications for the development of theory and practice.
- 3) Identify dominant areas in Forensic Accounting research to understand significant contributions to the development of theory and practice.
- 4) Determine key international publication channels and their role in disseminating Forensic Accounting related research in different parts of the world.
- 5) Comparing Forensic Accounting publications across different countries to identify the level of global interest and engagement in this field.
- 6) Identify leading authors and their contributions to the Forensic Accounting literature, and recognise their expertise and role in driving research forward.
- 7) Analyse the institutional affiliations of the authors to understand the extent of involvement of academics and practitioners in Forensic Accounting research at national and international levels.
- 8) Explore themes and concepts raised in Forensic Accounting publications, including financial fraud, forensic auditing, investigative accounting, and accounting fraud and their implications for regulation and corporate governance.

The subsequent discussion of this research is organised as follows: Section II discusses the research methodology, while the results and bibliometric analysis related to forensic accounting are presented in Section III. Furthermore, conclusions and suggestions for future research are presented in Section IV.

2. Method

This study uses bibliometric analysis as its research methodology and Scopus database. This method allows researchers to evaluate the dynamics of research in a field, identify emerging trends, as well as uncover gaps in

the literature that may become opportunities for further research. Using bibliometric analysis, this study aims to provide a comprehensive overview of the development of forensic accounting, including the identification of key topics, leading authors, and influential journals in the discipline. According to Alsmadi & Alzoubi (2022), bibliometrics and network analysis are needed to map and categorise important information, so that it can serve as an effective tool in quantitative analysis to gain a more comprehensive understanding of the literature. Furthermore, in this study we used VOSviewer software to build, map and analyse bibliometric networks relating to research trends in Forensic Accounting. In addition, VOSviewer focuses on the visualisation of bibliometric maps, where comprehensive display features make it easy for users to evaluate and analyse the bibliometric maps (Nobanee et al., 2021). The software has been extensively used in various studies to analyse diverse articles and map data networks.

This study used the Scopus database (<https://www.scopus.com>) as the main platform for bibliographic research in literature analysis because it has a wide coverage of academic publications, and is regularly updated and expanded, making it one of the largest accessible abstract and citation databases (Aris et al., 2024; Wahid et al., 2020). In directing the search practice, we used keywords such as 'Forensic Accounting', accompanied by the application of several filters relevant to the field. The next step in conducting bibliometric analysis, the filtered document data will be exported and stored in RIS format for further analysis. RIS files are processed using the visualisation software VOSviewer (<https://www.vosviewer.com/download>) which functions to analyse networks and map data visualisations. The bibliometric process applied in this study is shown in Figure 1 below.

Topic & Search Criteria	Topic: Forensic Accounting
	Scope & Coverage: Database: Scopus Search fields: Article title, Abstract, Keywords Search type: All
	Keywords: "Forensic Accounting" OR "Financial Fraud" OR "Forensic Audit" OR "Investigative Accounting" OR "Accounting Fraud"
	Date Extracted 07 Februari 2025
Screening	Research Refinement: Scopus = 2.517 documents Dates = 1990-2025 (2.516 documents) Subject Area = Business, Management, and Accounting, Economics, Econometrics, and Finance (1.068) Language = English (1.050) Pub stage = Final (1.026)
Included	Search String: TITLE-ABS-KEY ("Forensic Accounting" OR "Financial Fraud" OR"Forensic Audit"OR "Investigative Accounting" OR "Accounting Fraud") ANDPUBYEAR > 1989AND PUBYEAR <2026 AND (LIMIT-TO (SUBJAREA , "BUSI") ORLIMIT-TO (SUBJAREA ,"ECON")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (PUBSTAGE , "final"))
	Record Included for Bibliometric Analysis: n = 1.026

Figure 1: Article Processed

Source: Data Processed (2025)

This study evaluated 1.026 articles that were analysed using VOSviewer visualisation software to identify author collaborations and co-occurrence patterns. We analysed authorship collaborations to map connections between researchers based on the documents produced, with the aim of identifying key scientists and evaluating their level of involvement. Co-authorship analysis is used to explore the collaboration between two or more authors in the writing of an article (Setiawan et al., 2023). Then, we also applied co-occurrence analysis to statistically identify various topics or variables that are relevant to Forensic Accounting related research. The keyword co-occurrence network map shows the interrelationships and relationships that often appear between certain topics or concepts in documents and articles (Aris et al., 2024). The wider the diameter of the largest circle that includes a keyword,

the higher the frequency of occurrence of that keyword in the reviewed research (Al Husaeni & Nandiyanto, 2022). This analysis is very important because it allows researchers to identify and understand patterns and developments in research topics.

3. Results and Discussion

3.1 Forensic Accounting Publication Trends

Since 1990, research on Forensic Accounting has been a topic that has attracted attention in international publications. Figure 2 shows the number of publications from 1990 to 2025 regarding Forensic Accounting which experienced significant fluctuations. This research successfully identified 1.026 articles from the Scopus database after filtering based on relevant topics. Based on document analysis in the first half of 2025, the highest number of publications was recorded in 2024 with 142 articles, followed by 2023 and 2022 with 111 and 90 articles respectively. This trend shows that interest in Forensic Accounting research is increasing and is expected to continue to grow in the future.

The significant increase in the number of publications, especially in 2024, indicates a great opportunity to further develop research in this field, both in terms of theory, methodology, and topics relevant to global challenges. It also indicates the need to update knowledge and competences every year to cope with the increasingly complex dynamics of forensic practice. Increased research interest reflects the need for new and more effective approaches to identifying, analysing and resolving financial crime cases, both in the public and private sectors.

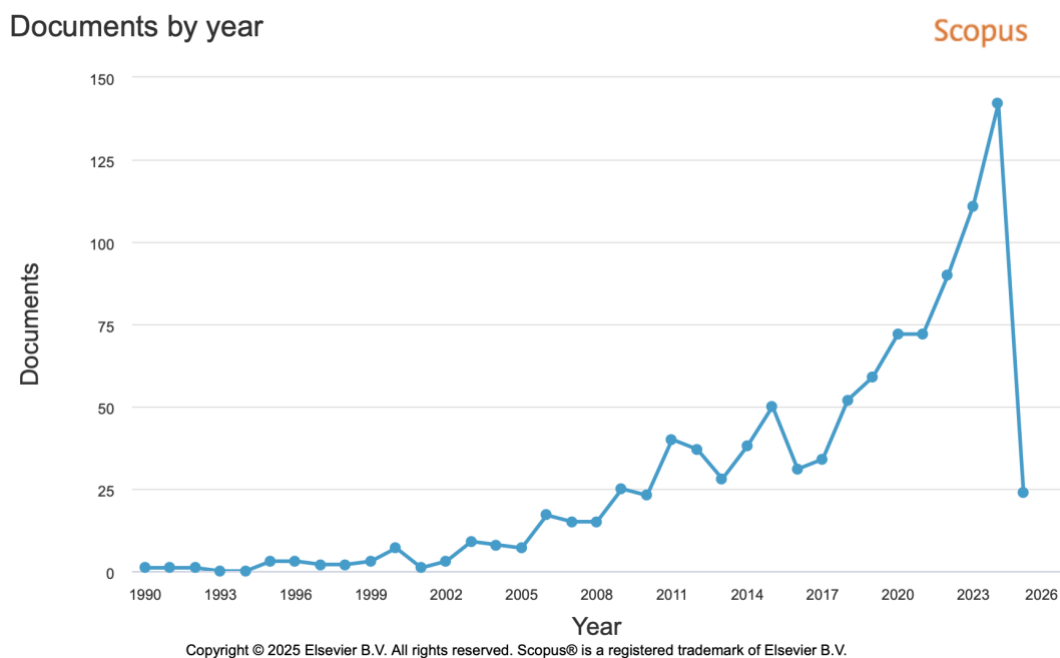


Figure 2: Publication quantity (year to year)

Source: Data Processed (2025)

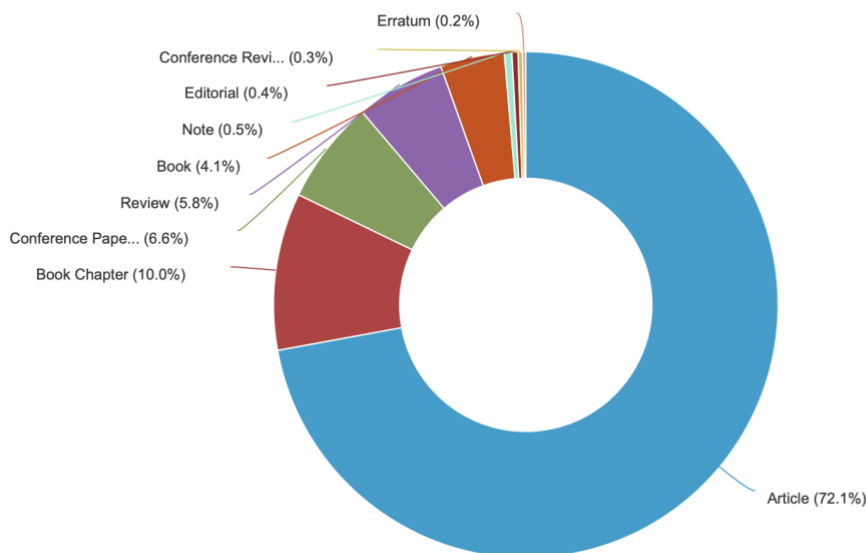
3.2 Forensic Accounting Publication Types

This research evaluated 1.026 publications that have been published, as displayed in Figure 3, with the main focus on Forensic Accounting. Most of the contributions came from scientific articles, which accounted for 72.1% of the total publications. The next largest contribution came from book chapters at 10.0%, followed by conference papers and reviews which accounted for 6.6% and 5.8% respectively. Meanwhile, contributions from books were recorded at 4.1%, notes at 0.5%, and editorials at 0.4%. The contributions from conference reviews and erratum were 0.3% and 0.2%, respectively. This high frequency of publications reflects the increasing global academic attention to the topic of Forensic Accounting.

The high proportion of scholarly articles (72.1%) indicates that Forensic Accounting is becoming an increasingly relevant topic in the research world, opening up opportunities for further exploration in theoretical frameworks, methodologies, and cross-country case studies. With the growing diversity of publications, including book chapters and conference papers, practitioners can access the latest perspectives and approaches that can be applied in corporate policy, forensic audit, and risk management.

Documents by type

Scopus



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Figure 3: Forensic Accounting Publication by type

Source: Data Processed (2025)

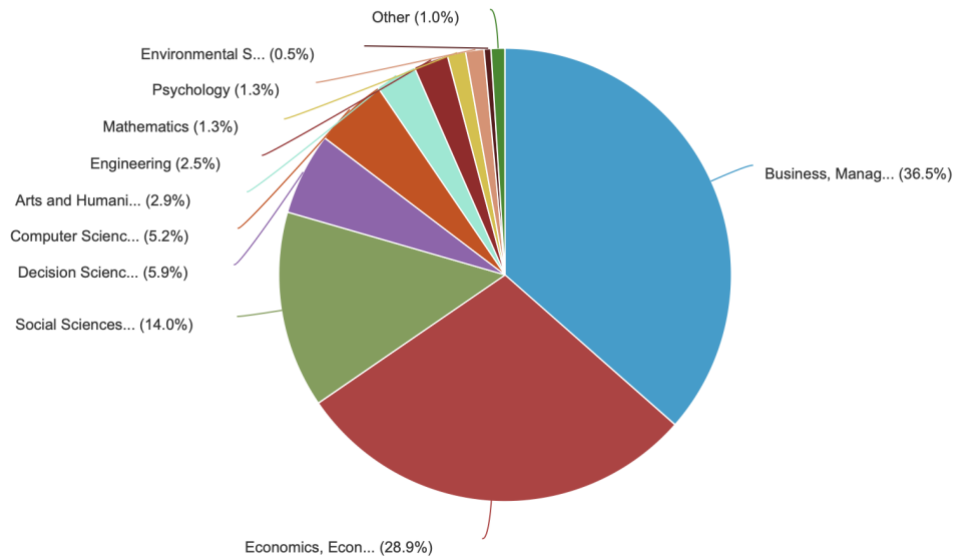
3.3 Forensic Accounting Subject Area

Research focusing on this topic is currently dominated by the fields of Business, Management, and Accounting at 36.5%, followed by Economics, Econometrics, and Finance at 28.9%, Social Sciences at 14.0%, Decision Sciences at 5.9%, Computer Science at 5.2%, Arts and Humanities at 2.9%, Engineering at 2.5%, and Mathematics and Psychology at 1.3% each. Meanwhile, Environmental Science contributed 0.5%, and other fields 1.0%. This distribution of research topics shows that economic issues are still the main focus of Forensic Accounting-related studies and publications. This dominance reflects the important role of economic analysis in detecting, preventing, and investigating financial fraud. This is also related to the application of forensic audit methods, financial data analysis, and investigative techniques to uncover illegal activities or financial statement manipulation in various business sectors.

These findings are of great importance to academics and practitioners in all parts of the world. For academics, the dominance of Forensic Accounting research in Business, Management and Accounting at 36.5% indicates the need for more comprehensive curriculum development, with the integration of economic analysis, forensic audit techniques and financial investigation methods to produce graduates who are prepared for the challenges of fraud detection and prevention. In addition, academics in Social Sciences, Computer Science and Psychology could explore interdisciplinary approaches, such as the use of advanced analytical technologies and behavioural understanding to support the effectiveness of forensic investigations. From a practitioner perspective, these results emphasise the importance of cross-sector collaboration in addressing financial fraud risks. Practitioners in the finance, audit, and risk management sectors need to adopt data-driven strategies, utilise forensic analytics, and improve competencies in identifying complex fraud patterns. The synergy between academics and practitioners is key to improving the quality of research, policy development, and the implementation of more effective forensic accounting practices in various industry sectors.

Documents by subject area

Scopus



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Figure 4: Forensic Accounting Subject Area

Source: Data Processed (2025)

3.4 Top 10 Forensic Accounting publishing channels

The importance of this topic and its role in supporting transparency and financial integrity in business practices is demonstrated by data from the top ten leading publishing outlets worldwide on Forensic Accounting. The five international publishing outlets include Journal of Financial Crime, Journal of Business Ethics, Issues in Accounting Education, Journal of the International Academy for Case Studies, and Studies in Systems Decision and Control, as shown in Figure 5. These publications underscore how the application of Forensic Accounting can assist companies in identifying, preventing, and addressing cases of financial fraud and improving the effectiveness of internal control systems. Thus, stakeholders can obtain reliable and relevant information to support transparent and accountable business governance.

The other five publication channels outside Figure 5 include Decision Support Systems, Journal of Accounting Research, Journal of Corporate Accounting and Finance, Managerial Auditing Journal, and Academy of Accounting and Financial Studies Journal. The continuation of these publication channels demonstrates a strong reputation and significant influence within the academic community, which encourages researchers to contribute through their findings and perspectives on forensic accounting and fraud prevention. This encourages researchers to explore new approaches, expand the literature, and produce empirical findings that can enrich the academic discussion on Forensic Accounting. Practitioners in business, government, and financial institutions can use the insights from these studies to identify gaps in financial controls, develop more effective anti-fraud policies, and improve organisational accountability.

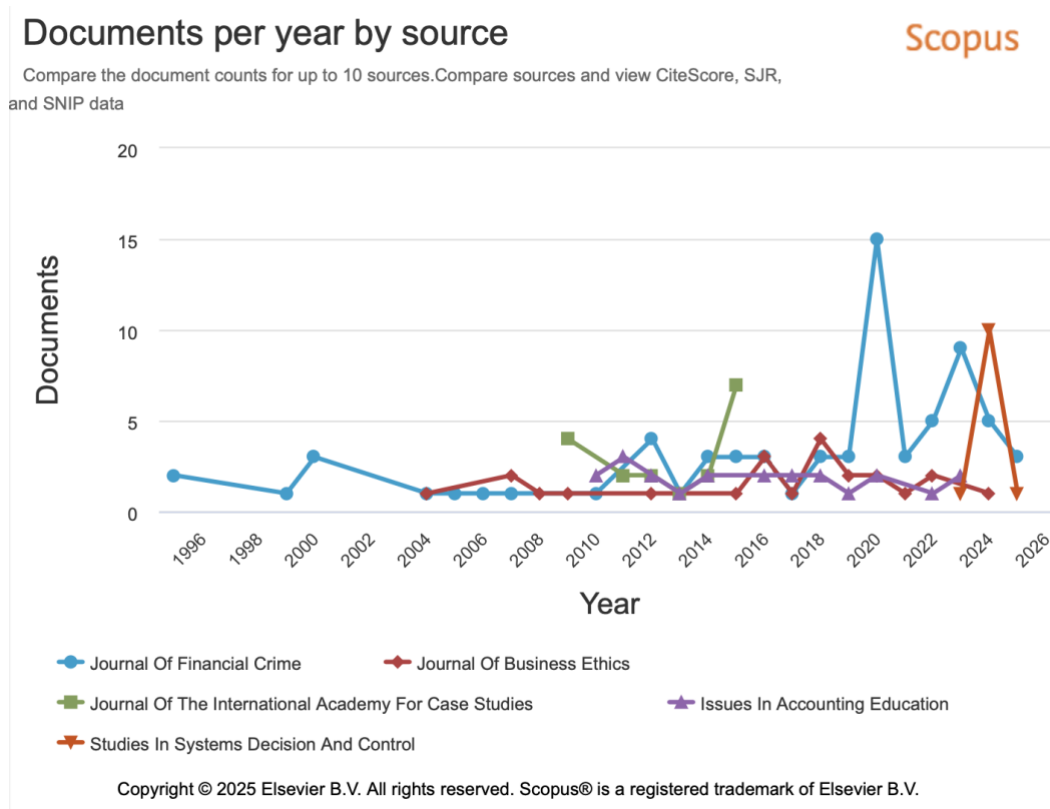


Figure 5: Top 10 Forensic Accounting publishing channels

Source: Data Processed (2025)

3.5 Top 15 countries of Forensic Accounting publications

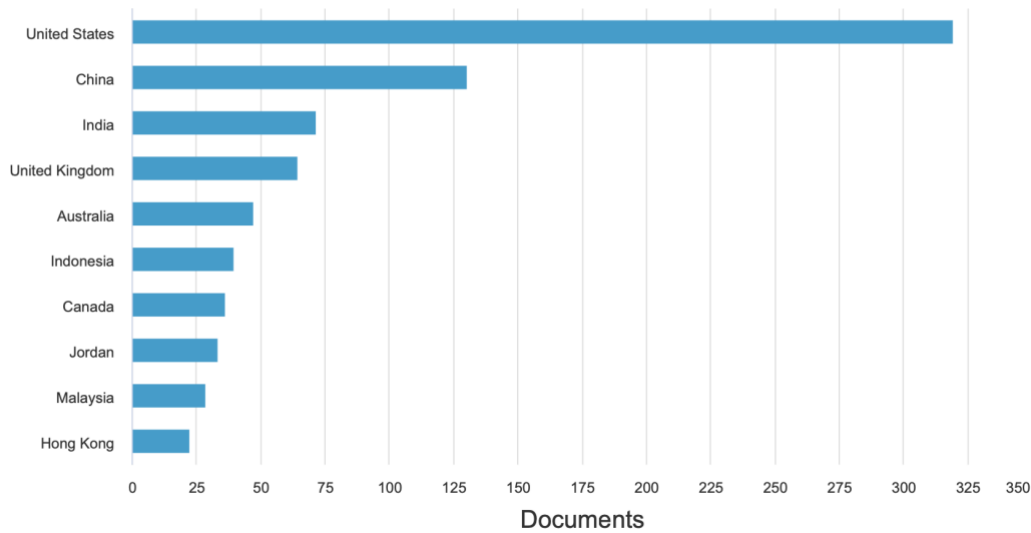
Publications on Forensic Accounting are dominated by the United States and China, with 319 and 130 articles respectively. This number reflects the rapid development of research related to forensic accounting in these two countries. Furthermore, India occupies the third position with 71 articles, followed by the UK and Australia which recorded 64 and 47 publications respectively. Indonesia and Canada produced 39 and 36 articles respectively, while Jordan published 33 articles, as well as Malaysia with 28 articles. Hong Kong also contributed with 22 publications. The increase in the number of publications from developing countries such as India and Indonesia indicates a positive trend in favour of strengthening forensic accounting practices as well as awareness of the important role of accounting in detecting and preventing financial fraud. This trend is in line with global efforts to improve transparency, accountability and integrity in financial reporting, reflecting a collective commitment to combat financial crime across sectors.

The remaining five countries outside the list in Figure 6, namely France, Italy, Saudi Arabia and Singapore, together produced 18 articles, while Germany recorded 17 publications. This trend opens up opportunities for academics to conduct cross-country research collaborations, explore new methodologies, and expand comparative studies that can enrich the global literature. In addition, practitioners in the public and private sectors in various countries can utilise these findings to adopt best practices from countries with more advanced publications, adapt them to the local regulatory context, and develop more effective anti-fraud policies. A review of forensic accounting publications from different countries shows a growing interest in the topic, reflecting the global need to strengthen more effective financial oversight systems.

Documents by country or territory

Scopus

Compare the document counts for up to 15 countries/territories.



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Figure 6: Top 15 countries of Forensic Accounting publications

Source: Data Processed (2025)

3.6 Top 15 Affiliates in Forensic Accounting Publications

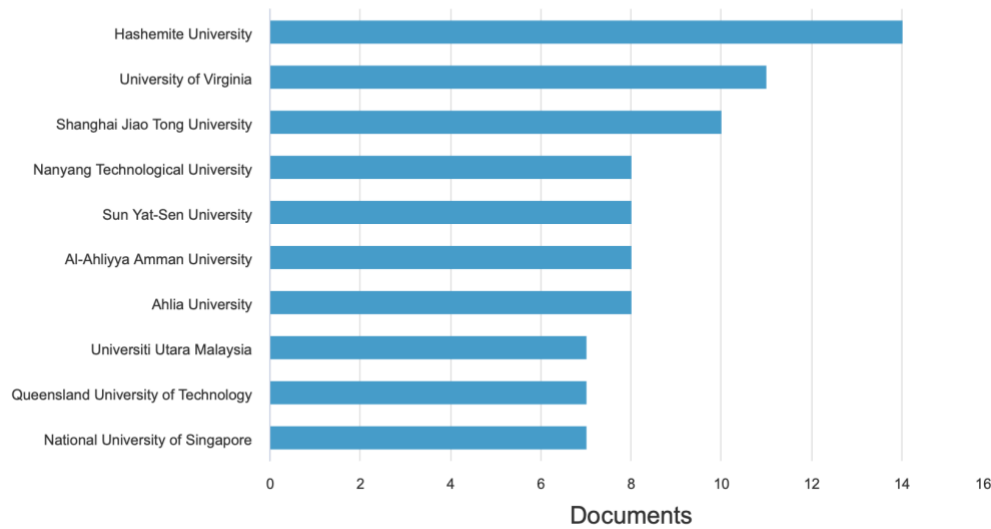
The authors of publications on Forensic Accounting approach the topic from various perspectives, both academic and practical. The majority of the authors come from an academic background with a higher education institutional affiliation. The top fifteen institutions with the highest number of publications are occupied by Hashemite University with 14 related articles, followed by the University of Virginia with 11 articles, and Shanghai Jiao Tong University which produced 10 articles. In addition, 8 articles each came from authors affiliated with Nanyang Technological University, Sun Yat-Sen University, Al-Ahliyya Amman University and Ahlia University. The other five affiliations outside of the table were Chitkara University with 7 articles, Universiti Teknologi MARA, Tshwane University of Technology, The University of Texas at Austin, and Southeast Missouri State University with 6 articles.

The diverse backgrounds of institutions such as Hashemite University, University of Virginia, Shanghai Jiao Tong University, Nanyang Technological University, and Sun Yat-Sen University reflect the opportunities for scholars to collaborate internationally, encourage cross-cultural knowledge exchange, and enrich perspectives in curriculum development and further research. This also indicates that the topic of Forensic Accounting has global relevance, encouraging researchers to explore new approaches that can be adapted to suit local contexts in different countries. In addition, the high participation of renowned academic institutions provides an opportunity for practitioners to adopt the latest research-based methods in managing financial risks so as to strengthen the role of Forensic Accounting in creating more transparent financial governance and integrity.

Documents by affiliation

Compare the document counts for up to 15 affiliations.

Scopus



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Figure 7: Top 15 Affiliates in Forensic Accounting Publications

Source: Data Processed (2025)

3.7 Leading Authors and Their Role in Advancing Forensic Accounting Literature

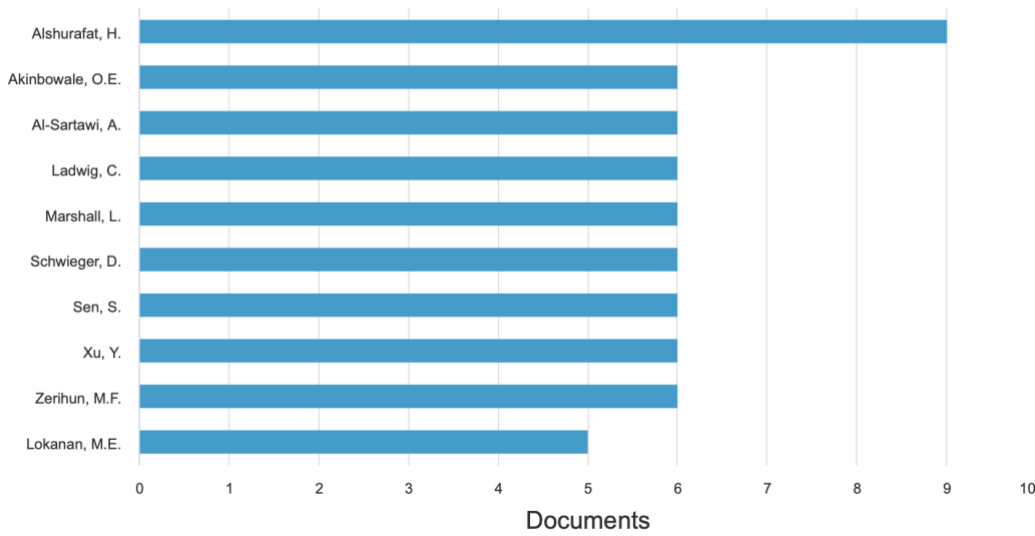
The results of identifying sources and authors who contribute to Forensic Accounting publications are very important to provide references for researchers in compiling and analyzing their studies. The mapping of 1,026 Scopus indexed articles from 1990 to 2025 shows that Alshurafat is the author with the highest number of publications with a total of 9 articles, Akinbowale, Al-Sartawi, Ladwig, Marshall, Schwieger, Sen, Xu, and Zerihun with 6 articles. Finally, Lokanan with 5 articles as shown in Figure 8. The dominance of these authors reflects their significant role in driving development and progress in this field of study. In addition, the high frequency of publications from these authors indicates a deep level of expertise and engagement in producing academic work in the field of Forensic Accounting. It also allows recognition of the unique contributions of various researchers who have been instrumental in driving the discipline forward, both in terms of theory and practice. In addition, an understanding of the evolution and dynamics of forensic accounting development encourages researchers to explore the latest issues and contribute to the strengthening of relevant theories.

The network of lines connecting the authors reflects the collaborative relationship between them, while the different colors indicate the grouping of collaborations based on specific research groups or thematic focus shown in figure 9. The mapping of collaborative networks between authors as well as thematic groupings based on colors shows the importance of cooperation across institutions and disciplines in developing forensic accounting. As such, collaborative efforts in this field provide a strong foundation for creating a more integrated, multidisciplinary approach to the challenges of fraud and financial crime on a global level. Furthermore, understanding the origins of publications, both in terms of sources and authors, is essential to trace the evolution and dynamics of forensic accounting development.

Documents by author

Compare the document counts for up to 15 authors.

Scopus



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Figure 8: Top 15 Authors in Forensic Accounting Publications

Source: Data Processed (2025)

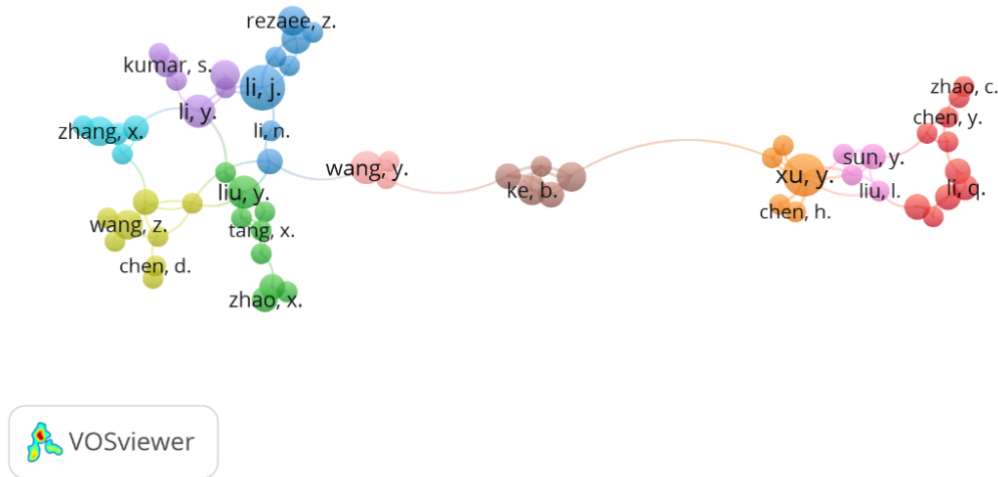


Figure 9: Co-authorship

Source: Data Processed (2025)

3. 8 Themes and Concepts Explored in Forensic Accounting Publications

Figure 9 presents a comprehensive summary of global topics related to Forensic Accounting. The illustration features key themes such as Risk Control, Fraud Detection, Digital Forensics, Financial Crime, Fraud Analytics, Risk Monitoring, Digital Compliance and Financial Governance. Based on the results of co-occurrence analysis using VOSviewer, eight distinct clusters covering 122 items were identified.

Cluster 1, which consists of 24 items, includes five of the following: audit quality, corporate strategy, financial system, corruption, and fraud. The use of these keywords has very important implications in relation to financial

management and accounting research and practice in preventing and detecting corruption and fraud. Research focusing on these keywords can provide important insights for formulating policies that improve corporate governance, strengthen financial regulation, and promote a more ethical and transparent business environment.

Cluster 2, which consists of 20 items, includes five of the following: accounting fraud, corporate financial fraud, earnings manipulation, forensic accountants, and fraud investigation. The use of these keywords emphasizes the importance of oversight, transparency, and strengthened corporate governance to prevent and detect financial fraud that can undermine corporate integrity. The implications of the use of these keywords indicate the need to implement strong internal controls, increase transparency, and strengthen good corporate governance regulations and policies to prevent and detect fraudulent practices in a complex business environment.

Cluster 3, which consists of 18 items, includes five of the following: big data analytics, data analytics, fraud prevention, forensic accounting, and technology. The use of such keywords illustrates the significant shift in the modern accounting and finance landscape towards a more data- and technology-driven approach. The implications of the use of these buzzwords also indicate the need for accounting professionals to develop new competencies in data management and understanding of advanced technologies. In addition, the synergy between data, technology and forensic expertise creates a financial ecosystem that is more adaptive, responsive to fraud threats and supports robust evidence-based decision-making.

Cluster 4, which consists of 18 items, includes five of the following: blockchain, money laundering, cyber security, economic crime, and financial crime. The use of these keywords indicates a focus on crucial issues in the modern digital financial ecosystem. The implications of using these keywords reflect the urgent need for adaptive regulation and cross-sector collaboration to balance the benefits of technological innovation with the mitigation of financial crime risks. Furthermore, research in this area can provide insights into how effective cybersecurity strategies and anti-money laundering policies can be developed to deal with the dynamics of economic crime.

Cluster 5, which consists of 16 items, includes five of the following: artificial intelligence, financial statement fraud, fraud risk, risk assessment, and learning systems. The use of these keywords reflects a research focus that integrates advanced technology with financial risk analysis to detect and prevent financial statement fraud. The implications of the use of these keywords indicate a paradigm shift in risk management, from a reactive to a proactive approach, relying on intelligent technology to detect anomalies before the risk develops into a significant fraud. The use of these keywords also emphasizes the importance of synergy between technology and risk governance in maintaining the integrity of financial reporting in the digital era.

Cluster 6, which consists of 14 items, includes five of the following: anomaly detection, crime, data mining, financial fraud detection, and fraud detection. The use of these keywords indicates a research or analysis focused on identifying abnormal patterns associated with criminal activity, particularly in a financial context. The implication of using these keywords shows the importance of integrating advanced analytics technology in supporting faster and more accurate decision-making processes, reducing the risk of financial loss, and increasing the effectiveness of monitoring criminal activity. It also underscores the critical role of collaboration between technology, regulation and policy to create a more proactive fraud detection system that is responsive to evolving threats.

Cluster 7, which consists of 6 items, includes five of the following: computer crime, public sector, laws and legislation, information management, and jordan. The use of these keywords reflects the research focus on issues related to cybercrime in the context of the public sector, and how regulation and information management play a role in addressing it. The combination of these keywords implies the need for an integrated approach between technological, legal and management aspects in addressing the challenges of cybercrime in the public sector. This highlights the importance of collaboration between policymakers, IT professionals and law enforcement to create a secure and trusted digital ecosystem, while ensuring the continuity of public services at large.

Cluster 8, which consists of 6 items, includes five of the following: capital markets, decision-making, financial fraud, financial literacy, and regulation. The use of these keywords indicates the focus of research or analysis

related to the dynamics of financial markets and how various factors affect the behavior and decisions of market participants. It can be concluded that the five keywords are interconnected, describing a financial market ecosystem where decisions are influenced by financial literacy factors, the risk of fraud, and the importance of strong regulation to ensure the efficiency and integrity of capital markets.

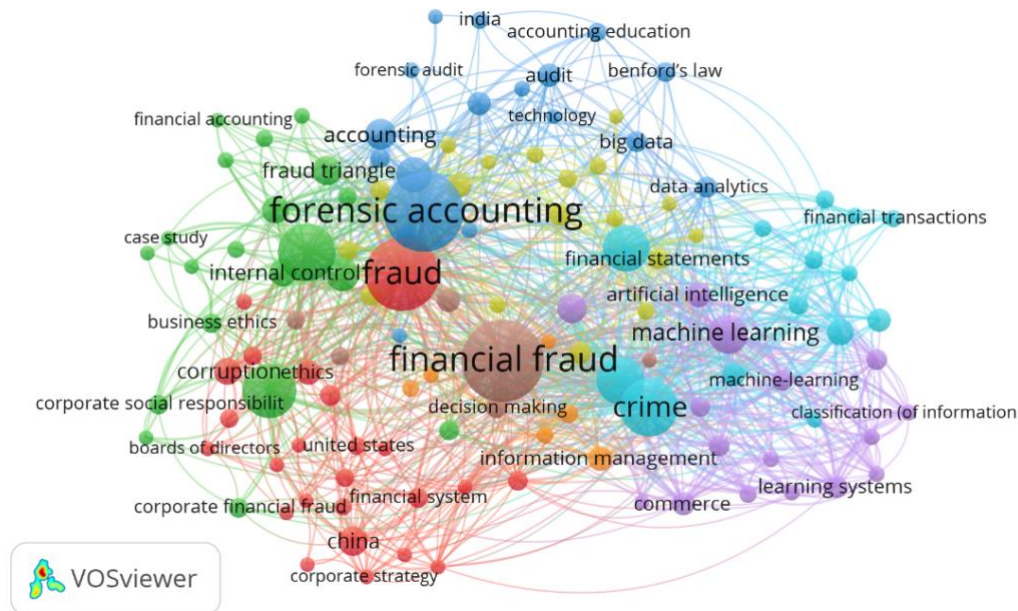


Figure 9: Co-occurrence

Source: Data Processed (2025)

4. Conclusion

A total of 1,026 articles on Forensic Accounting were analyzed in this study and VOSviewer software was used to process them. Based on the analysis of the processed documents, the highest number of publications occurred in 2024, followed by 2023 and 2022. Based on the type of publication as of the first half of 2025, articles are the most common type of publication with 72.1%. Currently, research related to the topic of Forensic Accounting is dominated by the field of Business, Management, and Accounting with 36.5%. The top five international publication channels include Journal of Financial Crime, Journal of Business Ethics, Issues in Accounting Education, Journal of the International Academy for Case Studies, and Studies in Systems Decision and Control. In addition, the countries that dominate the topic of Forensic Accounting are the United States and China. Some of the affiliations behind this research topic include Hashemite University. Co-authorship analysis shows that Alshurafat is the author with the highest number of publications. Findings from co-occurrence analysis with VOSviewer showed eight distinct clusters with a total of 122 items. The results of the co-occurrence analysis indicate that research on Forensic Accounting still requires deeper exploration. The main focus should be on developing clusters that identify key elements in detecting, analyzing, and preventing financial fraud.

The results of this bibliometric analysis are expected to contribute to academics and practitioners in understanding the forensic accounting research landscape, as well as encourage cross-disciplinary collaboration to overcome the challenges faced in the digital era. Thus, this research not only focuses on mapping the literature, but also aims to provide strategic recommendations for the development of forensic accounting studies in the future. The limitation of this research lies in the use of a limited database, which only relies on Scopus as the main source. This has the potential to cause data bias because it does not consider other relevant databases such as Web of Science, Google Scholar, or Dimensions. Future research is also recommended to explore under-researched topic groups in the realm of forensic accounting. One promising area is the integration of advanced technologies, such as artificial intelligence, big data analytics and blockchain in detecting and preventing financial fraud.

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Intent-Focused Management Theory: Redefining Management Practice and Scholarship

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Abstract

Management is a process of planning, organizing, staffing, directing and controlling the available resources of an organization in order to achieve the set goals in a dynamic and unpredictable environment. The process is guided by management thought, which is a body of knowledge that consists of theories and principles. Management theories are concepts that outline different approaches to business management. Essentially management theory provides logical reasoning in the form of a set of broad principles that provide a general frame of reference by which management practice can be evaluated. The most important goal of management theory is to provide a coherent set of logical principles that form the general frame of reference for the evaluation and development of sound management practices. Management therefore, in some form or the other has been practiced in various parts of the world since the dawn of civilization. Without theories and principles learning managerial practice would depend upon haphazard trial and error. It is however worth noting that even with the continued application of carefully crafted and tested management theories, managers still grapple with the management of businesses and organizations in general. The pervasive and universal nature of management has seen application of its concepts and principles in civilian as well as military organizations. However, a review of extant conceptual and empirical literature brings out clear gaps in terms of theoretical anchorage of military decision making tools as well as lack of comprehensiveness in the existing theories of management which guide project planning and implementation including public policy making process. This is partly attributed to lack of clarity on the minimum threshold required of a management theory. It is in view of the aforesaid that this study was carried out with the following objectives: First, to review extant conceptual and empirical literature on existing management theories and models with intent of establishing existing gaps in their contribution towards decision making and organizational management. Second, to establish existing gaps with reference to theoretical anchorage of military decision making tools, project planning logic models and public policy making processes. Lastly, to propose a comprehensive theoretical model, management theory and supporting principles as a basis upon which the above decision making tools and processes would be anchored.

Keywords: Intent, Intent Focused, Intent Focused Management, Management Theory, Military Management, Public Policy, Management Practice

1. Introduction

Management has no snap-shot definition; it is usually easier for management scholars to explain than to define. Management scholars and teachers are still searching for a definition that will be all embracing. To Okafor, L.C. et al. (2018) perhaps this definition problem could be attributed to the pervasiveness of the discipline. It covers the

entire gamut of human life. In effect, any definition given is amorphous and, therefore, could be challenged. As more scholars continue to research on management principles, theories and concepts, more and more definitions continue to be suggested. This paper focuses on the following as the definition of management for the purpose of addressing the identified gaps in literature regarding the use of certain decision making tools within military organizations, non-governmental organizations and public policy formulation institutions including the relevance and applicability of management theories.

Management is seen as a process of planning, organizing, directing and controlling the available resources of the organization in order to achieve the set goals of the organization in a non-static environment. Consequently, Graffin (1996) sees management as a set of activities (including planning and decision making, organizing, leading and controlling) directed at an organization's resources (human, time, financial, physical and information), with the aim of achieving organizational goals in an efficient and effective manner. Also, management is the process of working with and through others to achieve organizational objectives in a changing environment (Kreitner 1992). The practice of management is guided by theories, some of which will be discussed in the paper at a later stage. The starting point is to gain an understanding of the difference between two commonly applied concepts in the study of management: concept of management and management thought.

A discussion on the development of management thought requires that scholars clearly distinguish between 'Concept of management' and 'Management thought'. Concept of management refers to the process of planning, organizing, directing and controlling of resources to achieve organizational objectives. Management thought on the other hand refers to the body of knowledge and theories that guide management practices. Evidence of the use of well-recognized principles of management is found in the organization of the Roman Catholic Church and the organization of military forces. The Roman Army in 100 BC for example, was organized into legions of 4,200 infantry and 300 cavalry for accomplishment of missions.

Management therefore, in some form or the other has been practiced in the various parts of the world since the dawn of civilization. With the onset of Industrial Revolution, however, the position underwent a radical change. The structure of industry became extremely complex. At this stage, the development of a formal theory of management became absolutely necessary. It was against this background that the pioneers of modern management thought laid the foundations of modern management theory and practice.

Management theories are concepts that outline different approaches to business management. These theories guide leadership styles, decision-making processes, and organizational structures. It is simply a statement predicting which actions will lead to what results and why. Essentially management theory provides logical reasoning in the form of a set of broad principles that provide a general frame of reference by which management practice can be evaluated and the development of new practices and procedures are based. The most important goal of management theory is to provide a coherent set of logical principles that form the general frame of reference for the evaluation and development of sound management practices.

It is instructive to note that every action that managers take and every plan they formulate, is based on some theory at the back of their minds that makes them expect the actions they contemplate will lead to the results they envision. The value of theories in management can be summarized in two points: They help in interpreting the present, to understand what is happening and why; and they help in making predictions. In other words "theories help to sort the signals that portend important changes in the future from the noise that has no strategic meaning". From this general view of the functions of management theory, it is without gain to say that management theory is an important tool in the practice of management. It is a means to an end.

In other words management theory serves as a tool to increase the effectiveness of managers. Managers who are up to date in management theories are more likely to be up to date in practice, if and only if they would, and are able to apply the knowledge gained from the theories. Management theory is useful to the manager by helping him to explain the dynamics of organization and shedding light on the problems often faced by him in practice, such as those related to motivation, productivity, satisfaction etc.

In specific terms, management theory is useful in the following ways: It increases efficiency. A manager becomes more effective and efficient as he/she uses established guidelines to help solve problems; It improves managerial learning and development, because it provides an established structural framework of knowledge, which would appear to be useful, and which managers can fall back on to crystallize the nature and process of management and to simplify the process of learning.

Without theories and principles learning managerial practice would depend upon haphazard trial and error. It is however worth noting that even with the continued application of carefully crafted and tested management theories, managers still grapple with the management of businesses and organizations in general.

1.1. Statement of the problem

Theories are built on assumptions that certain conditions exist and the application of a given theory is subject to the fulfillment of the assumptions underlying it. The nature of the relationship between an organization and the environment may change over time as environmental factors change structure, form and volume and even assuming greater fluidity. This results in the violation of the essential assumption that the specified conditions remain stable over time. Events and situations are affected and determined by the realities of the environment in which they occur.

It is implied therefore that solutions to problems will vary according to situations at hand and the environmental influence on them. Evidently, on many occasions, managers encounter circumstances in which application of the supposed relevant theory does not yield the predicted results. This is particularly because the theory does not comply with the existing conditions for it to work. In other words it does not fit the circumstance to which it is being applied. A situation that is usually referred to as lack of “circumstance-contingency.” It therefore follows that many theories have failed because they have been misapplied.

Essentially, a theory in management is more reliable when “its statement describing the actions that must lead to success explains how they will vary as a company’s circumstance change”. A review of extant conceptual and empirical literature brings out a clear gap in terms of lack of comprehensiveness in the existing theories of management. This is attributed to lack of clarity on the minimum threshold required of a theory. In this case therefore, most theories have assumed that the planning function of management is automated and that the management process commences at implementation stage, thus creating a knowledge gap regarding the application of management theories.

Further to the aforesaid, the pervasive and universal nature of management has seen application of its concepts and principles in both civilian and military organizations as explained here below: Firstly, Militaries are organizations constitutionally established to defend the sovereignty and territorial integrity of States. They also support civil authorities during disasters and calamities to restore normalcy in the affected areas. The planning and execution of such sensitive missions calls for application of decision making tools such as Campaign planning and the Combat Estimates also known as the Seven Questions (7Qs). These two tools guide the Military Decision Making Process. The success of military planning and accomplishment of military operations is much dependent on the conceptualization and proper application of such decision making tools.

Secondly, Civilian organizations including Non-Governmental Organizations on the other hand, apply the Project Logic Models to aid in project planning, implementation and evaluation. This is a tool that guides on determining the requirements in terms of inputs and outlines the outputs including project outcomes.

Lastly, within the Public Sector, the word policy is used to denote a Statement of Government Intent, which articulates basic principles to be pursued to attain specific goals and actions. Public Institutions world over conduct public policy formulation. This follows a well laid down process from identification of the problem to policy implementation including monitoring and evaluation, which is a management process as well. The process is guided by theories and models such as game theory model, systems model, institutional model, elite-mass model, rationality model and incremental model. A keen scrutiny of these models and theories clearly brings out the

existence of a knowledge gap. The theories have majored in explaining the factors necessitating the formulation of public policy rather than guiding the process of policy formulation.

The continued application of the Campaign Planning Tool and the Combat Estimates as decision making tools within military organizations has therefore no theoretical anchorage from the Management Scholar's point of view. Lack of comprehensive models and theories to guide project planning and public policy formulation by Non-Governmental organizations and the public sector respectively is a matter that must be addressed through scholarship.

It is in view of the aforesaid that this study was carried out for the purpose of filling the existing knowledge gaps relating to theoretical anchorage and comprehensiveness of the military decision making process, public policy formulation and project planning, implementation, monitoring and evaluation within various institutions.

1.2. Objectives of the study

The objectives of this paper were as follows:

- a. To review extant conceptual and empirical literature on existing management theories and models with intent of establishing existing gaps in their contribution towards decision making and organizational management.
- b. To establish existing gaps with reference to theoretical anchorage of the military decision making process tools, project planning logic models and public policy formulation process.
- c. To propose a comprehensive theoretical model, management theory and supporting principles as a basis upon which the above decision making tools and process will be anchored.

These proposed theoretical models, the management theory including supporting principles, were built on the realization that the military decision planning process, project planning using logic models and public policy formulation process are all strategic planning and management processes that ought to be intent driven. The determination of the strategic intent which closely translates into the end-state or desired outcome is what initiates the planning process. It was the author's belief that the proposed theory would be comprehensive enough to fill the realized theoretical gaps.

It was further believed that this study would not only contribute theoretically to the body of existing knowledge on management theories, but would improve the practice of decision making within: Security, Strategy and Defence Studies Institutions; Public Policy Formulation Organs; Policy Studies Institutions and other organizations, both public and private. It will also promote optimum resource utilization in various organizations through strict adherence to strategic intents in the exercise of management.

2. Literature Review

2.1. Defining a 'Theory'

According to Gabriel (2008), a theory refers to a generalized statement of abstractions or ideas that asserts, explains or predicts relationships or connections between or among phenomena, within the limits of critical bounding assumptions that the theory explicitly makes.

Kerlinger and Lee (2000, p. 11) define a theory as a set of interrelated constructs (concepts), definitions, and propositions that present a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting the phenomena.

These two definitions are important in guiding the understanding of the factors that together constitute a theory including the nature of relationship that must exist for a concept to be referred to as a theory. It was necessary to do so for the purpose of eliminating confusion in the conceptualization of theories and models or frameworks. An understanding of the historical context regarding the evolution of management theories is necessary for a deeper analysis of resultant gaps.

2.2. Historical Context of Management Theories

Wilson and Thomson (2006) argued that 'History matters' and therefore, it is essential to develop better understanding of the present-day emerging trends and stages in the management since 19th century so that holistic view could be attained. To larger extent, there is an agreement that the management practices and approaches have altered with the passage of time (Bartol and Martin, 1998; Naranjo-Gil, Sánchez-Expósito and Gómez-Ruiz, 2016; Hodge, 2002). However, different schools of thought have accredited it to several factors namely; globalization (Stros, Bukovinski and Coner, 2014), intense competition/survival of the fittest (Ferreira and Kittsteiner, 2011), connectedness (Pham et al, 2018), multiplicity (Cooper et al, 2017), socially constructed realities (Morgan, 1986) and so on. Having said that, the roots of management lies in the earlier management theories and therefore remain vital for tackling the contemporary management challenges.

The advent of industrial revolution in the middle of the 18th century had its impact on management. Industrial revolution brought about a complete change in the methods of production, tools and equipment, organization of labour and methods of raising capital. Under this system, land and buildings, hired labour, and capital was made available to the entrepreneur, who strived to combine these factors for efficient achievement of a particular goal. These changes brought about development in the field of management. Traditional or customary ideas of management were slowly given up and management came to be based on scientific principles.

Prof. Charles Babbage, James Watt Junior and Mathew Robinson Boulton, and Robert Owen were no doubt, pioneers of management thought. But, the impact of their contributions on the industry as a whole was meagre. The real beginning of the science of management did not occur until the last decade of the 19th century. During this period, stalwarts like F.W. Taylor, H.L. Gantt, Emerson, Frank and Lillian Gilberth etc., laid the foundation of management, which in due course, came to be known as scientific management.

This epoch in the history of management will be remembered as an era in which traditional ways of managing were challenged, past management experience were scientifically systematized and principles of management were distilled and propagated. The contributions of the pioneers of this age have had a profound impact in furthering the management know-how and enriching the store of management principles. Fredrick W. Taylor and Henry Fayol are generally regarded as the founders of scientific management and administrative management respectively and both provided the bases for science and art of management.

2.3. Overview of Major Management Theories

In simple terms, Drucker (1963) defined management as the product of effectiveness and efficiency where “doing things right” is regarded as ‘efficiency’ while “doing the right things” is considered as ‘effectiveness’ (cited from Robbins and Coulter, 2012). The theme of Drucker's definition is based on “knowledge work” (McGrath, 2014). On the other hand, Fayol defined it as, “to manage is to forecast and to plan, to organise, to command, to coordinate and to control” (cited from Prasad and Gulshan, 2011).

Different scholars have classified the management theories differently, such as Koontz (1988) divided it into six groups, namely, (i) The management process school, (ii) the empirical school, (iii) the human behavioural school, (iv) the social system school, (v) the decision theory school and (vi) the mathematical school respectively. On the other hand, Hitt et al. (1979) categorized it into three broader groups, such as (a) Classical management theory, (b) neo-classical management theory and (c) modern management theory. Following Sridhar's (2017) approach, this report considered second strategy and use three broader groups to explore and examine the distinctive theories under each school of thought.

2.3.1. Classical Management Theories

Scientific Management Theory. Classical theory is also known as traditional theory of management. The first among this school of thought (classical management perspective) is “scientific management perspective” where Frederick W. Taylor is known to be a “father of scientific management” for proposing 'one best way to do things' or scientific management/Taylorism (Ghuman and Aswathapa, 2010). Time and motion were a scientific analysis of task for examining the physical movements and requirements for the completion of task (Khurana, 2009). The idea of Taylorism is found to be consistent with the concerns of Adam Smith that emphasized division of labour bringing specialization, which leads to enhanced productivity (Khurana, 2009; Robbins and Coulter, 2012). In doing so the humans are treated as machines while ignoring the demoralizing and inhuman effects of tasks on the workers (Ghuman and Aswathapa, 2010). In addition to that, Taylor also commenced another study “science of shovelling” for determining the optimal weight to be lifted by the workers, thus, the optimal shovels were introduced to increase productivity while reward as increase in the pay was motivator (Ghuman and Aswathapa, 2010).

The major notion of the motivation for employees under scientific management were seen as money (Khurana, 2009). According to Furnham (2012), “money is an effective, powerful and simple motivator but it is not always motivator for everyone because at times it has power to demotivate” (p. 152). Additionally, Katzenbach and Khan (2010) argued that majority of the successful entrepreneurs agreed that major motivation is to be built upon something lasting rather than on the notion of making huge money. Furthermore, “Certainly great professional leaders like Marvin Bower, who built McKinsey & Co., John Whitehead, the former Goldman Sachs senior partner, and Supreme Court Justice John Paul Stevens explained that that their motivation came from the work itself, and that the lasting respect of others was far greater than money as a measure of accomplishment. And very few great artists are in it for the money. Money is a by-product, and usually a secondary one at that, for such achievers” (cited from Katzenbach and Khan, 2010). Nevertheless, for lower level jobs, still money is often use as a basic needs (key motivator), reflecting that the scientific management is still applicable in the modern-day management.

During the same era, Frank and Lillian presented “applied motion study” focusing on reduction in the number of motions in a task in order to increase efficiency to have profit and satisfaction of a worker (Caramerla, 2018). Meanwhile, Henry L. Gantt developed a Gantt Chart to measure the productivity and working efficiency along with the task and bonus system of wages (Sheldrake, 2003). Gantt Chart also offered a graphical daily balance to ensure efficiency in routine manner (Sheldrake, 2003). Both above mentioned works were inspired by the concept of Taylorism.

In the modern day, project management tools and techniques are used by organisations to ensure there is elimination of waste while attainment of most efficient results indicating the use of ‘applied motion’ in operations (Caramela, 2018). Program and review technique (PERT) charts are another modern-day managerial tool offering visual methods to administer time and resources of project (Sullivan, 2017). Nowadays, same scientific management approach is used with modifications as of now multiple websites offer online solutions through interactive sessions, free tutorials and blogs discussion, which are all based on Henry Gantt management theory (Sullivan, 2017). Harrington Emerson stated twelve principles of efficiency that enable manager in defining objectives, developing scientific methods for evaluation, forming standardized procedures and rewarding employees (Sridhar, 2017).

Administrative Management Theory. Under same classical school of management, the contemporary school of thought to scientific management are the ‘administrative management’ and ‘bureaucratic organisations’ (Robbins and Coulter, 2012; Sridhar, 2017). This school of thought is based on traditional or administrative principles of management while prominent exponents include Henri Fayol, Chester Barnard and Colnel Urwick (Sridhar, 2017). Henri Fayol is considered as the father of modern management for his contribution to the administrative management field primarily focusing on the operational approach through 14 principles of management. “Fayol introduced unified concept by focusing on managerial levels and the organisation as a whole” (Sridhar, 2017).

All business activities could be split into six groups namely; administrative, security, accounting, financial, commercial and technical while focused on the “managerial activities of manager including, planning, organizing, directing, coordinating and controlling” (Robbins and Coulter, 2012). Key principles include “division of work, authority and responsibility, discipline, unity of command, unity of direction, subordination of individual interest to general interest, remuneration, centralization, scalar chain, order, equity stability of tenure of personnel, initiative and esprit de corps” (Robbins and Coulter, 2012). Fayol's heavily emphasized on rationality, logic and consistency (Sridhar, 2017).

Interestingly, “Taylor worked from the bottom of the hierarchy upward, whereas Fayol worked from the apex downwards, with ‘management centred’ philosophy,” which is the difference between two classical schools of thoughts (Sridhar, 2017). On the other hand, Chester Barnard argued that effective communication is essential for cooperation and there should be a balance between rewards and contributions among workers (Robbins and Coulter, 2012). Colonel Urwick assembled the principles of Taylor, Fayol and other management scholars and suggested that management is a dynamic process to perform organisational activities (Sridhar, 2017).

Bureaucratic Management Theory. With the expansion of organisations, the operations become further complex giving “authoritarian-paternalistic pattern” way that enhances functional specialization within the distinctive layers of management to have smooth operations (Sridhar, 2017). This led to bureaucratic approach toward organisational structure and Max Webber proposed a theory of bureaucracy for organisational efficiency based on organisational systems functioning on set of rules, policies and hierarchy of authority (Ibid). Biggest pain of this approach is that it excludes the conflict or overlapping duties, which offers clear direction so that organisational operations gain efficiency in productivity. The approach offers consistency in patterns to ensure higher precision in tasks to avoid waste of resources (Sridhar, 2017).

This is effectively the theme of modern-day organisations too to have structural and patronized functions in order to avoid wastage of resources and enhance operational efficiency (Brown, 2014). However, the major focus of this theory remains on positions rather than individuals (Sridhar, 2017). Organisations would even continue their functionality even if workers quit, which is visible in modern day to some extent that organisation stays while employees come and go (Brown, 2014). Excessive red tapism and paperwork often creates unpleasant experience as well as delay smooth operations (Sridhar, 2017).

2.3.2. Neo-Classical Theory

Neo-classical school of thought argues that traditional theory and its principles are contradictory, only focused on motivation through monetary rewards and proposed approaches to carry out operations without taken into consideration the time factor, which is subject to alteration (Sridhar, 2017). The physiological and mechanical features being highly emphasized by the traditionalist led to a reaction from neo-classical school that focused more on human-orientation and largely paid attention to drives, time needs, attitudinal and behavioural aspects of workers. Human relations school and behavioural school formed under neo-classical theory (Robbins and Coulter, 2012; Sridhar, 2017).

Human Relation Theory. Elton Mayo is the main champion along with the Frank Roethlisberger and William Dickson of human relations movement that later transformed into organisational behaviour. They argued that inter-relationships within the group members are vital aspects at the organisational settings (Robbins and Coulter, 2012). Their study known as “Hawthorne experiment” proved as paradigm shifter in the management studies.

In actual, “Hawthorne Effect” is a term explaining the phenomenon of individuals work and demonstrate better performance when they are observed (Cherry, 2018). Since the experiment took place at Western Electric's Hawthorne company therefore phenomenon is termed after the location (Ibid). The experiment was conducted to assess whether there is a correlation between productivity and work environments (such as light, break duration and length of day work). It was evident that employee's productivity tends to enhance due to change during the experiment however, it declines when experiments ends. The experiment proved vital in establishing the key

notion that increased attention from the head/supervisor is reason for improved performance (Robbins and Coulter, 2012).

Follow up interviews with the workers revealed that individuals do not leave their attitude, emotions and feelings back home as they do not only work for economic gain. Their motivation to work was not only confined to economic benefits but a good treatment, healthy work environment and autonomy to do things in their own way motivates them to do better at work (Robbins and Coulter, 2012). “The two important conclusions drawn from this experiment were (a) existence of strong informal groups and (b) behaviour of employees at work is significantly affected by non-economic factors” (Sridhar, 2017).

Hence, this work contradicts the earlier work of classical theory that argued employees are economic and rational beings whereas human relations school revealed employees' social person view. Additionally, social person view opposed rational economic view as studies revealed social needs motivate employees, interpersonal relationship develop sense of identity among employees, fatigue and boredom enhance due to repetitive routine and structured tasks, social forces make employees more responsive towards work rather than management control and incentives, and participative management increases employee motivation towards assigned tasks (Robbins and Coulter, 2012).

Due to this theory, the concept of social managers emerged and evolved which is why at present the managers role is visible as coach or helpers to manage employees in workplace. Thus, the recent trends of human relations are widely visible in the modern day of managerial approach. The theory also proved a milestone in looking beyond organisational/environmental factors by exploring the social and individual psychology of workers working in workplace (Robbins and Coulter, 2012). Furthermore, the experiment revealed that individual's psychological needs have a vital role in the individual and collective performances. People orientation is essential as employees given attention performs better irrespective of the working conditions (Ibid).

In summation, the greater output is resultant of employees' satisfaction of needs and desires. As the theory focused on better communication and concept of powering the employees to participate in decisions results in organisational success. These are largely evident in the present day too as now the organisations such as Google, LaFosse and Pets at Home uses the concepts of human relations to ensure greater output (Goldfingle, 2012). Although, this study rejected the concept of Taylorism's degree of specialization, structured programme and rigid hierarchical control but it does not oppose all ideas of classical school, therefore, it is regarded as neo-classical school. Interestingly, Sridhar (2017) concluded the notion of human relations approach as, “this school emphasized that treat employees as if they are important and give the workers the feeling of participation” (p. 10).

2.3.3. Behavioural Schools of Thought

As stated earlier, the Hawthorne experiment led to the inclined interest in behavioural science within the management, leading to transform human relations approach into modern behaviourism (Robbins and Coulter, 2012). Psychological considerations remain key aspect while suggesting that primary economic objectives are attained through completion of emotional needs. Interestingly, Sridhar (2017) stated that behavioural schools could also be taken into consideration under the modern organisational humanism within modern management theory. Thus, this indicates that most of the aspects of behavioural schools are relevant to the modern-day management theories.

There is number of scholars such as, Abraham Maslow, Douglas McGregor, Frederick Herzberg, Kurt Lewin, Mary Parker Follet and so on who have contributed to behavioural school (Haynes, 2013; Robbins and Coulter, 2012; Rogers, 2006; Sridhar, 2017). However, not all of them could be specifically classified as neo-classical theorists because several of those scholars have contributed to modern management theories either in general perspective, modern humanism, or social system theory. Some of the most widely studied are discussed in this report.

Maslow's Hierarchy of Needs Theory. Abraham Maslow categorized as well as prioritized the total five types of employee needs. The pyramid of needs had the most basic needs at the bottom and term them as “physiological

needs” such as, sleep, eating, water, sex, breathing and other physical needs (McLeod, 2018; Robbins and Coulter, 2012). With the attainment of these needs, second need arises namely, “safety needs” as the previous needs do not remain motivators. The basic safety, protection, stability and no fear remain the concerns of the individual. If a person's safety needs are not satisfied then they work as motivators (McLeod, 2018).

On the other hand, Robbins and Coulter (2012) argued that Maslow explained that security needs include the protection from physical as well as emotional harms that arise physiological needs are met. “Belonging and love needs/social needs” develops after the physical and safety needs of an individual have been satisfied (McLeod, 2018). This is a need of an individual that he/she wants a social support and acceptance, love, and friendship in the society (Robbins and Coulter, 2012). It is also considered as the prime motivator for the individual after physical and security needs remain no longer motivators, and therefore, he/she develops a meaningful relationship with others.

The internal esteem attributes including, autonomy, self-respect and achievement need external esteem like attention, recognition, and status work as motivators for the individuals under “esteem needs” (Robbins and Coulter, 2012). In order to attain this need, individual is required to develop self-confidence so that glory, fame, status and reputation could be achieved (McLeod, 2018). The esteem needs are often the key motivator for employees working in the organisations. “Self-actualization needs are related to attainment of one's own potential, growth and self-fulfilment that drive him/her to become what he/she is capable of becoming” (Robbins and Coulter, 2012). Maslow argued that after the satisfaction of one need, individuals inclined to another level of need while only one type of need works at a time (Robbins and Coulter, 2012).

Theory X and Theory Y. Douglas McGregor in his book, “human side of enterprises” published in 1960 argued that there are two types of individual in the organisation, respectively X and Y types (Robinson, 2010). Theory X managers have a negative view of workers and perceive them as untrustworthy, lazy, and lacking the initiative to take responsibility (McGregor, 1960; Robinson, 2010). Therefore, such types of managers are more autocratic and rigid in their respective approaches. The employees are seen to have low or no motivation to take initiative on their own, thus, require set of directions to execute tasks. On the other hand, Theory Y managers view employees as trustable and have the potential to take a charge of responsibility.

Furthermore, the employees are highly self-motivated (Robinson, 2010). The Y type managers are participative and democratic in their style and thus motivate employees by involving them actively in their routine tasks (Ibid). In modern era also there are examples of theory Y managers. For instance, WL Gore and Associates is an organisation that highly encourages managers to work as coach in encouraging employees to be creative and self-initiators. Festejo (2012) argued that employees tend to perform better when allowed to exhibit their creativity with no restriction.

Smith (2010) argued that for lower/operational level employees Theory X managers/supervisors are more effective because the productivity to achieve specific unit production is attained when there are directions given from the top. Grandey (2004) argued that Theory X managers mainly focus on task accomplishment while Theory Y is keen on fulfilling employees' motivational needs but still the focus is on achieving productivity rather than measuring the well-being of employees. Furthermore, Theory Y also comes under the criticism that it is a deliberate approach to take more out of employees so that there is increased productivity (Grandey, 2004). Care for employee is subject to their productivity at work and economic benefits of the organisation. Barnett (2017) argued that in the 21st century still the theory is practically visible as there is higher focus on self-managed workers and as a result they are involved in such programs so that they are more creative and willing to take initiatives, which are aligned with the aspects of Theory Y.

2.3.4. Modern Management Theories

The complexities, connectedness and context are the three main features of the organisation that have shaped the modern management theory (Haque, Aydin & Uysal, 2017; Sridhar, 2017). In addition to that, the individual and organisational diverse needs, aspirations, motives and potential equally play their part in the modern management

theory (Robbins and Coulter, 2012). Thus, this is the reason for flux, interdependence, ambiguity and multiplicity are the elements that have expanded the complexities in the dynamics where organisations operate and functions (Maznevski and Medenhall, 2004). The consequence of these aspects is that having one universal management principles template for all types of organisations and individuals become rather impractical and inapplicable (Sridhar, 2017). Hence, such complexities drive the organisations to develop flexible strategies and managerial principles to deal with work and workers at workplace. In addition to that, the modern management theory considers complex employee views that are opposing to rational economic man view of classical theory and neo-classical theory's social person view (Sridhar, 2017).

Organisation-centre was the theme of classical theory revolving around efficiency along with functional approach following deductive reasoning. On the other hand, person-centric approach was focus on neo-classical school emphasizing on experimental descriptive aspects following higher deductive reasoning. Nevertheless, revisionists followed behavioural and quantitative dimensions while adopting inductive reasoning with rigorous complete experimentations. The modern school of management largely considered logic and viewed management applicability to distinctive situations (Sridhar, 2017). In the era of digitalization and computer usage, quantitative methods were used to assess the role of management in modern day organisations (Hodgetts and Altman, 1981).

System Theory. As discussed earlier, both; classical and neo-classical theory have largely focused on one aspect at the expense of other. For instance, the 'efficiency', 'structure' and 'task' are the core theme of classical theory whereas 'people' is centre theme of neo-classical theory. Considering the limitations of both, modern theory intakes the balanced root to investigate the management practices. The first theory in modern school of management is system theory that offers a holistic view – "organisation as a whole" (Sridhar, 2017).

System as an entity reflects coherent whole (Ng, Maull and Yip, 2009), implying an exchange of dialogue between "holism" and "reductionism" (Mele et al. 2010). Thus, it conveys the multidisciplinary viewpoint from several context including, economic, society, nature, information technology and institutions (Mele et al. 2010). The management's problems are tackled through the integrated approach where focus remains on systems serving people. The prominent authors of this theme include; Chester Barnard, George Homans, Philip Selznick and Herbert Simon (Sridhar, 2017). Two or more interdependent parts constitute a system where all interlinked parts function to make things work. In fact, organisation is viewed as a human body where all parts function together to function properly. Hereby, interdependent parts are very significant and indicates that the emphasis of the managers or supervisors shall not be limited to one specific single cause but consider the holistic view as different factors combine cause problem (Sridhar, 2017). Open and closed are two types of systems.

According to Sridhar (2017), "An open system interacts with its environment such includes; all biological, human and social systems whereas several mechanical and physical systems are regarded as closed systems". Interestingly, organisation as a closed system is view of traditional organisational theorists whereas organisation treated as an open system is a viewpoint of modern theorists (Sridhar, 2017). It reflects that modern-day organisations are consistently interacting with their environment on regular basis. In other words, "an organization is an open system that interacts regularly with external forces namely, government agencies, suppliers and customers" (Sridhar, 2017). These different stakeholders affect the practices of the organisations.

Mele et al. (2010) argued that system theory applications in management could be found in several dimensions such as it focuses on complexity, adaption, relationships, environment, quality, value and knowledge. The organisation viewed as learning system reflects the vision of knowledge produced through set of skills and competencies (Nonaka and Tacheucki, 1995). "Knowledge is at the core of an autopoietic process of resource generation, creating resource-behaviour-resource cycles where cognitive schemes allow the entire system to function" (Mele et al. 2010, p. 130). Considering value approach, "the organisation is viewed as a holistic system with higher degree of integration between the factors intervening in the process of value creation" (Grant, Shani and Krishnan, 1994). It indicates the that sub-systems such as R&D activities, routine research, feedback, and quality management are results of network (Polese, 2004) resulting from different system actor's (stakeholders) contribution (Alter, 2008). The focus of organisation on quality links the system thinking with the concept of total quality management (Kim and Burchill, 1992). The focus on quality strengthens the relationship between different

parts of system enhances tendency to achieve goals (Mele and Colurcio, 2006). If an organisation is a system at micro level, then at macro level environment is a system (Mele et al. 2010). The action of employees amplifies for survival when operating at micro and macro level. In a viable systems approach (Barile and Polese, 2010) in order to survive in the continual dynamic process organisation, need to adapt to internal changes (following adaptation). This reflects that the modern organisations to larger extent still follows the earlier theorists' notion of focusing on "set of skills and competencies", "quality", and "specialization" to ensure tasks are carried out in effective and efficient manner.

Contingency Theory. Effectiveness is contingent as it depends on the interplay between managerial applications and behaviours and particular situation (Fielder, 1970). Organisational behaviour is studied through contingency theory approach by elaborating on contingent factors namely, culture, technology and external environment affecting the functionality and design of the organisation (Islam & Hu, 2012). Sridhar (2017) argued that modern-day organisations are more complex and therefore one specific managerial strategy could not be applied to all types of situations. Hence, the emphasis of contingency approach is on the adaption of managerial strategies as per the need of situation.

In other words, each situation should be viewed separately, and the plans should be made while taking into consideration a wide range of internal and external factors to administer the context, connectedness and complexities of the dynamic environment. Based on the scenario, a best fit of the managerial approach for the situations should be implemented. This theory emphasises on the postulate that organisational outcomes are resultant of a fit between two or several factors (Van de Ven & Drazin, 1985; Islam & Hu, 2012). Nevertheless, the focus of this theory remains on the organisational design (Luthans & Stewart, 1977).

Interestingly, Sridhar (2017) explains that as per this approach, theorists have made an attempt to assimilate several thoughts of various management schools because it was obvious that alone those concepts and principles would not be universally applicable under all situations. Thus, it could be argued that considering the contingent approach, the practices of modern-day organisations have roots in the earlier schools of management because the integration of various schools of management is combined to enable the managers to effective managerial practices in distinctive situations. As a result, this theory also stressed on the importance of development of managerial skills to deal with situational factors (Sridhar, 2017).

One of the notable works is of Hersey & Blanchard's (1969) "Life Cycle Theory of Leadership", which argued that the role of manager/supervisor reduces with the increase learning capabilities and efficiency of the employees. In other words, as the situation vary, so does the role of manager also change because of the maturity of the employees and change in the organisational dynamics. In other words, practical selectivity and situational sensitivity should be developed by the managers (Sridhar, 2017). Presently, the contingent approach is practiced ensuring there is structural organisation while leading the workforce through motivating them (Sridhar, 2017). On the other hand, planning information decision systems, control systems, development of communication channels, decentralized decision-making and employee training and development are some of the potential areas where contingent approach is evident (Sridhar, 2017).

Thus, it indicates that the theory focuses on the behavioural motivation, which is the focus of neo-classical school and the results of such motivation are driven by the interactions with the different environmental factors. Those factors play their part in motivating employees to demonstrate individual excellence so that organisational goals are attained in effective and efficient ways, hinting towards focus on task-orientation (reflecting the traditionalists' school of thought).

Contingency approach argues that flexibility in leadership style and acting according to the needs of situation lead to influence employees do well in workplace (Islam & Hu, 2012). It indicates the motivational factor of Herzberg's theory that interpersonal relationship leads to productive workforce. Therefore, the root of this approach is largely linked with the earlier school of thoughts of management. Sridhar (2017) stated that the champions of this theory confirmed that environment is complex and dynamic, which requires flexibility in the organisational design and structure and therefore, bureaucratic structure could not be effective in such situation.

Although, this approach has widened the scope of leadership practices but the theory comes under the criticism that this approach is more straightforward while situations could be tricky as number of factors could emerge in the middle of process and in search of perfect solution there could be wastage of invaluable resources such as time and money. At times there could be superficial decisions due to time limits rather than going deeper into the situation. Since, it takes a situational context, there is a problem that what leaders do is based on the situation. Hence in hindsight what may appear viable in a particular situation might not be the best for the company in a long run because of change in the situation. Thus, this approach is not feasible in all situations.

Management Science. Core concept of the Management Science school of thought is “Operational Research Teams to deal with complexities, connectiveness and context” (Sridhar, 2017). One should not confuse management science with scientific management classical school as the two are different. Nevertheless, management science intakes quantitative approach evolved from scientific management techniques’ applications (Sridhar, 2017). Due to the organisational complexities, a modern-day manager requires more calculative approach and information to take rationale and effective decisions (Luthans & Stewart, 1977). Hence, this approach proposes the quantitative techniques for making such decisions (Luthans & Stewart, 1977).

Different quantitative tools and high-speed computers are used for dealing with voluminous data to be computed in a manner so that information is analysed to give appropriate options for making decisions (Sridhar, 2017). Operations Research Teams included scientists from interdisciplinary groups during the World War II so that complex problems of war could be tackled in appropriate manner (Sridhar, 2017). Under this approach, mathematical models were constructed to deal with real life problems while altering the variables’ values so that the effect of change could be calculated for making rationale decision-making (Sridhar, 2017). Quality control tools, inventory-control, PERT, CPM, simulation models, queuing theory, and linear programming tools are used under this approach because of the higher emphasis on rational and objective decision-making (Sridhar, 2017).

“Objective rationality reflected the capacity and readiness to undertake a largely scientific, which is unemotional and based on reasoning linking the means with ends while considering the impact of decision on environment in totality aspect” (Sridhar, 2017). Thus, it could be argued that this approach is more focused on perfection and precision by expressing the relationship between variables through quantitative mode.

2.4. Issues arising from review of management theories

The first objective of the study was to review extant conceptual and empirical literature on existing management theories and models with intent of establishing existing gaps in their contribution toward guiding managers in decision making and organizational management. The reviewed literature has revealed existing gaps with reference to the comprehensive nature of the existing management theories. A summary of the gaps in literature is tabulated as shown in Table 1 below:

Table 1: Limitations in management theories

S/No	THEORY	THEORETICAL LIMITATIONS/GAPS
1.	Scientific Management Theory	<p>The major drawback of this school of thought is that it treats and views worker from only the lens of economics whereas workers’ behaviours are not always directed by financial needs as there are other needs such as social, security and esteem needs (Sridhar, 2017).</p> <p>In addition to that, there may be multiple methods to commence task rather than relying on “one best way” because the situation differs and even two individuals could carry out similar job differently (Sridhar, 2017).</p> <p>In terms of theoretical importance to management as a process, the theory is selective in terms of application to the functions of management. It enters the management process at the organizing function taking center stage in job design then later explaining options for scientific selection, training and remuneration of employees at the staffing function of management. No</p>

		guidance to managers regarding the planning and control functions of management.
2.	Administrative Management	<p>This school of thought also has limitations as many of the principles have dilemmas and are contradictory. For instance, limited span of control and division of labour contradicts number of organisational levels being smaller or principle of specialization is contradicted by unity of command (Sridhar, 2017). In addition to that, when seeking specialization, it is not possible to follow simultaneously all modes. There is lack of empirical testing of these principles at organisational setting. Moreover, all principles being valid under all situations is not practically applicable.</p> <p>Mechanistic organisational structure develops due to the outcome of these principles, that are insensitive to psychological and social needs of the employees (Sridhar, 2017).</p> <p>Taking a keen look at this theory from a management scholar's point of view, just as is the case with the scientific management theory, this theory is selective as well in terms of application to the functions of management.</p> <p>It gets into the management process at the organizing function taking center stage in organizational design suggesting the categorization of managerial and industrial activities into six different classes.</p> <p>The fourteen principles supporting the theory have also put much focus on the staffing and directing function of management. No guidance to managers regarding the conduct of planning and control functions of management.</p>
3.	Bureaucratic Organisation	<p>Higher emphasis on policies and procedures develop the cautious approach and as a result employees avoid risk and show less creativity, initiative and growth (Ibid). In addition to that, humans are not machines and therefore would differ in their approach and performances while this school of thought expects behavioural conformity at the expense of performance.</p> <p>In terms of theoretical importance to management as a process, the theory is selective in terms of application to the functions of management. It enters the management process at the organizing function taking center stage in organisational design, job design then later moving to selection and job placement, and lastly focusing on the directing and control functions.</p> <p>The bureaucratic theory like the other classical theories, gives no guidance to managers regarding the conduct of the planning function of management.</p>
4.	Human Relation School	<p>One of the key limitations of this theory is that it keenly focuses on human variables as most important critical attribute while ignoring all other attributes. Additionally, focuses on symbolic rewards while ignoring role of material rewards (Sridhar, 2017).</p> <p>The approach focuses on individuals and small groups instead of large organisations. Moreover, the effective communication and interpersonal relationship are effective for lower levels of organisation rather than other layers of management (Robbins and Coulter, 2012).</p> <p>"It could be argued that the movement of this approach has accepted several assumptions of traditionalists and does not accomplish a major breakthrough in management theory" (Sridhar, 2017). However, it contributes to open a passage for behavioural school of thought.</p>
5.	Maslow's Hierarchy of Needs	<p>Alderfer (1969) criticized the work of Maslow by stating that multiple needs can work together rather than one need at a time (Robbins and Coulter, 2012). For instance, physiological and security needs can both work at a time on individuals. In addition to that, Maslow ignored the environmental factors by considering the needs occurring in static manner whereas in reality, environmental factors tend to constantly change with time.</p> <p>This theory enters into the management process midway same as the theories X and Y. It leaves the planning, organizing and staffing functions to other management theories. It assumes that management commences at the directing phase where employee behavior is key in determining organizational performance.</p>

		The theory further doesn't apply in determining the nature of employee to be employed, but guides managers on how best to analyze and understand the factors behind the already hired employees' motivation. From this point of view, the theory is thus non comprehensive enough to guide managers as is required of a theory.
6.	Theory X and Theory Y	<p>Theory X and Theory Y enters into the management process midway same as the Maslow's Hierarchy of Needs. It leaves the planning, organizing and staffing functions to other management theories.</p> <p>It assumes that management commences at the directing phase where employee behavior is key in determining organizational performance.</p> <p>The theory further doesn't apply in determining the nature of employee to be employed, but guides managers on how best to analyze and understand the factors behind the already hired employees' motivation. From this point of view, the theory is thus non comprehensive enough to guide managers as is required of a theory.</p>
7.	System Theory	<p>Vague. This approach is so simple that it's hard to refute. While this makes it more convincing, it does limit its utility in more complex scenarios.</p> <p>Inadequate for complex organisations. In smaller organisations, you can usually identify the components of a system quite easily. Conversely, in large organisations with large departments performing multiple functions, the distinction between these components becomes less clear.</p> <p>Limited. Although it can describe the basics of organisational structure and function, it excludes a lot of elements that you may want to understand or explain, such as organisational hierarchies or inequalities. It, therefore, provides no techniques or solutions, only a framework for describing system elements.</p>
8.	Contingency Theory	<p>Lack of Theoretical Base. The theoretical base is referred to the available studies on the concept. So many researches have been done in this regard but no sound base has been provided by them which can provide with the obvious action that could be taken in a particular situation.</p> <p>Difficulty in Testing. It is very complicated job to test this approach because this approach is based on experience and practice. There is no set of principles for this approach.</p> <p>Limitation of Pro-activeness. This approach does something when some situation arises so it means it is reactive but actually what is desired from a manager is pro-activeness. This means he has to be aware of the probable changes in the environment and must be able to decide in advance that if such situation comes then what could be done.</p> <p>Tedious. Only saying that decide according to the situation is not a solution. It requires a complete analysis of the situation and manager do not necessarily always have time to go through all what is actually required. Therefore to apply this approach in practice is very complicated not simple.</p>
9.	Management Science	<p>The applications of management science are evident in planning and controlling functions of management. It ignores other functions of management. For instance, staffing, leading, and organizing by nature are more human instead of technical.</p> <p>The theory is unable to accurately predict business phenomena that contain behavioral elements. The theory ignores the importance of people, relationships and other non-quantifiable factors.</p>

3. Military Management

The term Management was earlier defined as the effective and efficient coordination of resources in order to achieve desired objectives. All organizations have objectives that are the desired targets that the manager hopes to achieve. The manager must plan, organize, direct, control and coordinate activities in order to realize the organization's objectives.

The Primary Purpose of management is to convert resources into results. A resource by itself can do nothing; it

remains sterile until it is managed. Management, therefore, is the conversion of sterile and inert resources into productive results.

It is now easy to understand that management is of vital concern to Military Commanders. They have certain resources in the form of weapons, firepower, trained personnel and various means of transport and communication at their disposal. The process of utilizing these resources in action to achieve the given objective is the process of management. Management therefore, implies creating the right condition, for the right job, to be done the right way, at the right time to ensure that the desired results are achieved.

Taking a broader view, the scope of military management turns out to be the study of all matters related to the following:

- a. Creation of combat forces.
- b. Maintenance and support of combat forces.
- c. Employment of combat forces as an instrument of national power in pursuit of national strategic objectives.

All these activities require action to produce due results from given resources. The process underlying such action is the universal management process which must be guided by principles and theories.

The decision regarding employment of forces commences with planning which is dependent upon guidance from a higher headquarter in form of a strategic intent. The concept of strategic intent is described in the section that follows.

3.1. The Concept of Strategic intent

Strategic intent is a pivotal concept in business as well as military strategy. Introduced by Gary Hamel and C.K. Prahalad in 1989, strategic intent is a critical foundation in the strategic management process. It emphasizes the importance of having a clear and powerful vision that guides an organization towards sustainable competitive advantages in a fiercely competitive environment.

Strategic intent clarifies an organization's purpose and the goals it strives to achieve. This clarity is essential in today's business and security landscape, where merely identifying temporary advantages is insufficient. A well-defined strategic intent helps organizations set a stable course and pursue long-term success amidst ongoing environmental challenges.

Strategic intent encapsulates the aspirations and ultimate goals an organization aims to achieve. It represents a clear vision of what the organization seeks to become and the industry leadership position it aims to secure.

Originating from the insights of Gary Hamel and C.K. Prahalad in 1989, strategic intent acts as a compass, guiding the firm's direction by defining its long-term objectives and the strategies to achieve them. At its core, strategic intent answers critical questions like "What does the organization aim to accomplish?" and "Why are these goals important?" This concept goes beyond mere planning, it's about setting a benchmark for leadership in the industry and charting a course towards that pinnacle.

Understanding strategic intent is crucial because it aligns the organization's resources and energies towards a unified and clear goal, ensuring that every action and decision contributes to the broader vision of long-term success and industry leadership.

3.2. Critical Role of Strategic Intent in Organizations

Strategic intent is crucial in guiding an organization towards achieving its long-term goals. It provides a cohesive sense of direction, fosters a culture of discovery, and instills a shared sense of destiny among all organization members. Here's why each of these aspects is vital:

Sense of Direction. Strategic intent gives the entire organization a clear and unified direction. It outlines the company's long-term vision concerning future markets and competitive positioning.

Sense of Discovery. This component encourages a continuous pursuit of innovation and exploration within the company. With a well-defined strategic intent, employees feel motivated to explore new competitive territories and develop unique approaches that differentiate the organization from its competitors. This sense of discovery not only keeps the workforce engaged but also drives the organization to adapt and evolve in a changing business environment.

Sense of Destiny. Strategic intent also has an emotional dimension, it cultivates a feeling of belonging and purpose among employees. When team members believe in the goals and the value of their efforts, they are more likely to commit wholeheartedly to the organization's mission. This shared sense of destiny helps in mobilizing the entire organization towards achieving its strategic goals.

3.3. Hierarchy of Strategic Intent

Strategic intent is not just a singular concept but a structured hierarchy that includes several key components. Each level builds upon the last to create a comprehensive roadmap guiding an organization towards its ultimate objectives. Here's how each element fits into the hierarchy of strategic intent:

Vision. At the top of the hierarchy is the vision, which articulates the organization's long-term aspiration. The vision sets a broad, ambitious image of what the organization aims to become in the future. It serves as a guiding star for all strategic planning, aligning every action and decision with the organization's ultimate purpose. For instance, a company might envision itself as the leader in renewable energy technology.

Mission. The mission statement clarifies the organization's fundamental purpose and separates it from other entities. It answers the question of why the organization exists and outlines the unique path it will follow to realize its vision. The mission provides a clear direction and framework for all operational and strategic decisions. It typically encapsulates what the business does and its reason for existence.

Goals. Goals are specific targets that the organization aims to achieve within a set timeframe. These are more concrete than the vision and are designed to be measurable and achievable, guiding the organization towards its larger aspirations. Goals help to translate the lofty aspirations of the vision into practical, actionable benchmarks.

Objectives. Objectives drill down further into how the goals will be achieved. They are typically short-term or medium-term achievements that are crucial stepping stones towards meeting the broader goals. Objectives are specific, measurable, and time-bound, providing clear milestones that motivate and guide employees.

Plan. The plan details the steps the organization will take to meet its objectives and achieve its goals. It involves strategic actions, resource allocation, and timelines. Planning is an essential activity that encompasses the development of strategies to utilize resources effectively and address anticipated challenges. It ensures that every part of the organization is synchronized towards achieving the set objectives.

3.4. Evidence on application of concept of Strategic Intent in Military Context

Principles of War. There are ten principles of war. However, the principle of interest in relation to the concept of strategic intent is the first principle on Selection And Maintenance Of The Aim: This is the master principle. In the conduct of war, and therefore in all military activity, it is essential to select and define the aims clearly. Within his strategic directive, a commander may have several courses of action open, each of which would fulfil the aim. The selection of the best course will lead to the mission and outline plan being issued, the mission being a statement of the aim and its purpose. The aim passed on to subordinate commanders must be precise or expressed in unambiguous terms and attainable with the forces available. Once decided the aim must be circulated as widely as security allows so that all can direct their efforts to achieve the aim (Horton Academy, 2016).

Mission Command. This is a philosophy of decentralized command intended for situations which are complex, dynamic and adversarial. It underpins the Manoeuvrist Approach and has four enduring tenets: timely decision-making; the importance of understanding a superior commander's intention; a clear responsibility on the part of

subordinates to fulfill that intent; and determination on the part of the commander to see a plan through to a successful conclusion (Horton Academy, 2016).

The underlying requirement is the fundamental responsibility to act, or in certain circumstances to decide not to act, within the framework of the commander's intent. This approach requires a style of command which promotes decentralized command, freedom and speed of action, and initiative. Mission Command is a central pillar of Joint and Army doctrine. It has the following key elements:

- a. A commander gives his orders in a manner that ensures that his subordinates understand his intentions, their own missions, and the context of those missions.
- b. Subordinates are told what effect they are to achieve and the reason why it needs to be achieved.
- c. Subordinates are allocated sufficient resources to carry out their missions.
- d. A commander uses a minimum of control measures so as not to unnecessarily constrain his subordinates' freedom of action. e. Subordinates then decide for themselves how best to achieve their missions.



The commander's intent binds the activities of a dispersed force into a whole while maximizing his subordinates' authority to act.

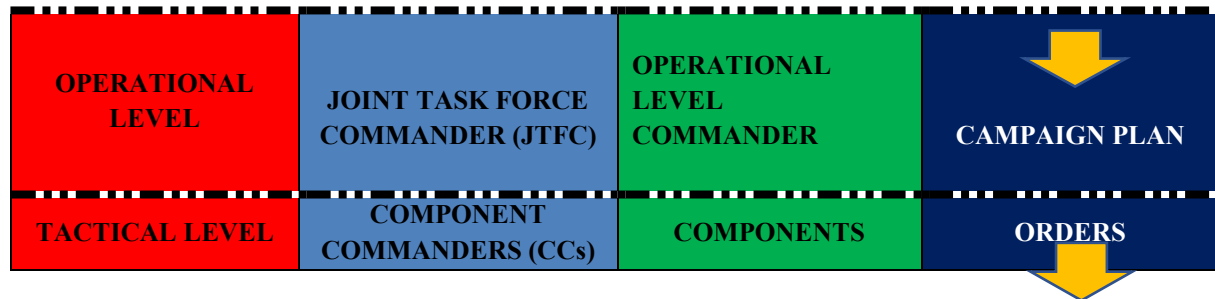
Concept of Operations. This is applicable during issue of orders or general plans on how a mission is to be executed. It is a clear and concise statement of the line of action chosen by a commander in order to accomplish his mission. The Concept of Operations represents the most important element of orders after the Mission. In it, the commander expresses his Intent (what is to be achieved and why), his Scheme of Manoeuvre (where, when and with whom he intends to conduct his selected course of action in order to accomplish his mission) and the Main Effort.

The Commander's Intent is a concise expression of the purpose of the campaign or operation, the desired results and how operations will progress towards achieving the desired end-state. At the tactical level, the Commander's Intent should be focused on the effect that he wishes to achieve on the enemy. The intent tells the subordinate exactly what effects his commander is trying to achieve and why (Horton Academy, 2016).

Military Decision Making Process (MDMP). The nature of the crisis, and the military response necessary, will determine the size and shape of the joint forces required and the command arrangements necessary to support them. There are four levels of response after emergence of a conflict:

Table 2: Levels of Conflict

GRAND STRATEGIC LEVEL	NATIONAL SECURITY COUNCIL (NSC)	C-in-C CABINET	NATIONAL STRATEGIC GUIDANCE
MILITARY STRATEGIC LEVEL	NATIONAL MILITARY AUTHORITY (NMA)	CDF SVC COMDS	 MILITARY STRATEGIC DIRECTIVE
	JOINT COMMANDER (JC)	MILITARY STRATEGIC COMMANDER	 MISSION DIRECTIVE



a. **Grand Strategic Level.** This is the level at which the intent to apply national resources to achieve national policy objectives is set. The purpose of grand strategy is to direct and provide overall coherence to national, alliance or coalition policy, including all military and non-military aspects.

Grand strategy is the province of governments, whether acting independently or in concert with other governments through a multinational organisation, an alliance established by a treaty, or an ad hoc coalition.

National Security Command (NSC) composed of the President and the Cabinets is the highest decision-making authority at the Grand Strategic Level. The NSC issues the National Strategic Guidance (NSG) which is cascaded down to the Military Strategic Level.

There is a range of options open to governments to achieve a strategic objective of which military force is but one; diplomatic and economic resources will invariably be employed as well, or even instead of, military force. The grand strategic level decides on the resources to be allotted to achieve the desired objectives, gives broad political guidance as to their employment and imposes the limitations that are deemed necessary.

A successful national strategy sets out a path using the diplomatic, economic and military instruments of national power to achieve the long-term aims of the nation and protect its vital interests (Horton Academy, 2016).

b. **Military Strategic Level.** This is the application of military resources to help achieve grand strategic objectives. The military strategic authority will consider the realistic contribution that military force can make to the achievement of grand strategic objectives and set such activity in hand. The National Military Authority (NMA) composed of the Chief of Defence Forces (CDF) and Service Commanders is the highest military decision-making body at the military strategic level.

The NMA appoints the Joint Commander (JC) as the military strategic commander to exercise operational command of all the forces in the theatre of operations. The NMA issues the Military Strategic Directive to the JC who subsequently issues Mission directive to the Joint Task Force Commander (JTFC).

The military strategic directive will encompass advice from the office of the president through the cabinet office and defence council; to ensure that it is in accordance with defence policy and includes the necessary guidance on accounting for the expense incurred. The JC should receive a balanced set of objectives (ends), directives (ways) and resources (means).

The military strategic directive will include the following:

- a. Grand strategic situation (brief political survey) and related military strategic alliance/coalition goals.
- b. The desired end-state; that state of affairs which needs to be achieved at the end of the campaign to terminate or resolve conflict on favourable terms.
- c. Political, diplomatic, financial and legal limitations on the use of force, including UN resolutions, when applicable.

- d. Military objectives; Military end-state; Military concept of operations; Constraints and Definition of theatre/area of operation

c. **Operational Level.** This level is concerned with the direction of military resources to achieve military strategic objectives. The operational level provides the link between the national and military strategic objectives and the tactical employment of forces. The focus at this level is on the design and conduct of operations using operational art, the application of creative imagination by commanders and staffs, supported by their skill, knowledge, and experience to design strategies, campaigns, and major operations, organize and employ military forces.

JTFC and component commanders use operational art to determine when, where, and for what purpose major forces will be employed and to influence the adversary disposition before combat. It is at this level that campaigns and major operations are planned, sustained, sequenced and directed. The responsibility falls under the JTFC to determine the campaign plan necessary to achieve the desired military strategic end state within the Joint Operations Area (JOA).

d. **Tactical Level.** Tactical level involves the application of military resources to achieve operational objectives. The tactical level focuses on planning and executing battles, engagements, and activities to achieve military objectives assigned to tactical units or task forces (TFs). These battles and engagements are planned and fought within the overall campaign or major operation designed by the operational level (Horton Academy, 2016).

3.5. Issues arising from the literature review on military management

The second objective of the study was in part to establish existing gaps with reference to theoretical anchorage of the military decision-making process tools. It is evident from the review that the application of the concept of strategic intent in military planning indicates its centrality in guiding the planning and conduct of military operations. It brought out the fact that a strategic intent is a roadmap for resource allocation and capability development. It identifies potential gaps between current capabilities and future needs, and outlines strategies to bridge these gaps. This ensures that the military organization dreams big and has the practical means to turn those dreams into reality.

The review showed that management is inherent in military command. Taking a broader view, the scope of military management turns out to be inclusive of all matters related to the following: Creation of combat forces; Maintenance and support of combat forces; including employment of combat forces as an instrument of national power in pursuit of national strategic objectives. The process of military management therefore, which is dependent upon well designed decision-making tools such as campaign plans and the combat estimates, is one that ought to be guided by existing management theories and principles.

It is however worth noting that these decision making tools are not grounded in any management principles and theories. They continue to dangle loosely and precariously within the management domain, leaving management scholars with no option but to work towards anchoring them in management thought. This can only be possible by proposing a suitable and comprehensive theory aimed at properly situating the decision making tools within the management practice and scholarship context.

4. Public Policy

The concept of public policy is not universally defined or understood in a singular manner. Its interpretation varies significantly depending on the context, geographical location, and specific circumstances surrounding the subject matter at hand. Consequent upon this, diverse conception of public policy exists, with some constraining it to the tangible actions undertaken by government, others focusing on governmental intentions, and yet others encompassing both the actions and inactions of government. (Dye, 2004). However, for the purpose of this study, public policy is contextualized as “a statement of intent, anchored on a set of principles and decisions, that defines the course of action that the Government will be committed to in achieving specific developmental goals in the

interest of the Public.” Public policy can also be described as a guiding framework of government intentions for addressing a set of national or sector specific issues. Further, it can be viewed as a statement of commitment by the government, which articulates basic principles to be pursued to attain specific goals. The public policy-making process is contextualized within political, economic, socio-cultural, governance, global, technological, legal and environmental spaces (GoK, 2024).

Public Policy Analysis

Literature abound on the explanation of what public policy analysis connotes, Eminue (2009) perceived public policy analysis as any type of analysis that generates and presents information in such a way as to improve the basis for policy makers to exercise their judgment. Conversely, Chandler and Plano (1988, p. 96) posit that policy analysis involves “a systematic data-driven approach that offers alternatives to relying solely on intuition when assessing the impacts of policies or policy options.

Specifically, within the realm of public policy analysis, the emphasis lies on elucidation rather than prescription, conducting a rigorous investigation into the origins and impacts of public policy while amassing dependable research findings of general applicability. (Dye, 2004). From the foregoing, it can be deduced that policy analysis is the systematic study of the causes, processes, formation, implementation and consequences of public policy.

4.1. Public Policy Making Process

This section explains the public policy making process to enable the users appreciate and understand the requirements for each stage and how it is conducted. The section provides a structured way in examining how public policies are formulated, adopted, implemented, and modified. The public policy development process is explained here below:

Problem Identification and Agenda Setting. This stage starts with the identification of the existence of a public policy issue that requires government intervention and action to address the issue. During problem identification, it is important to specify the issue, describe how it came about, the magnitude of the issue, state who is affected and the root cause of the problem. Problem identification involves both state and non-state actors.

Identification of policy issues is very crucial because the policy issue may manifest itself in various forms and may require a thorough analysis of the causes and effects to come up with all the dimensions of the problem to develop appropriate interventions. At the end of the process, a listing of all public policy issues identified through analysis and proposed solutions to the issue forms the policy agenda universe. It is from this Policy Agenda Universe that “policy agenda” is agreed through negotiation, persuasion and compromise by the stakeholders. The policy agenda can be viewed as “agenda setting” where all policy issues and proposed solutions are identified by policy actors and agreed upon for prioritization by the government.

Agenda setting process is lengthy and sometimes requires a lot of persuasion and negotiation with different stakeholders pushing for their proposed solutions to enter the policy agenda based on their interest. This is because benefits and costs of addressing the policy issue falls disproportionately on different actors and therefore there will be winners and losers. It requires stakeholder mapping based on their interest, power and influence, and their areas of operation. The process is done in stages with each set of stakeholders meeting to discuss and pick issues that qualify to get into the policy agenda of the government in addressing the public policy issue identified.

Policy Formulation. The policy formulation also referred to as policy design involves actual drafting of the public policy document to provide effective and acceptable course of action for addressing the identified problem, and is based on the policy agenda selected. The main activities undertaken at this stage are generating the policy options through policy analysis and drafting all the sections of the policy in question.

Public Policy Approval. This is the process through which a proposed policy is formally accepted and authorized by the relevant governing body or authority. During this stage, decision-makers review and consider the proposed

policy's content, objectives, potential impacts, and feasibility. They may gather input from experts and stakeholders to ensure that the policy is well-informed and addresses the intended issues.

Public Policy Implementation. Policy implementation is the process of translating public policy statements into actions. This entails actualizing the public policy implementation matrix through development of annual work plans and budgets for the implementation of the policy actions. It also involves carrying out sensitization to the public to create awareness of the public policy. Communication is also carried out in this stage where the concerned entities develop communication strategies to disseminate the public policy contents to various stakeholders and the public and where possible, in the language the public can understand.

Public Policy Monitoring, Evaluation, Reporting and Learning . Monitoring, Evaluation, Reporting and Learning (MERL) are interconnected processes used to assess the progress, relevance, efficiency, effectiveness, impact and sustainability of the implementation of public policies. This process is crucial for ensuring that activities outlined in the policy are implemented on time, by respective MDAs and the Counties. It also helps to track and ensure goals of the policy are achieved and lessons learned are used for future improvements of the policy. The MERL contributes to evidence-based decision-making in policy development, improved accountability, enhanced transparency and the overall effectiveness of policy implementation. The processes of MERL and what it entails are elaborated below.

- a. **Monitoring.** This involves regular and systematic collection of data and information to track the implementation of the activities and outputs outlined in the public policy implementation matrix. This also helps identify early warning of potential problems or risks and bottlenecks in the implementation of the policy and provides appropriate remedy.
- b. **Evaluation.** It is a systematic and objective assessment of the effectiveness, efficiency, relevance, and impact of a policy action implementation. It involves collection of data and evidence on policy to determine whether the policy goals have been achieved and to inform the review or relevance of continual implementation of the policy.
- c. **Learning.** It involves drawing insights and lessons from the monitoring and evaluation processes. Learning informs decision-making, helps identify best practices, and guides adjustments for ongoing and future activities of the public policy.
- d. **Reporting.** It involves communicating the findings, results, and lessons learned from the monitoring and evaluation processes. The reports are shared with both state and non-state actors to provide information on the achievement of the policy actions and to ensure transparency and accountability.

Policy Review. The process of policy review is informed by the results of monitoring and evaluation of implementation of the policy actions. If policy actions, activities and objectives have been achieved as outlined in the policy, decision makers will recommend continual implementation of the policy. If the results show that the policy goals are not being achieved however, the decision makers may recommend policy review or termination of the policy implementation altogether.

4.2. Theoretical Approaches to Public Policy Making

Comparative public policy studies have usually tried to show why one explanation of policy is correct and others are false. To be worthwhile, empirical policy analyses need to combine different approaches. The more sophisticated the conceptualization and measurement of the dependent (policy) variables, the more likely it is that a satisfactory policy explanation will require more than one theory. Hence, in the following section, you will study some of the important theories used in the study of Public Policy.

The Incremental Theory. The incremental theory of decision making posits that decisionmakers use previous activities, programs, and policies as the basis for their decisions and focus their efforts on incrementally increasing, decreasing, or modifying past activities, programs, and policies (Dye 2013). This method of decision making contrasts sharply with the rational model of decision making which involves conducting a thorough analysis of all possible options and their consequences and then evaluating their advantages and disadvantages (Lindblom 1959). Instead, they rely on

“successive limited comparisons” to simplify decision making (Lindblom 1959, 81). Successive limited comparisons consist of comparing a limited number of options that are not too different from the current solution or practice (Kleindorfer et al. 1993; Beach 1997) and differ only marginally from each other (Pal 2011). The incremental theory of decision making or more simply, incrementalism, is presented as decision theory that avoids many of the problems of the rational-comprehensive theory and, at the same time, is more descriptive of the way in which public officials actually make decisions. Incrementalism can be summarized in the following manner.

- a. The selection of goals or objectives and the empirical analysis of the action needed to attain them are closely intertwined with, rather than distinct from, one another.
- b. The decision maker considers only some of the alternatives for dealing with a problem, and these will differ only incrementally from the existing policies.
- c. For each alternative only a limited number of important consequences are evaluated.
- d. The problem confronting the decision maker is continuously redefined. Incrementalism allows for countless ends-means, means-ends adjustments that have the effect of making the problem more manageable.
- e. There is no single decision or right solution to the problem. The test of the good decision is that various analysts find themselves directly agreeing on it, without agreeing that decision is the most appropriate means to the agreed objective.
- f. Incremental decision making is essentially remedial and is geared more to the amelioration of present, concrete social imperfections than to the promotion of future social goals.

Lindblom contends that incrementalism represents the typical decision making process in pluralist societies such as United States. Decisions and the policies are the product of give and take and mutual consent among numerous participants in the decision making process. Incrementalism is politically expedient because it is easier to reach agreement when the matter in dispute among various groups is only modifications of existing programs rather than policy issues of great magnitude or an “all or nothing” character. Since decision maker operate under conditions of uncertainty with regard to future consequences of their actions, incremental decisions reduce the risk and cost of uncertainty. Incrementalism is also realistic because it recognizes that decision maker lack the time, intelligence and other resources needed to engage in comprehensive analysis of all alternative solutions to existing problems. Moreover people are essentially pragmatic, seeking not always the single best way to deal with a problem but modestly, “something that will work.” Incrementalism, in short, yields limited, practicable, and acceptable decisions.

Group Theory. Group theory is a variant of pluralist theory notably with two variants; the total group view led by Arthur Bentley (1870- 1957) and moderate group view led by David Truman (1913-2003). The idea of group pressure was systematically articulated into a theoretical framework in the 20th century. Those who led this advancement were Arthur Bentley in his work “The process of government” subtitled “The study of social pressure,” David Truman in his work “Governmental process” and Earl Latham (1939-2013) in his book “The group basis of politics” published in 1952 (Eminue, 2009).

The group theory of politics posits that public policy and group struggle are inseparable due to the fact that what may be called public policy is the equilibrium reached in this group struggle at any given moment. Group theory analysis therefore represents a balance which the contending factions or groups constantly strive to win in their favour. Consequent upon this, public policies reflect the activities of groups (Anderson, 2003). In essence, group theory in public policy domain attempts to analyse how each of the diverse groups in a society tries to influence public policy to its advantage at the policy formulation level.

Group theory in relation to public policy recognised public policy as a reflection of the interest of dominant groups, as groups gain and lose power and influence, public policy will be altered in favour of the interests of those losing influence. Corroborating the foregoing, Latham argues that what we perceive as public policy is essentially a transient balance achieved during inter-group struggle. Once this equilibrium shifts in favor of new groups, a new policy emerges or the existing policy undergoes modification. Politics, fundamentally, involves a dynamic equilibrium formed through the contestation among diverse groups (Latham, 1965).

The major proposition of this theory in relation to public policy is that power to dominate and influence policy decision is dependent on group solidarity and power as a result, the ability of a group to tilt the policy of

government to its favour depends on a number of factors as captured by Anyebe (2018, p.25) prominent among them are: wealth, organisational skill, leadership quality, bargaining skill, access to decision-makers and a modicum of luck.

It is pertinent to note that ultimately, no group has monopoly of influence over government policy due to the fact that different groups are constantly striving to shape public policies in their favour, either independently or in collaboration with other groups that share similar interests. The tactics employed in this struggle include coalition building, compromises, exchanging favours, and conflicts among groups. In this dynamic environment, the majority or more influential people typically prevails in having their preferred policies enacted. However, even the minority or less dominant group manages to have their perspectives acknowledged, albeit temporarily (Anyebe, 2018, pp. 11-12).

Group theory focuses on one of the major dynamic elements in policy formation, especially in pluralist societies such as the United States, but it seems both to overstate the importance of groups and to understate the independent and creative role that public officials can play in the policy process. Indeed, many groups have been generated by public policies. The American farm Bureau Federation, which developed around the agricultural extension program, is a notable example, as is the National Welfare Rights Organization. Public officials also may acquire a stake in particular programs and act as an interest group supporting their continuance. In the United States some welfare-agency employees, including social workers, prefer current programs, with their emphasis on supervision and services (as well as benefits), to a guaranteed annual income, which would probably eliminate some of their jobs.

Another shortcoming of group theory is that in actuality many people (e.g., the poor and disadvantaged) and interests (such as diffuse interests as natural beauty and social justice) are either not represented or only poorly represented in the group struggle. As Professor E.E. Schattschneider remarks about the under organization of the poor, "the flaw in the pluralist heaven is that the heavenly chorus sings with strong upper-class accent." Those who are not represented will have little voice in policy making and thus their interests are likely to be unarticulated therein.

Finally, from a methodological perspective, it is misleading and inefficient to try to explain politics and policy making solely in terms of interests and the group struggle. This bias leads to neglect of many other factors, such as ideas and institutions, which abound and which independently affect the development of policy. The reductionism or uncaused explanation that results when all political phenomena are crammed into the group concept should therefore be avoided.

Elite Theory. C. Wright Mill (1956) is perhaps, the leading representative of the Elite-Mass Model. Approached from the perspective of elite theory, public policy can be regarded as reflecting the values and preferences of governing elite. The essential argument of elite theory is that public policy is not determined by the demands and actions of the people or the "masses" but rather by ruling elite whose preferences are carried into effect by public officials and agencies.

Elite – Mass theory has been summarized by Professors Thomas Dye (2004) and Harmon Zeigler as follows:

- a. Society is divided into the few who have power and the many that do not. Only a small number of persons allocate values for society; the masses do not decide public policy.
- b. The few who govern are not typical of the masses that are governed. Elites are drawn disproportionately from the upper socio-economic strata of society.
- c. The movement of non-elites to elite positions must be slow and continuous to maintain stability and avoid revolution. Only non-elites who have accepted the basic elite consensus can be admitted to governing circles.
- d. Elites share consensus on the basic value of the social system and the preservation of the system. The United States, the elite consensus includes private enterprise; private property, limited government, and individual liberty.
- e. Public policy does not reflect demands of masses but rather the prevailing values of the elite. Changes in public policy will be incremental rather, than revolutionary. Incremental changes permit responses to events that threaten a social system with a minimum of alteration or dislocation of the system.

f. Elites may act out of narrow self-serving motives and undermining mass support and interest. In order to please the public they may initiate reforms, curb abuse, and undertake public-regarding programs to preserve the system and their place in it.

g. Active elites are subject to relatively little direct influence from apathetic masses. Elites influence masses more than masses influence elites.

Elite theory focuses our attention on the role of leadership in policy formation and on the reality that, in any political system, a few govern the many. Whether elites rule and determine policy, with little influence from the masses, is a difficult proposition to handle. It cannot be proved merely by assertions that the “establishment runs things,” which has been a familiar plaint in recent years. Political scientist Robert Dahl argues that to defend the proposition successfully one must identify a controlling group, less than a majority in size, that is not a pure artefact of democratic rules of minority of individuals whose preferences regularly prevail cases of differences of preferences on key political issues.

Institutional Theory. The study of government institutions (or organizations) is one of the oldest concerns of political science. This is not surprising, since political life generally revolves around governmental institutions such as legislatures, executive, courts, and political parties; public policy, moreover, is authoritatively determined and implemented by these institutions.

Traditionally, the institutional approach concentrated on describing the more formal and legal aspects of governmental institutions: their formal structure, legal powers, procedural rules, and functions or activities. Formal relationships with other institutions might also be considered, such as legislative-executive relations. Usually little was done to explain how institutions actually operated as opposed to how they were supposed to operate, to analyze public policies produced by the institutions, or to discover the relationships between institutional structure and public policies:

Subsequently, political scientists turned their attention in teaching and research to the political processes within governmental or political institutions; concentrating on the behaviour of participants in the process and on political realities rather than formalism. In the study of the legislatures, interest shifted from simply describing the legislature as an institution to analyzing and explaining its operation over time, from its static to its dynamic aspects. Thus in the academic curriculum the course on the legislature often came to be about the legislative process.

Institutionalism, with its emphasis on the formal or structural aspects of institutions, can nonetheless be usefully employed in policy analysis. An institution is in part, a set of regularized patterns of human behaviour that persist over time and perform some significant social function or activity. It is their differing patterns of behaviour that really distinguish courts from legislatures, from administrative agencies, and so on. These regularized patterns of behaviour, which we often call rules or structures, can affect decision-making and the content of public policy. Rules and structural arrangements are usually not neutral in their effects; rather, they tend to favor some of the senate rules (and traditions, which often have the effect of rules), such as those relating to unlimited debates and action by unanimous consent, favour the interests of legislative minorities over majorities. Many actions in the senate, such as bringing bills up for consideration and closing off debate on them, are done by unanimous consent. Thus one senator, so inclined, can block action by the senate.

Institutional theory focuses on institution and how they matter in policymaking, so the most general way of explaining how institutions affect policy output is by seeing how the institutions (explained through various trends) empower and constrain actors in policymaking (March and Olsen, 2008, p. 3).

In summary, institutional structures, arrangements, and procedures often have important consequences for the adoption and content of public policies. They provide part of the context for policy making which must be considered along with the more dynamic aspects of politics, such as political parties, groups, and public opinion, in policy study. By itself, however, institutional theory can provide only partial explanations of policy. It has little to say about what drives the policy process.

Rational Choice Theory. The rational-choice theory, which is sometimes called social choice, or formal theory, originated with economists and involves applying the principles of micro-economic theory to the analysis and explanation of

political behaviour (or non-market decision-making). It has now gained many adherents among political scientists.

Perhaps the earliest use of rational-choice theory to study the political process is Anthony Downs's Economic Theory of Democracy published in 1957. In this influential book, Downs assumes that voters and political parties act as rational decision-makers who seek to maximize attainment of their preferences. Parties formulated whatever policies would win most votes, and voters sought to maximize the portion of their preferences that could be realized through government action. In attempting to win elections, political parties moved towards the centre of the ideological spectrum to appeal to the greatest number of voters and maximize their voting support.

Thus, rather than Rational choice theory both alerts us to the importance of self-interest as a motivating force in politics and policy making, and provides a better understanding of decision-making processes. Many contend, however, that politics is not merely as devoid of altruism and concern for the public interest as the rational-choice theorists assume. The adoption of "good public policy," for example, is frequently a goal of members of congress and public-interest groups.

Political Systems Theory. The political system theory is most closely associated with the work of David Easton (1953). According to this model, public policy is the response of the political system to demands arising from its environment. The political system as defined by Easton composed of those identifiable and interrelated institutions a activities in a society that make authoritative decisions allocation of values) that are binding on society. The environment consists of all those socio-cultural, economic, and political conditions or factors within and outside the boundaries of the political system which shape the political process, and whose activities are influenced by the political system.

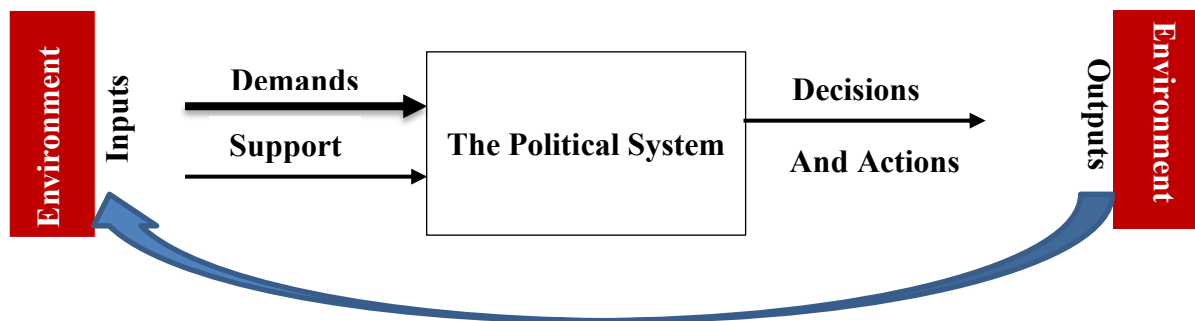


Figure 1: Systems Analysis by Easton David (1965)

The political system receives inputs from the environment. Inputs consist of demands and supports. Demands are the claims made by individuals and groups on the political system for action to satisfy their interests. Support is rendered when groups and individuals abide by the rules or laws of the country, pay their taxes, and accept the decisions and actions of the authoritative political system made in response to demands. These authoritative allocations of values constitute public policy. The concept of feedback indicates that the political system receives information about the policy outcomes.

The political systems theory has certain limitations. First, it does not explain the origin of public policies, nor is it concerned with how decisions are made and policies developed within the political system. Again, it is not concerned with evaluation of past and present policies. Nonetheless, systems theory is a useful aid in organizing our inquiry into formation. Systems theory draws our attention to the influence of puts on the content of public policy.

Public policy may be viewed as a political systems response to demands arising from its environment. The political system, as Easton defines it, comprises those identifiable and interrelated institutions and activities (what we usually think of as governmental institutions and political processes) in a society that make authoritative allocations of values (decisions) that are binding on society. The environment consists of all phenomena – the social system, the economic system, the biological setting – that are external to the boundaries of the political system. Thus at least analytically one can separate the political system from all the other components of a society.

Inputs into the political system from the environment consist of demands and supports. Demands are the claims for action that individuals and groups make to satisfy their interests and values. Support is rendered when groups and individuals abide

by election results, pay taxes, obey laws, and otherwise accept the decisions and action undertaken by the political system in response to demands. The amount of support for a political system indicates the extent to which it is regarded as legitimate, or as authoritative and binding on its citizens.

Outputs of the political system include laws, rules, judicial decisions, and the like. Regarded as the authoritative allocations of values, they constitute public policy. The concept of feedback indicates that public policies (or outputs) made at a given time may subsequently alter the environment and the demands arising there from, as well as the character of the political system itself. Policy outputs may produce new demands, which lead to further outputs, and so on in a never-ending flow of public policy.

The usefulness of systems theory in studying public policy is limited by its highly general and abstract nature. It does not, moreover, say much about the procedures and processes by which decisions are made and policy is developed within the “black box” called the political system. Indeed, systems theory depicts government as simply responding to demands made upon it, and its results are sometimes characterized as “input-output studies.” (For an illustration, see the discussion in the section headed socioeconomic conditions.) Nonetheless, this approach can be helpful in organizing inquiry into policy formation. It also alerts us to some important facts of the political process, such as these: How do inputs from the environment affect the content of public policy and the operation of the political system? How in turn does public policy affect the environment and subsequent demands for policy action? ‘How well is the political System able to convert demands into public and preserve itself over time?

The Economic Approach. The econometric approach, sometimes called the public choice approach or the political economy approach, is primarily based on economic theories of politics in which human nature is assumed to be “rational” or motivated preference gain. This approach assumes that people pursue their own fixed weighted preferences regardless of collective outcomes. Essentially, it integrates the general insight of public research with the method of public finances. For examples, it assume that the preferences of individuals are narrow and diverse, which requires that these individuals aggregate, or “logroll” their preferences into majorities that can command governmental action. For examples, John Chubb has used such an approach to study policy implementation.

The Participatory Approach. The participatory approach, recently associated with Peter DeLeon and others, is closely related to the post positivist challenge and involves a greater inclusion of the interests and values of the various stakeholders in the policy decision-making processes. It is presumably closer to what Harold Lasswell (1971), called the “policy sciences of democracy”, in which an extended population of affected citizens would be involved in the formulation and implementation of public policy through a series of discursive dialogues. It would involve extensive open hearings with a broad range of concerned citizens, in which these hearings would be structured in such a way as to prompt individuals, interest groups, and agency officials to contribute to policy design and redesign. The declared purpose of participatory policy analysis is to gather information so that policy makers can make better (i.e., more completely informed) recommendations and decisions. As an approach to analysis, it encourages consideration of a greater number of players and values in the policy making process and to thus have a better catalogue of the various perspectives being brought to bear on the policy under consideration.

4.3. Issues arising from review of public policy making theories

The second objective of the study further sought to establish existing gaps with reference to theoretical anchorage of the project planning logic models and public policy formulation process. The reviewed literature has revealed existing gaps with reference to the comprehensive nature of the existing theories which guide public policy making process. A summary of the gaps in literature is as shown in Table 3 below:

Table 3: Gaps in public policy making theories

S/No	THEORY	THEORETICAL GAPS
1	Incremental Theory	Incremental decision making is essentially remedial and is geared more to the amelioration of present, concrete social imperfections than to the promotion of future social goals. Tends to focus on the short-term rather than long-term end state.

2	Group Theory	The theory seems both to overstate the importance of groups and to understate the independent and creative role that public officials can play in the policy process.
		From a methodological perspective, it is misleading and inefficient to try to explain politics and policy making solely in terms of interests and the group struggle. This bias leads to neglect of many other factors, such as ideas and institutions, which abound and which independently affect the development of policy
3	Elite Theory	A key limitation of elite theory when applied to policy formulation is its tendency to overemphasize the power and influence of a small, privileged group, potentially neglecting the role of public opinion, diverse interests, and grassroots movements in shaping policy decisions, often leading to an overly simplistic view of the policy process and potentially overlooking important avenues for citizen participation and accountability.
		Elite theory often focuses on the policy formulation stage but may not adequately address how policies are implemented and can be altered by various actors once they reach the bureaucratic level.
4	Institutional Theory	Institutional theory often assumes a stable institutional environment, neglecting how institutions can evolve, adapt, or be disrupted by political actors and external factors, potentially overlooking opportunities for policy innovation or necessary reforms.
		While recognizing the influence of institutions on actors, institutional theory can sometimes underplay the potential for individual actors to actively shape policy through strategic behavior and political maneuvering.
5	Rational Choice Theory	Real-world policy issues often involve multiple stakeholders with conflicting interests and complex interdependencies, which can be difficult to adequately model using a purely rational approach.
		By focusing on maximizing overall utility, policies formulated based on rational choice theory can sometimes overlook the needs and concerns of marginalized groups.
6	Political Systems Theory	The usefulness of the systems theory in studying public policy is limited by its highly general and abstract nature. It does not, moreover, say much about the procedures and processes by which decisions are made and policy is developed within the „black box“ called the political system.
7	Economic Approach	Real-world policy issues often involve multiple stakeholders with conflicting interests and complex interdependencies, which can be difficult to adequately model using a purely economic approach.
8	Participatory Approach	A key limitation of participatory theory in policy formulation is that while it aims to include diverse perspectives, it can often be challenging to ensure equitable representation of all stakeholders, potentially leading to the voices of marginalized groups being overlooked or underrepresented, which can undermine the legitimacy and effectiveness of the policy process.

5. The Call for a Theoretical Framework

The third objective of this study was to propose a comprehensive theoretical model, management theory and supporting principles as a basis upon which the above decision making tools and process would be anchored. According to Nachmias and Nachmias (2008), a theoretical framework supports a theory in a research study, introduces and describes the theory that explains why the research problem under study exists. It permits the researcher to evaluate assumptions more critically, forces the researcher to address questions of why and how, connects the researcher to existing knowledge and permits the researcher to intellectually transit from simply describing a phenomenon that have been observed to generalizing about various aspects of that phenomenon. The current study proceeds to suggest a theoretical framework, a theory of management and principles that will guide the application of the proposed theory. A new theoretical model offers an opportunity to theorize and put forward propositions at the abstraction level that can be empirically investigated as hypotheses with factual data (Nachmias & Nachmias, 2004).

5.1. The Proposed Intent Focused Management Theory

The Intent Focused Management Theory was developed on the premise that the continued application of the Campaign Planning Tool and the Combat Estimates as decision making tools within military organizations had no theoretical anchorage from the Management Scholar’s point of view. Further, lack of comprehensive models and theories to guide project planning and public policy formulation by Non-Governmental organizations and the public sector respectively was a matter that had to be addressed through scholarship.

It was in view of the a foresaid that this theory was proposed for the purpose of filling the existing knowledge gaps relating to theoretical anchorage and comprehensiveness of the military decision making process, public policy formulation and project planning, implementation, monitoring and evaluation within various institutions.

In light of the theoretical and empirical gaps identified in the review, this study presents a theoretical framework that will assist in finding out the influence of management theories in decision making and organizational performance. The proposal is presented using a number of tools including comprehensive multi-sectoral and single agency logic models, theoretical frameworks, theoretical propositions and guiding principles.

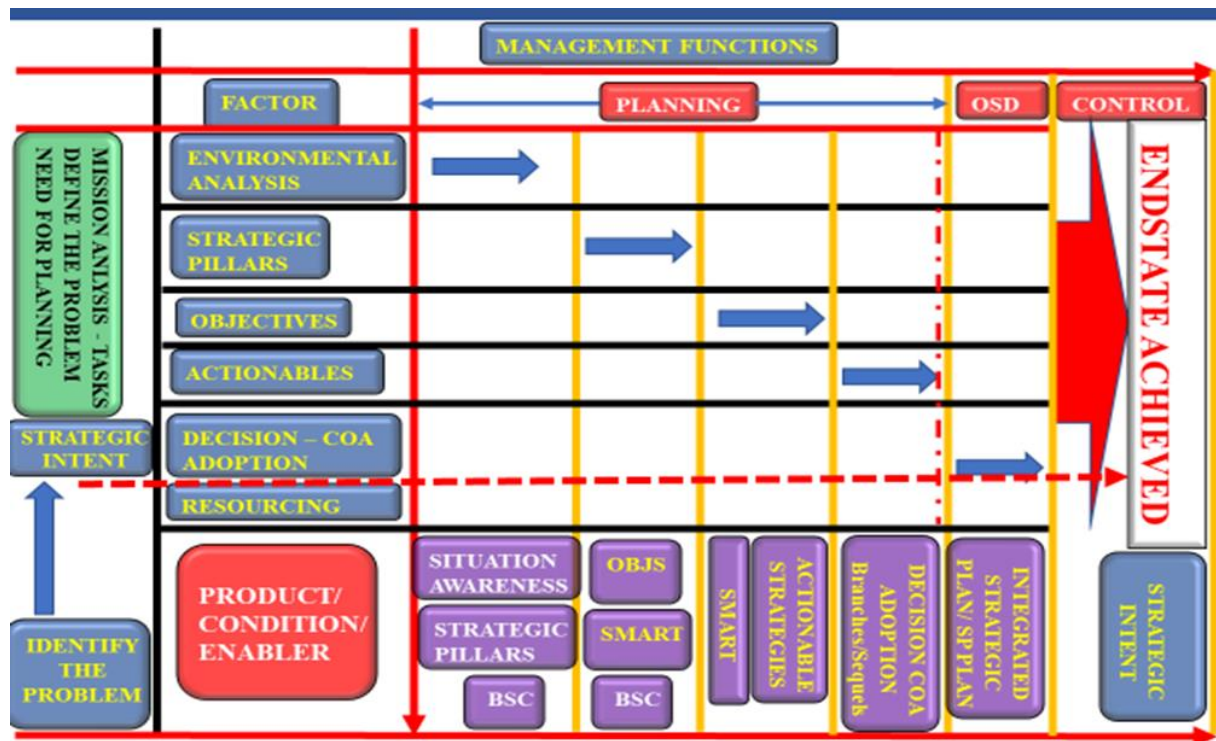


Figure 2: Intent Focused Theory Logic Model

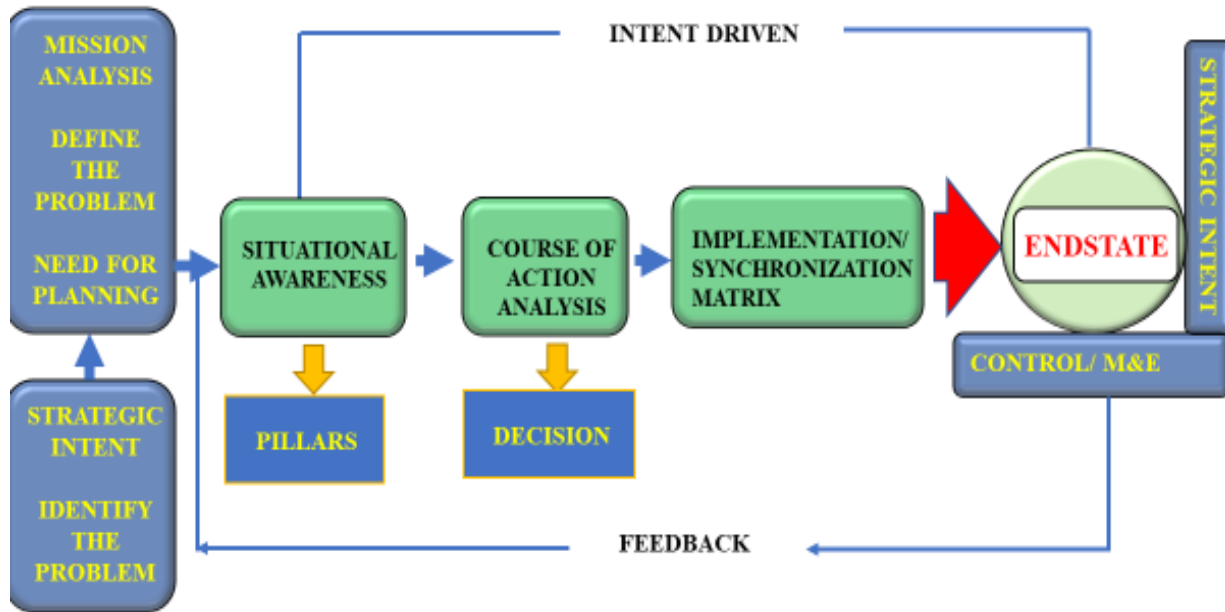


Figure 3: Intent Focused Theoretical Framework

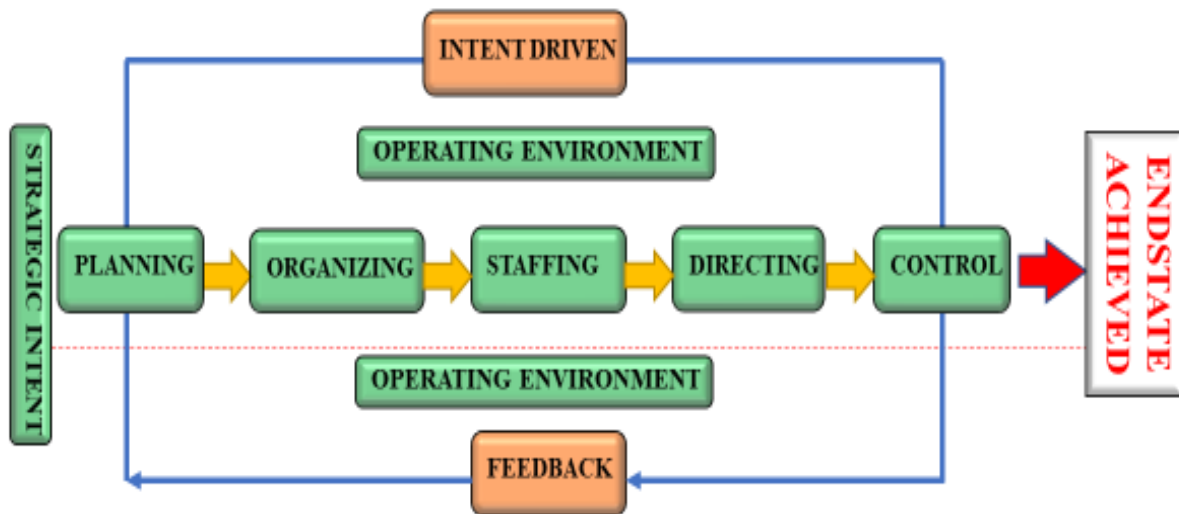


Figure 4: Simplified Intent Focused Theoretical Framework

5.1.1. Identifying a strategic intent

Strategic intent clarifies an organization’s purpose and the goals it strives to achieve. This clarity is essential in today’s business and security landscape, where merely identifying temporary advantages is insufficient. A well-defined strategic intent helps organizations set a stable course and pursue long-term success amidst ongoing environmental challenges.

Strategic intent encapsulates the aspirations and ultimate goals an organization aims to achieve. It represents a clear vision of what the organization seeks to become and the industry leadership position it aims to secure. Thus, the paper proposed that;

Proposition 1: Identifying a strategic intent, which clarifies the goals, purpose and endstate to be achieved sets the stage by giving a reference point upon which decision are made. It provides a roadmap for decision making.

5.1.2. Aligning management functions to strategic intent

Understanding strategic intent is crucial because it aligns the organization's resources and energies towards a unified and clear goal, ensuring that every action and decision contributes to the broader vision of long-term success and industry leadership. All employees in an organization must ensure that their activities from the planning function to the controlling function are aligned with the desired endstate which is derived from the intent. Any deviation will derail the achievement of the overall goals and objectives. Thus, the study proposed that;

Proposition 2: Aligning all management functions with the strategic intent focuses effort on key areas hence facilitating achievement of the broader organizational goals.

5.1.3. Dynamic nature of management environment

The practice of management is carried out within the context of a dynamic and unpredictable environment. Environmental dynamism describes the rate and unpredictability of changes in a firm's external environment (Dess and Beard, 1984). When firms face highly dynamic environments, operators face vague value-judgment standards and discouraging environments for the selection of operational strategies; these factors may force operators to rapidly make strategic decisions using limited diagnostic observations of the company's operational environments, so as to establish dynamic capabilities.

Milliken (1987) considered environmental dynamism as speed of product changes, the changing frequency of customer preference and operational environment. According to Zahra and Covin (1995), business firms under turbulent environments need to continuously renew product/service so as to respond to environmental change. Thus, these businesses will be better able to satisfy customers' continuously changing preferences, making timely and effective responses to competitors' tactics. More dynamic environments require them to maintain higher levels of dynamic capabilities with better resource configurations, so as to effectively respond to changes in customer needs as well as technological transformation in order realize higher levels of performance during heightened periods of competition. This calls for flexible business plans that can quickly adapt to changing customer preferences. Thus;

Proposition 3: The functions of management are executed within the framework of a dynamic and unpredictable environment. This calls for critical environmental analysis and flexibility in planning leading to development of adaptable strategies and plans.

5.1.4. Information requirement during planning

The level of change in external operating environment may be to an extent that can have a major impact on achievement of the overall goals. In such cases, planners need not to proceed with planning, but must seek guidance and clarification from their superiors on the best way forward. This ensures that planning is intent guided and in line with the aspirations of the organization's leaders. Failure to seek clarification may result in unintended outcome which might not serve the interests of the stakeholders and management as well. Upon getting guidance, planners can proceed aligning all their actions and decisions with the adjusted intent leading to overall success. Thus, the study proposed that;

Proposition 4: Whenever changes occur in the environment which may have an impact on the endstate, planners must seek clarification up. This ensures that planning is intent guided and in line with the aspirations of the organization's leaders leading to achievement of the desired objectives.

Proposition 5: Resumption in the planning process must adhere to the intent as guided. This is to ensure that the interests of management as well as stakeholders is taken into consideration, hence organizational success.

5.1.5. Intent Focused Theory

The theory is summarized as follows:

- a. A Strategic Intent clarifies the purpose, goals and endstate.
- b. All management functions must be intent driven.
- c. The functions are executed within the framework of a dynamic and unpredictable environment.
- d. Whenever changes occur in the environment which may have an impact on the endstate, planners must seek clarification up.
- e. Resumption in the planning process must adhere to the intent as guided.

5.2. Principles of Intent Focused Management Theory (UD - AIR)

The Intent Focused Management Theory will be guided by the following principles:

- a. Understand strategic intent, own mission and operating environment.
- b. Determine strategic pillars, alternative and best course of action.
- c. Allocate resources.
- d. Implement in line with intent.
- e. Review the process.

The principles can be summarized using the acronym UD-AIR. To be referred to as Frankline Omuse 5 (five) principles of management.

5.3. Application of Intent Focused Theory

The theory is a useful decision making tool for the following categories of organizations:

- a. Military organizations campaign planning departments.
- b. Government Multi - Sectoral planning departments for programmes with Lead Agency and Supporting Agencies.
- c. Public policy making bodies.
- d. Large Bureaucratic Corporations dependent on formal organizational planning.
- e. All Institutions dependent on Strategic Planning for decision making.
- f. Intent focused theory is key in guiding managers execution of management functions in all types of organizations.

5.4. Application in academia

The theory will be of great importance in academia as it redefines the general practice of decision making in both the public and private sectors. It will be of particular importance to the following categories of training institutions:

- a. Military and security studies training institutions.
- b. Project planning training institutions.
- c. Public policy studies schools.
- d. Management training institutions.

5.5. *Benefits of Intent focused management theory*

The theory will be beneficial in management practice in the following manner:

- a. Realization of value for money due to optimum utilization of resources occasioned by strict adherence to strategic intent and desired endstate during project implementation.
- b. Well guided decision making resulting in quality policies that are beneficial to the stakeholders and citizens in general.
- c. Efficiency and effectiveness since the theory guides management practice from planning to control.
- d. This theory will act as an accountability theory by stakeholders of any organization in whatever industry for holding managers, leaders, administrators and policy makers accountable for the resources allocated to them or put under their stewardship with intent of accomplishing organizational goals/objectives.

5.6. *Conclusion and direction for future research*

In conclusion, the objectives of this paper were: to review extant conceptual and empirical literature on existing management theories and models with intent of establishing existing gaps in their contribution towards guiding managers in decision making and organizational management; to establish existing gaps with reference to theoretical anchorage of the military decision making process tools, project planning logic models and public policy formulation process; and to propose a comprehensive theoretical model, management theory and supporting principles as a basis upon which the above decision making tools and process will be anchored. A review of extant literature on management theories was carried out where gaps were realized. Literature on military decision making tools and public policy making theories too, established gaps in theoretical anchorage and theoretical comprehensiveness respectively. This was the basis upon which the Intent Focused Theoretical Framework, Theory and guiding principles were proposed. The main limitation of this study concerned the propositions, which all constituted theoretical propositions that are yet to be empirically tested and validated using data from a field survey. In view of these limitations, future research needs to consider the propositions advanced by this theoretical work with a view to undertaking an empirical investigation to validate the claims made using original data.

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Exploring Green Universities: A Bibliometric Study of Sustainability Research in Higher Education Institutions

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Abstract

This study presents a bibliometric analysis of sustainability research in higher education institutions (HEIs), focusing on key trends, research gaps, and emerging themes. The analysis highlights the growing scholarly attention toward environmental sustainability, green universities, and management control systems (MCS). Over the past decade, sustainability research in HEIs has experienced a consistent upward trend. The findings indicate that dominant contributors to sustainability research include the United States, the United Kingdom, and China, with leading universities and high-impact journals playing a pivotal role in knowledge dissemination. The study identifies core research themes, including sustainability governance, environmental education, and institutional sustainability policies. However, several underexplored areas remain, such as the role of digital technologies (AI, IoT, blockchain) in campus sustainability, financial mechanisms for sustainable initiatives, and the integration of MCS in sustainability frameworks. Additionally, future studies should examine the impact of sustainability policies on student well-being and explore how universities engage with external stakeholders to drive broader sustainability initiatives. Despite limitations, including language restrictions and reliance on the Scopus database, this study provides a structured overview of HEI sustainability research and offers insights for future investigations to enhance institutional sustainability efforts.

Keywords: Bibliometric, Environmental, Green Universities, Higher Education Institutions, Sustainability

1. Introduction

1.1 Introduce the Problem

In recent years, the role of universities in advancing environmental sustainability has gained significant attention in both academic and policy discussions (Sawalkar et al., 2023; Song, 2023). As centers of knowledge production, higher education institutions (HEIs) hold a unique position in shaping environmental consciousness, driving sustainable innovations, and influencing public policy (Madhuranthakam et al., 2023; Sarwar et al., 2023). The increasing recognition of universities as key agents in sustainability transitions has given rise to the concept of "green universities"—institutions that integrate sustainability principles into their teaching, research, campus operations, and community engagement (McCollum & Nicholson, 2023; Nikula et al., 2023). Green universities

aim to reduce their environmental footprint through sustainable infrastructure, renewable energy use, waste reduction programs, and sustainable procurement policies (Kusmulyono et al., 2023). Beyond operational sustainability, these institutions play a crucial role in educating future leaders, policymakers, and professionals who will be responsible for implementing sustainable practices in various sectors (Malone & Young, 2023; Molnar et al., 2023). Given this expanding role, there is a pressing need to systematically examine how universities contribute to environmental sustainability and what mechanisms facilitate or hinder their progress in becoming green institutions.

In response to these challenges, scholars have increasingly turned their attention to studying the sustainability initiatives undertaken by HEIs. Over the past decade, research has explored multiple dimensions of sustainability in universities, including curriculum development, student engagement, faculty research, institutional policies, and governance structures (Asgarova et al., 2023; Bincy & Vasudevan, 2023). A growing body of literature has investigated the impact of sustainability education on student attitudes and behaviors, highlighting the importance of integrating environmental awareness into university curricula. Moreover, empirical studies have examined how HEIs adopt sustainability policies and reporting frameworks, such as the Global Reporting Initiative (GRI) and the Sustainability Tracking, Assessment & Rating System (STARS), to enhance transparency and accountability in their environmental initiatives (Proctor & Rumbley, 2023; Roy, 2023). Despite this progress, gaps remain in understanding the systemic challenges that universities face in implementing sustainability strategies, as well as the role of internal governance and control mechanisms in ensuring long-term sustainability commitment.

One emerging area of interest in this field is the application of Management Control Systems (MCS) to support sustainability initiatives in universities. Traditionally, MCS have been used in corporate settings to monitor financial performance, set strategic goals, and enhance organizational efficiency (Roos & Guenther, 2020). However, in the context of universities, MCS can serve as a framework for integrating sustainability into decision-making processes by establishing performance measurement indicators, incentivizing sustainable behavior, and aligning institutional objectives with broader environmental goals. Universities that incorporate sustainability-oriented MCS can better track their progress in reducing carbon emissions, optimizing resource use, and promoting green research initiatives (Shboul et al., 2023). Moreover, by embedding sustainability metrics into management controls, universities can foster a culture of accountability, encouraging faculty and staff to actively participate in environmental initiatives. Nevertheless, limited research has explored the intersection between MCS and sustainability in higher education, indicating a gap that warrants further investigation.

Given the increasing academic interest in sustainability within HEIs, a bibliometric analysis of this research domain is both timely and necessary. Bibliometric analysis allows for a systematic examination of publication trends, key themes, influential authors, and institutional contributions in a specific research area (Di Vaio et al., 2021). By utilizing data from Scopus, this study aims to map the intellectual landscape of sustainability research in universities, with a particular focus on environmental sustainability, green universities, higher education, and management control systems. This analysis will help identify the dominant research themes, assess the evolution of sustainability discourse in academia, and highlight emerging areas that require further exploration. Additionally, by examining the geographical distribution of research outputs, this study seeks to determine which regions and institutions are leading the discourse on university sustainability and how their contributions shape global discussions on the topic.

Despite the growing body of literature, several research gaps remain. Many studies have focused on sustainability reporting and environmental policies in universities, but fewer have examined how MCS can facilitate or hinder sustainability transitions in HEIs (Ajaps, 2023; Asgarova et al., 2023). Additionally, while the impact of sustainability education on students has been widely documented, there is still limited understanding of how internal governance structures, faculty incentives, and institutional leadership influence sustainability outcomes. This study seeks to bridge these gaps by conducting a comprehensive bibliometric review, providing insights into how sustainability is managed, measured, and controlled within universities. By addressing these gaps, this research will contribute to a deeper understanding of the mechanisms that enable universities to function as drivers of sustainability and offer practical recommendations for enhancing their environmental impact.

To achieve these objectives, this study is guided by several key research questions:

RQ1. What are the main themes and trends in research on environmental sustainability in universities?

RQ2. Which countries and institutions are leading the field in sustainability research?

RQ3. How has the discourse on green universities evolved over the past decade?

RQ4. What are the opportunities for future research in this area?

Through this analysis, we aim to provide a structured overview of existing literature, identify gaps in research, and propose directions for future studies to enhance the role of universities in achieving global sustainability goals.

1.2 Literature Review

1.2.1 Environmental Sustainability

Environmental sustainability refers to the responsible management of natural resources to ensure their availability for future generations while minimizing ecological degradation (Song, 2023). This concept has gained significant importance due to global challenges such as climate change, pollution, and biodiversity loss. Sustainability efforts aim to balance economic growth, social well-being, and environmental protection by promoting efficient resource utilization, reducing carbon emissions, and fostering sustainable consumption patterns (Fakourian & Asefi, 2019; Moqbel et al., 2020).

The role of higher education institutions (HEIs) in advancing environmental sustainability has been widely discussed in recent literature. Universities serve as key drivers of sustainability through research, education, and community engagement (Kukkonen et al., 2021). They are responsible for developing future leaders, policymakers, and professionals who can implement sustainability practices across various industries. Additionally, HEIs have the potential to lead by example by adopting green campus initiatives, implementing waste reduction programs, and promoting renewable energy usage (Lam, 2022).

However, despite the growing emphasis on environmental sustainability, many institutions struggle with its practical implementation. Financial constraints, lack of policy support, and resistance to change are among the common barriers (Sawalkar et al., 2023). Effective management control systems (MCS) can help universities overcome these challenges by integrating sustainability goals into institutional strategies and decision-making processes. Furthermore, sustainability reporting frameworks such as the Global Reporting Initiative (GRI) and the Sustainability Tracking, Assessment & Rating System (STARS) have been introduced to measure and enhance environmental performance in higher education (Moqbel et al., 2020).

1.2.2 Green University

The concept of a green university has emerged as a response to the need for sustainable development within higher education institutions. A green university integrates environmental sustainability into its core functions, including teaching, research, campus operations, and stakeholder engagement (Kukkonen et al., 2021). This concept aligns with the United Nations Sustainable Development Goals (SDGs), particularly Goal 4 (Quality Education) and Goal 13 (Climate Action), which emphasize the role of education in addressing environmental challenges (Fakourian & Asefi, 2019).

Green universities adopt various strategies to reduce their environmental footprint. These include energy-efficient buildings, waste management systems, water conservation programs, and sustainable transportation initiatives. Some universities have also incorporated sustainability-focused courses and interdisciplinary research programs to educate students about environmental issues (Moqbel et al., 2020). Furthermore, many institutions participate in international sustainability rankings such as the UI Green Metric World University Ranking, which evaluates universities based on their environmental sustainability performance.

Despite these efforts, the transition to a green university model presents several challenges. Institutional resistance, financial limitations, and a lack of standardized sustainability policies often hinder progress. Additionally, while

some universities excel in specific areas of sustainability (e.g., renewable energy use or waste management), others struggle with comprehensive implementation across all institutional levels (Lam, 2022). Effective leadership, stakeholder collaboration, and robust sustainability management frameworks are essential for overcoming these barriers and ensuring the successful transition to a green university model.

1.2.3 Higher Education

Higher education institutions (HEIs) play a critical role in shaping sustainable societies by fostering research, innovation, and awareness of environmental issues. Universities act as knowledge hubs that not only educate students but also influence industry practices and government policies through academic research and public engagement. Many HEIs have started incorporating Education for Sustainable Development (ESD) into their curricula, enabling students to develop the skills and knowledge required to address global sustainability challenges (Popowska & Sady, 2024).

In addition to their educational responsibilities, universities also contribute to sustainability through their campus operations. Implementing eco-friendly policies such as carbon neutrality goals, sustainable procurement, and biodiversity conservation are key aspects of HEIs' sustainability commitments (Sutawaidjaya et al., 2024). Some universities have established sustainability offices to oversee environmental initiatives, track progress, and ensure compliance with sustainability standards (Ficco et al., 2023).

The impact of HEIs on sustainability is not limited to their campuses. Many institutions engage in community outreach programs to promote sustainability beyond academia. Collaborations with local governments, businesses, and non-profit organizations help HEIs extend their influence and contribute to broader sustainability goals (Heinicke & Guenther, 2020). However, while HEIs are well-positioned to lead sustainability efforts, the extent of their impact depends on institutional priorities, governance structures, and resource availability (Baret et al., 2023).

1.2.4 Challenges and Opportunities in Implementing Sustainability in Higher Education Institutions

Despite growing awareness of sustainability in higher education, institutions face numerous challenges in implementing sustainability initiatives effectively. One of the primary obstacles is financial constraints. Many universities, particularly those in developing countries, lack the necessary funding to invest in sustainability infrastructure, such as solar panels, energy-efficient buildings, and water recycling systems (Roos & Guenther, 2020). Budget limitations often force institutions to prioritize short-term operational needs over long-term sustainability projects.

Another major challenge is the lack of policy enforcement and standardization. While many universities have sustainability policies, their implementation varies widely. Some institutions have comprehensive strategies with clear performance indicators, while others adopt fragmented approaches that lack accountability (Khandakar et al., 2022). Additionally, there is no universal framework for assessing sustainability performance in higher education, making it difficult to compare progress across institutions (Ficco et al., 2023).

Cultural resistance and lack of stakeholder engagement also hinder sustainability efforts. Faculty members, administrators, and students may resist changes that require altering traditional academic structures and daily routines (Alexa et al., 2020). Overcoming this resistance requires effective communication, incentives for sustainable behavior, and active participation from all stakeholders (Heinicke & Guenther, 2020).

Despite these challenges, there are significant opportunities for advancing sustainability in higher education. The rise of digital technology and data analytics offers new possibilities for monitoring and optimizing sustainability performance. Smart campus solutions, such as IoT-based energy management systems, can help universities reduce waste and improve efficiency (Popowska & Sady, 2024). Additionally, sustainability research funding and corporate partnerships provide financial support and expertise for HEIs to expand their sustainability initiatives (Baret et al., 2023).

Another promising development is the increasing focus on interdisciplinary research and collaboration. Sustainability is a complex issue that requires expertise from multiple fields, including environmental science, economics, engineering, and social sciences. Many universities are establishing sustainability research centers that bring together experts from different disciplines to address sustainability challenges holistically (Basheer et al., 2024).

Moreover, growing student activism and demand for sustainability-focused education are pushing universities to adopt greener policies. Students are increasingly advocating for climate action, demanding divestment from fossil fuels, and participating in sustainability initiatives on campus (Sutawaidjaya et al., 2024). This shift in student expectations encourages universities to prioritize sustainability in their strategic planning and operational management.

In conclusion, while the path to achieving sustainability in higher education is fraught with challenges, there are numerous opportunities for progress. By leveraging technology, fostering interdisciplinary collaboration, engaging stakeholders, and securing financial support, universities can become key drivers of sustainability at both local and global levels. Future research should focus on identifying best practices, developing standardized sustainability assessment frameworks, and exploring innovative strategies to enhance the effectiveness of sustainability initiatives in HEIs.

2. Method

This study employs a bibliometric method using the PRISMA Protocol (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) to ensure a systematic and transparent data screening process. The research data were obtained from the Scopus database using VOSviewer and R-Studio for bibliometric analysis. The first stage involved identification, where a search was conducted using the keywords "universities," "higher education," "green university," and "environmental sustainability." This search yielded 1,608 relevant articles. The collected data were limited to studies published between 2012 and 2024, with a focus on articles written in English and published in reputable journals.

Next, during the screening stage, additional selection criteria were applied to align with the research objectives. The study focuses on the fields of business, management, and accounting; economics and finance; social sciences; and environmental science. Furthermore, only journal articles were included in the analysis. At this stage, 1,130 articles were excluded for not meeting the established criteria, leaving 478 articles eligible for further analysis.

In the final stage, inclusion, further validation was conducted based on the relevance of keywords, titles, abstracts, and article content, along with an error-checking process. The analysis was carried out to identify research patterns and thematic trends in the literature on environmental sustainability in higher education. VOSviewer was used to visualize keyword networks and researcher collaborations, while R-Studio was utilized for statistical analysis in the bibliometric study (Van Eck & Waltman, 2022). The PRISMA Protocol ensures that the research results are structured and reproducible, adhering to the standards of scientific research based on secondary data (Page et al., 2021). The final search query used was as follows:

(TITLE-ABS-KEY ("universities") OR TITLE-ABS-KEY ("higher education") OR TITLE-ABS-KEY ("green university") AND TITLE-ABS-KEY ("Environmental sustainability")) AND PUBYEAR > 2012 AND PUBYEAR < 2024 AND (LIMIT-TO (SUBJAREA, "SOCI") OR LIMIT-TO (SUBJAREA, "BUSI") OR LIMIT-TO (SUBJAREA, "ECON") OR LIMIT-TO (SUBJAREA, "ENVI")) AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SRCTYPE, "j"))

Table 1: PRISMA Protocol

Stage	Description	Result
Identification	Keywords searched: "universities" or "higher education" or "green university" and "Environmental sustainability"	1.608 articles
Screening	Screening criteria: 1. Year: 2012-2024	Screened and excluded (N = 1.130)

	2. Subject Area: (1) Business, Management, and Accounting; (2) Economics, Econometrics, and Finance; (3) Social Sciences; (4) Environmental Science	1. Year: 600
	3. Language: English	2. Subject Area: 261
	4. Document type: article	3. Language: 28
	5. Source type: journal	4. Document type: 236
Eligibility inclusion	Justification-based keywords used, title, abstract, & error checking Validation process and bibliometric analysis	478 articles were eligible

Source: secondary data (processed, 2025)

3. Results and Discussion

3.1 Document general characteristics

Based on the general characteristics of the documents analyzed, as presented in Table 2, the data cover a timespan from 2013 to 2023, with a total of 478 documents derived from 264 sources, including journals, books, and other publications. The annual growth rate of publications is 12.13%, indicating a consistent increase in research output in this field. The average age of the documents is 5.54 years, suggesting a relatively recent and dynamic body of literature.

The dataset includes 1,620 authors, with 63 documents authored by single authors and 65 single-authored documents in total. The average number of co-authors per document is 3.54, reflecting a collaborative research environment with an international co-authorship rate of 24.69%. Additionally, the documents contain 1,784 keywords plus and 1,695 author's keywords, demonstrating a rich and diverse thematic scope. The 478 documents analyzed are all categorized as journal articles, providing a consistent and focused source of academic insights.

Table 2: Document general characteristics

Description	Results
Main information about data	
Timespan	2013:2023
Sources (Journals, Books, etc)	264
Documents	478
Annual growth rate %	12.13
Document average age	5.54
Average citations per doc	20.83
References	24526
Document contents	
Keywords plus (id)	1784
Author's keywords (de)	1695
Authors	
Authors	1620
Authors of single-authored docs	63
Authors collaboration	
Single-authored docs	65
Co-Authors per Doc	3.54
International co-authorships %	24.69
Document types	
Article	478

Source: secondary data (processed, 2025)

3.2 Evolution in The Number of Publications

Figure 1 illustrates the evolution in the number of articles produced in this field over time. A significant upward trend has been evident in recent years, reflecting the growing attention from both academics and practitioners toward this topic. Several factors contribute to this growth, including the increasing complexity of the business

environment, stricter regulatory requirements, and the development of advanced research methodologies that enable more in-depth and comprehensive analyses.

The rising number of publications can also be attributed to the proliferation of reputable journals that publish research in this domain, coupled with easier access to data through digital technologies. According to Zhang et al. (2022), the literature in economics and finance has experienced accelerated growth since 2015, driven by the increasing demand for data-driven research and the complexities introduced by globalization. This trend underscores the dynamic nature of the field and highlights the necessity for continuous academic engagement to address emerging challenges.

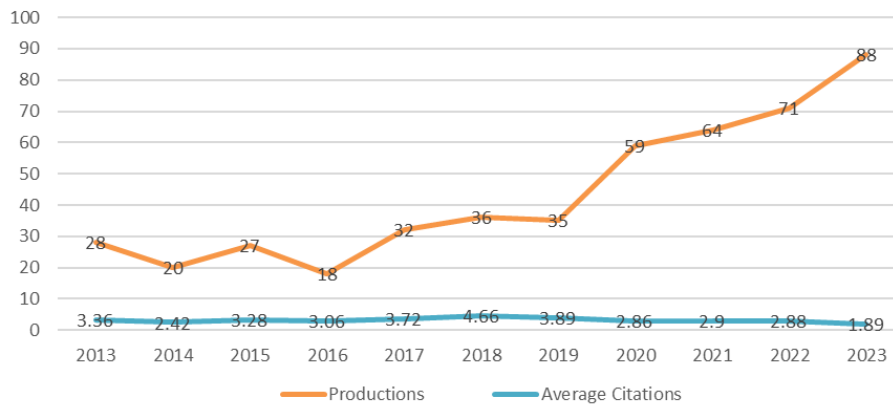


Figure 1: Evolution In the Number of Articles Production and Average Citations
 Source: secondary data (processed, 2025)

However, despite the notable increase in the number of publications, Figure 2 reveals a fluctuating pattern in the average number of citations per article. While more papers are being published, not all receive high citation counts. This discrepancy may be attributed to various factors, including the relevance of the research to industry trends, the robustness of the methodological approaches employed, and the extent to which subsequent research cites the articles. Li et al. (2021) found that studies incorporating innovative, data-driven approaches tend to receive more citations compared to descriptive research that reiterates established concepts.

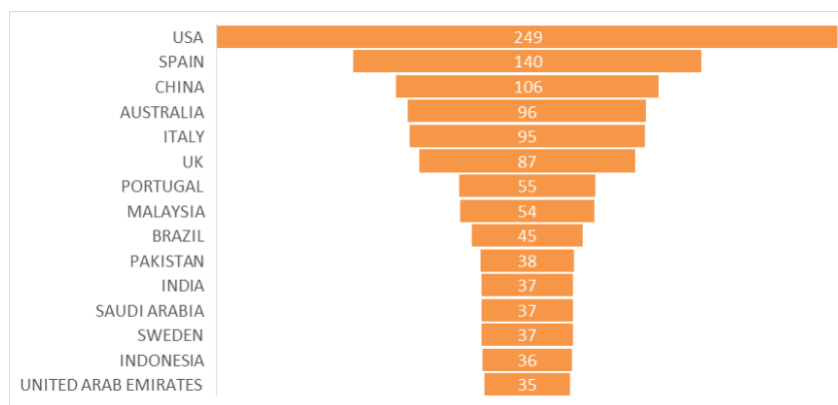


Figure 2: Top 15 Contributing Countries
 Source: secondary data (processed, 2025)

This phenomenon implies that the growth in publication quantity should be accompanied by an emphasis on research quality. Ensuring methodological rigor, pursuing novel research questions, and adopting advanced analytical techniques are crucial for enhancing the impact of academic work. By prioritizing quality alongside quantity, researchers can contribute meaningfully to the development of knowledge in this field and ensure the sustained relevance and influence of their work in the broader academic community.

Moreover, the data presented in Figure 2 highlight the significant contributions from various countries to the body of research. The United States leads with the highest number of publications, followed by Spain, China, and Australia. This distribution reflects the global nature of the research landscape and underscores the importance of international collaboration. Cross-border research partnerships can facilitate the exchange of ideas, methodologies, and data, ultimately enriching the literature and promoting more holistic insights into the field's evolving dynamics. In conclusion, the upward trend in publications and the fluctuating citation patterns underscore the dynamic interplay between quantity and quality in academic research. As the field continues to evolve, researchers must remain vigilant in maintaining methodological rigor, engaging with industry trends, and fostering international collaborations to maximize the impact and relevance of their contributions.

3.3 Distribution Across Global Regions

The distribution of publications based on geographical regions, as shown in Figure 3, indicates that countries with strong research ecosystems, such as the United States, the United Kingdom, and China, continue to dominate the publication landscape in this field. This dominance is primarily driven by significant investments in research and development, which provide these countries with access to high-quality data, advanced research infrastructure, and extensive global collaboration networks. Beyond funding, the presence of prestigious academic institutions and well-established publication practices further bolster their contributions. In contrast, developing countries still face significant challenges in increasing their research contributions in this domain, primarily due to limited access to research funding, technological infrastructure, and academic resources. Additionally, these countries often encounter difficulties in forming international collaborations, which are crucial for enhancing research visibility and impact on a global scale.

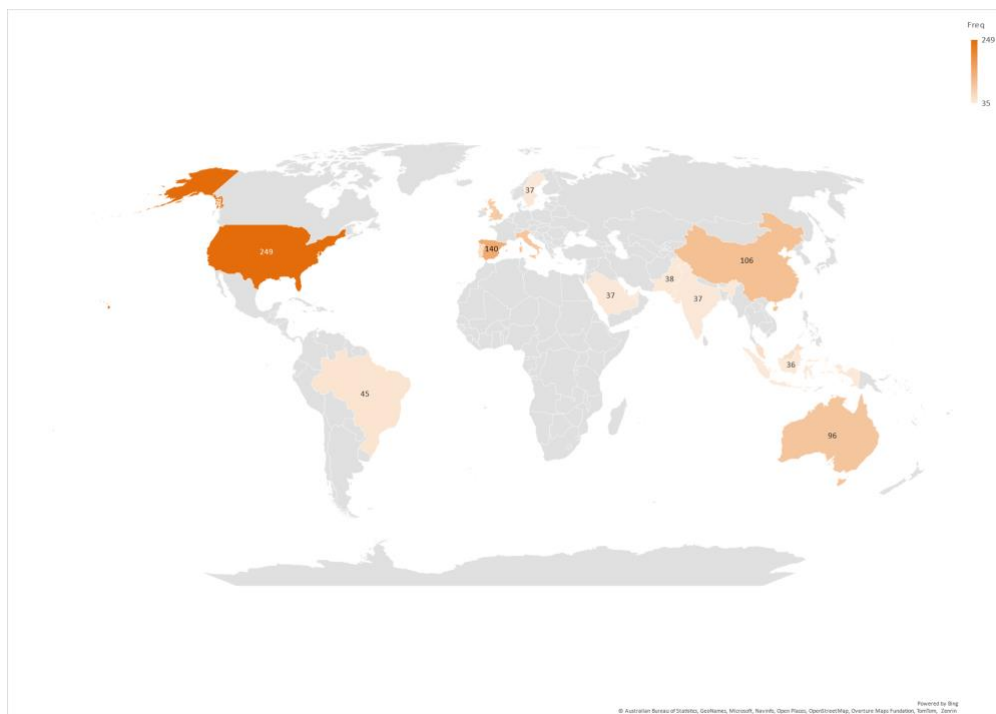


Figure 3: Global Distribution of Publication Density

Source: secondary data (processed, 2025)

Furthermore, Figure 4, which presents the top 10 most-cited countries, demonstrates that countries with high publication volumes do not always correspond to those with the highest academic impact. The United States and the United Kingdom remain the most highly cited countries, indicating that research from these nations is more frequently referenced in subsequent academic work. However, the emergence of new countries in this list signals a potential shift in the centers of academic excellence. This development suggests that academic influence is becoming more geographically diverse, potentially driven by increased global access to advanced research tools and collaborative platforms.

These findings imply the necessity of fostering increased academic collaboration between developed and developing countries to ensure that research in this field becomes more inclusive and provides a broader range of insights. Strengthening academic capacity in developing nations through targeted investments, training programs, and collaborative projects can serve as a strategic approach to enhancing their global research contributions. Such efforts will not only diversify the perspectives within the literature but also promote a more equitable and comprehensive understanding of the field's evolving dynamics. Furthermore, encouraging knowledge transfer and shared research initiatives can help bridge the gap between regions and cultivate a more interconnected academic community worldwide.

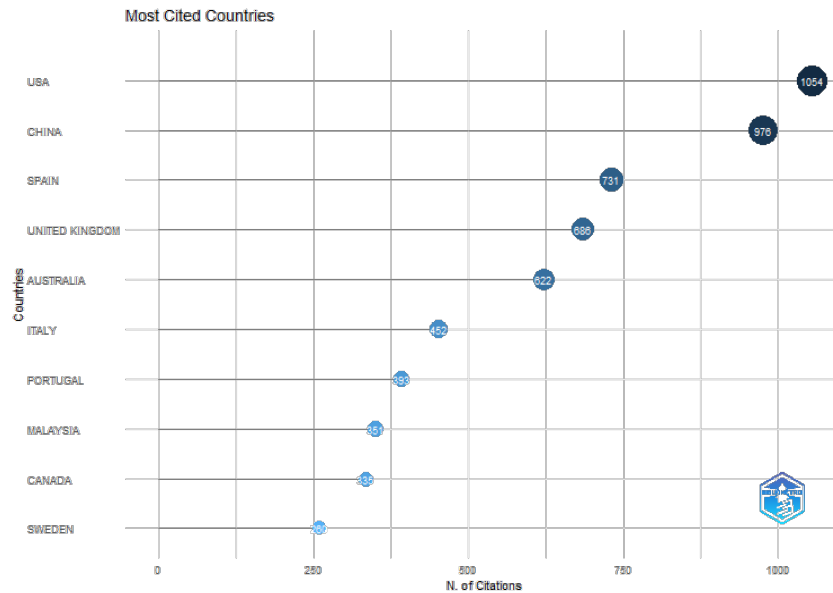


Figure 4: Top 10 Most Cited Countries

Source: secondary data (processed, 2025)

3.4 Journal Analysis

Figure 5 illustrates that publications in this field are predominantly concentrated in several key journals with high-impact factors. The presence of these journals signifies a consistent and reliable platform for researchers to share findings, exchange ideas, and advance the development of knowledge within the discipline. Notably, the journal *Sustainability* (Switzerland) leads with 73 publications, followed by the *International Journal of Sustainability in Higher Education* with 39 publications and the *Journal of Cleaner Production* with 25 publications. This pattern reflects the substantial role of these journals in disseminating research findings and shaping the academic discourse in this field. The dominance of these journals indicates a growing interest in sustainability-related topics, particularly those associated with environmental education, corporate social responsibility, and sustainable development practices.

The prominence of these journals can be attributed to their broad thematic coverage, rigorous peer-review processes, and open-access policies that facilitate greater visibility and accessibility of research findings. According to previous studies, journals with high production volumes often become focal points for academic collaboration and serve as benchmarks for emerging research areas. In addition, the presence of journals like the *International Journal of Environmental Research and Public Health* and *Environmental Science and Pollution Research* highlights the interdisciplinary nature of this field, where environmental, social, and economic dimensions intersect to address global sustainability challenges.

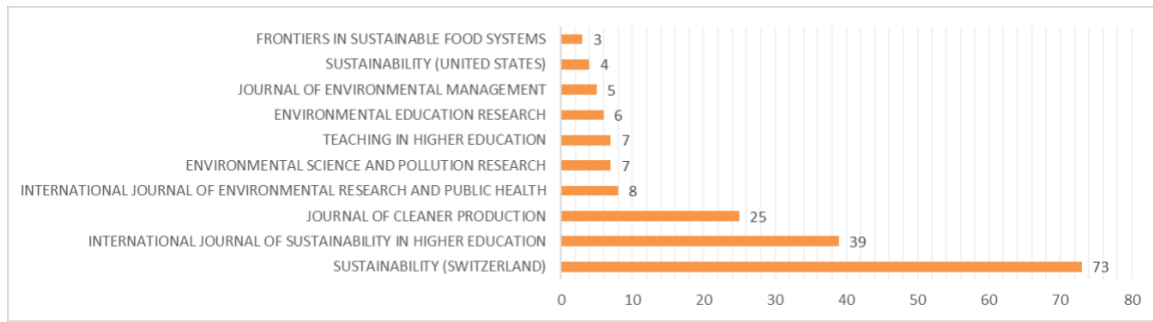


Figure 5: Top 10 Journals by Production

Source: secondary data (processed, 2025)

Furthermore, Figure 6 presents the top 10 sources based on their local impact, measured by the H-index. The Journal of Cleaner Production and Sustainability (Switzerland) stand out as the most influential source, with H-index values of 22 and 21, respectively. These journals' high citation rates suggest that their published works serve as essential references for subsequent research, indicating their central role in shaping the academic dialogue surrounding sustainability issues. The high impact of these sources also demonstrates their ability to attract high-quality research contributions, particularly in areas that integrate environmental management practices with educational strategies.

The distribution of journals based on their impact underscores a discernible pattern: journals with a broad, interdisciplinary focus tend to have higher citation rates, reflecting the increasing recognition of the interconnectedness of sustainability issues across various sectors. Additionally, the appearance of journals such as Teaching in Higher Education and Environmental Education Research in the top 10 list emphasizes the growing importance of educational approaches in promoting sustainability practices. The varying impact levels across journals also suggest a potential for future research to explore the relationship between publication volume, citation frequency, and the practical application of sustainability principles across different regions and industries.

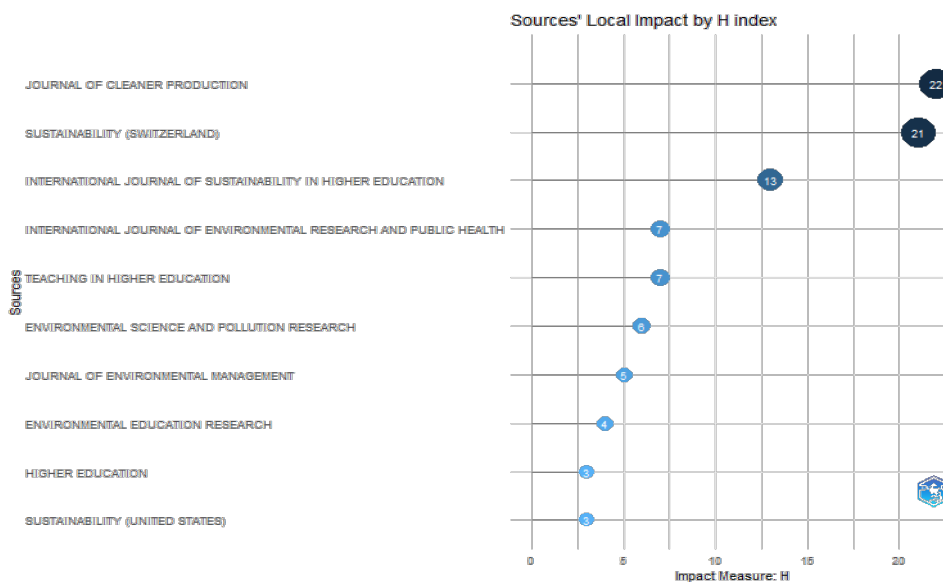


Figure 6: Top 10 Sources' Local Impact

Source: secondary data (processed, 2025)

These findings imply that researchers should carefully consider both the production volume and impact factor of journals when selecting publication outlets. High-impact journals not only provide greater visibility for research but also contribute to broader academic discussions that influence policy and practice. By strategically targeting journals with high relevance and visibility, researchers can maximize the reach and influence of their work while contributing to the ongoing efforts to address complex sustainability challenges on a global scale.

3.5 Network Analysis of Conceptual Structure

Figure 7 presents a comprehensive co-word network analysis that visually maps the intricate relationships among various keywords used in published research. The interconnectedness of terms like sustainability, environmental sustainability, and higher education highlights the central themes that dominate the academic discourse. The prominence of these keywords suggests a growing research focus on integrating sustainable practices within educational institutions, with a particular emphasis on the role of universities in promoting environmental awareness, knowledge dissemination, and actionable strategies. The dense clusters of related keywords underscore the interdisciplinary nature of this research, bridging environmental science, education, social studies, and institutional practices.

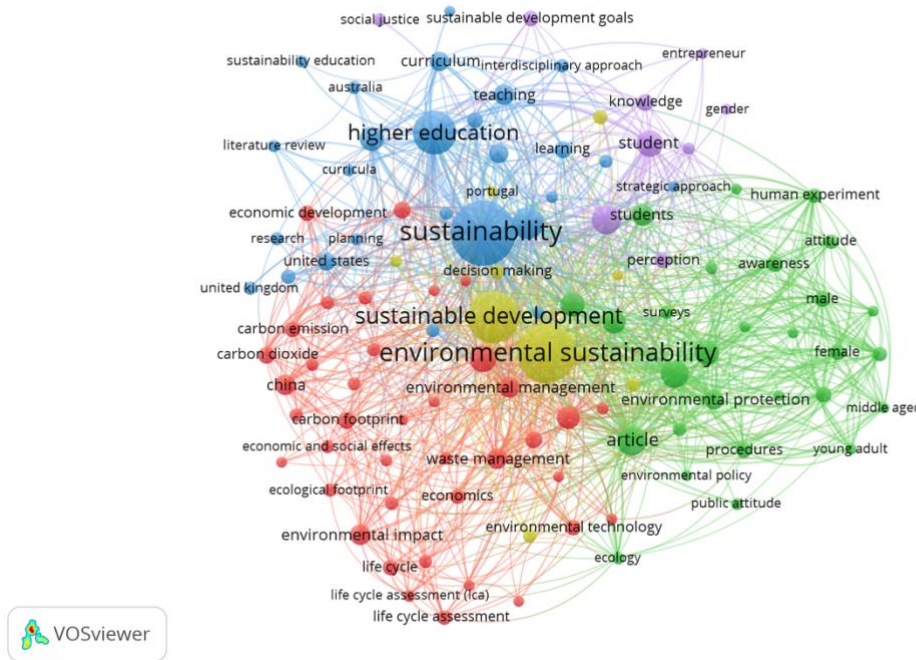


Figure 7: Graphical Representation of The Co-Word Network

Source: secondary data (processed, 2025)

Table 3 provides quantitative insights into these keywords, listing variables like sustainability with the highest connection strength (811) and occurrence (189), followed by environmental sustainability (759 connections, 154 occurrences) and sustainable development (688 connections, 122 occurrences). The average publication years for these terms, ranging from 2018 to 2020, indicate a sustained and growing interest in these topics, likely driven by global initiatives such as the UN Sustainable Development Goals (SDGs). Notably, the variable higher education has the highest average publication year (2020.06), suggesting its growing importance in recent years.

The distribution of variables across different clusters illustrates the thematic diversity within this research domain. Cluster 3, which includes terms like sustainability, higher education, and environmental education, signifies the intersection of educational practices with environmental objectives. Cluster 4 focuses on environmental sustainability and sustainable development, reflecting a broader, policy-oriented research direction. Clusters 1, 2, and 5 encompass more specialized topics such as climate change, human factors, and the university sector, indicating the nuanced exploration of social, institutional, and ecological aspects.

Table 3: Variable used in green university research

Variables	Cluster	Total connection strength	Occurrences	Avg. Year	Pub.
sustainability	3	811	189	2019.48	
environmental sustainability	4	759	154	2019.44	

sustainable development	4	688	122	2019.37
higher education	3	357	86	2020.06
university sector	3	322	46	2019.33
education	5	251	38	2019.61
human	2	411	35	2019.43
student	5	236	33	2019.67
climate change	1	162	33	2018.97
environmental education	3	119	27	2018.96
humans	2	345	27	2019.74
university sector	3	322	46	2019.33
environment	1	165	23	2018.61
environmental management	1	143	19	2017.74
innovation	3	17	96	2019.82

Source: secondary data (processed, 2025)

Figure 8, which presents the thematic map by keywords, categorizes research topics based on their development and relevance. Core themes like environmental sustainability and climate change appear in the upper-right quadrant, indicating their established presence and central importance in the literature. The size of the bubbles corresponds to the relative frequency of each keyword, with larger bubbles like environmental sustainability and sustainable development signifying their pervasive influence. In contrast, emerging or niche themes, such as solid waste and landscape, are positioned in the lower-left quadrant, suggesting potential areas for future exploration. The presence of terms like campus sustainability and attitude near the center indicates their bridging role between established and emerging research directions. The circles along the central axis represent themes transitioning between niche and core categories, suggesting their potential to become future research priorities if their relevance and development degree continues to grow.

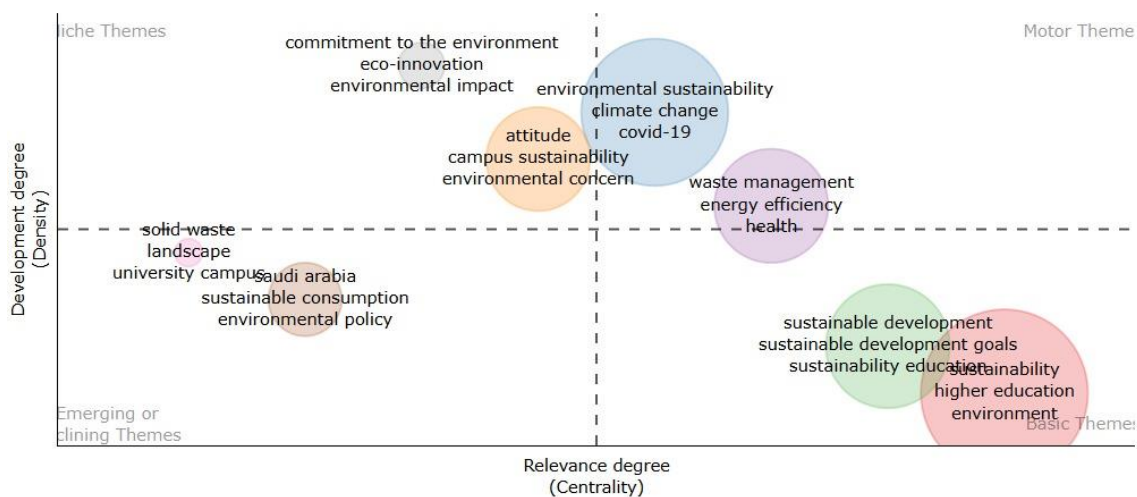


Figure 8: Thematic Map by Keywords

Source: secondary data (processed, 2025)

Figure 9 illustrates the thematic evolution of keywords over different periods, revealing shifts in research priorities. From 2013 to 2015, research predominantly focused on climate change, sustainability, and sustainable development. Over time, the introduction of terms like environmental education and circular economy between 2016 and 2019 reflects an expanded research agenda. More recent developments in 2020–2022, such as the emergence of green libraries and Pakistan, point to the growing diversification of research themes and the increasing participation of developing countries in sustainability-related studies. The evolution lines in Figure 9 illustrate how keywords related to education and institutional practices have consistently grown, underscoring the enduring relevance of educational strategies in promoting sustainability. The bubbles along the central axis of the thematic map indicate transitional themes that may gain prominence in the future if research interest continues to grow. The consistent growth of terms like environmental sustainability and waste management suggests an

increasing focus on practical implementation strategies in institutional contexts. Looking ahead, research trends may likely focus on the intersection of digital tools and sustainability, with potential growth in areas like smart campuses and sustainable technology adoption to address evolving environmental and educational challenges.

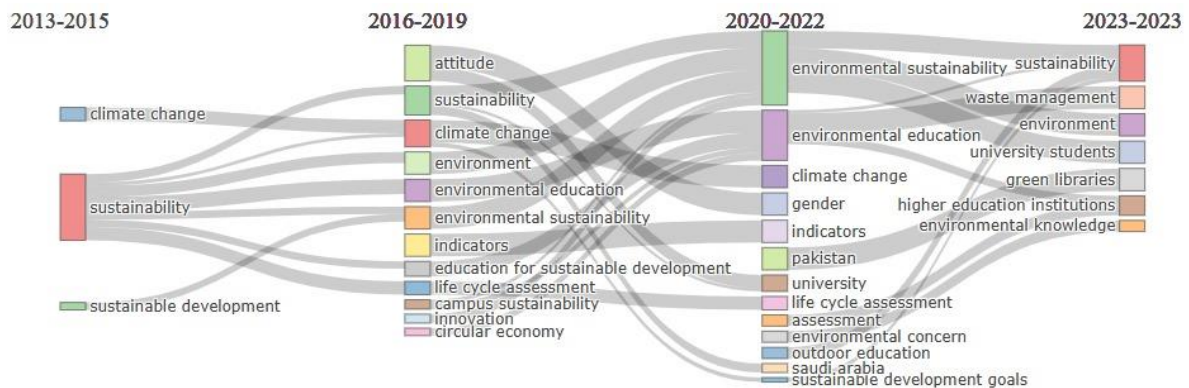


Figure 9: Thematic Evolution by Keywords

Source: secondary data (processed, 2025)

The analysis of publication trends, keyword relationships, and thematic evolution reveals a dynamic and evolving field. The prominence of sustainability-related terms underscores the field's relevance in addressing contemporary environmental challenges, while the thematic shifts indicate a continual adaptation to emerging issues and regional contexts. Future research could further investigate the practical applications of these insights, particularly in supporting policy development and institutional practices aimed at promoting sustainability. Additionally, exploring the role of less prominent themes might provide valuable insights into the evolving landscape of green university research. The ongoing development of themes along the central axis of the thematic map suggests potential growth in research on digital sustainability, smart campuses, and innovative environmental management practices.

3.6 Network analysis of social structure

Table 4 provides additional context by detailing the characteristics of these collaborative authors, including their cluster affiliation, total connection strength, number of documents, and average publication year. Ahmad Manzoor, for instance, is positioned in Cluster 12 with the highest total connection strength of 19 and an average publication year of 2021.5, indicating his significant role in recent research contributions. The presence of other authors, such as Huisingh Donald from Cluster 10 with 21 connections, suggests diverse collaborative interactions across institutions and countries, emphasizing the global nature of this research community. The variation in average publication years, ranging from 2015 to 2021, indicates the continuous evolution of research contributions and the ongoing development of new perspectives in this field. This diversity in clusters and publication years demonstrates the dynamic nature of research in sustainability, driven by both experienced researchers and new contributors.

Table 4: Collaborative Author

Authors	Cluster	Total connection strength	Document	Avg. Pub. Year
Ahmad, manzoor	12	9	4	2021.5
Abu qdais, hani	3	12	1	2019
Huisingh, donald	10	21	2	2015
Buitrago, jorge oswaldo sanche	11	11	1	2021
Skanavis, constantina	9	30	2	2017.5
Bacelar-nicolau, paula	1	19	2	2021
Filho, walter leal	8	25	2	2017
Azeiteiro, uiisses miranda	5	40	2	2018.5
Birkey, rachel	5	4	1	2017
Aldaz, cecilia elizabeth bayas	6	8	1	2019

Dagiliute, renata	4	13	1	2015
Alahmari, muteeb	4	6	1	2019
Clarke, amelia	4	8	1	2017
Alba-hidalgo, david	6	16	1	2018
Trendafilova, sylvia	7	6	2	2020.5
Boylan, sinead	2	6	1	2021

Source: secondary data (processed, 2025)

Figure 10 illustrates the social network among authors in this research field, reflecting the patterns of academic collaboration among key researchers. The network visualization reveals several clusters of authors who frequently collaborate, indicating the collective nature of research efforts in this domain. The presence of nodes with thicker connecting lines represents stronger collaborative relationships, while isolated nodes suggest potential areas for future collaborative efforts. The interconnectedness observed across clusters underscores the multidisciplinary nature of this research area, as scholars from different fields come together to address complex sustainability issues.

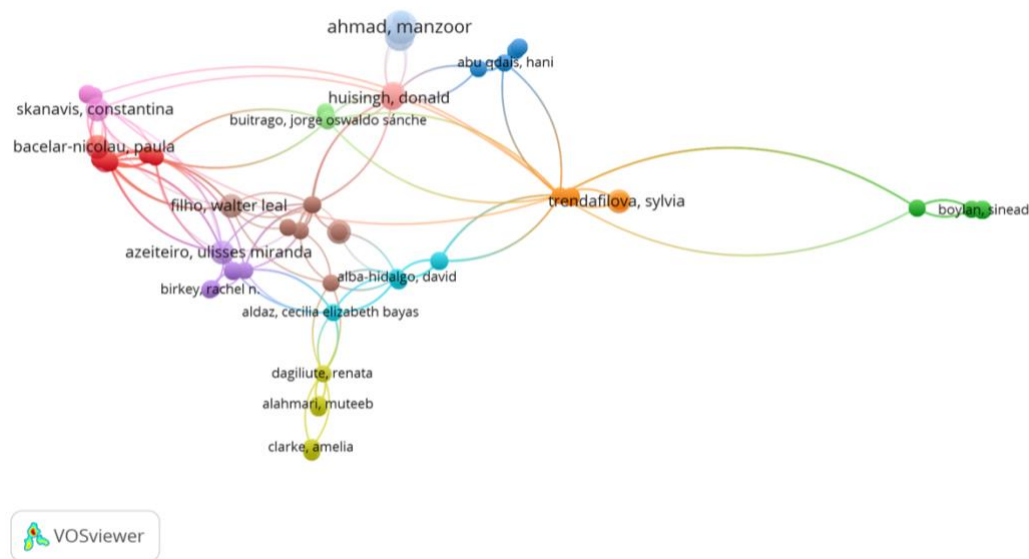


Figure 10: Graphical Representation of The Author's Network

Source: secondary data (processed, 2025)

Furthermore, Figure 11 presents the top 10 authors with the highest local impact, measured using the H-index. Ahmad M stands out with an impact measure of 5, positioning him as a thought leader whose research has significantly influenced subsequent studies. Authors like Adenle YA and Khattak SI, each with an impact measure of 3, also contribute notably to the field. The chart indicates a concentration of impactful research among a limited group of authors, suggesting that these individuals may serve as key opinion leaders who shape the research agenda and methodological advancements. The relatively lower impact measures for other authors hint at the potential for emerging scholars to contribute more prominently to future research endeavors.

The collaborative nature of these authors is further highlighted by the distribution across various clusters, as seen in Table 4. Authors such as Trendafilova Sylvia (Cluster 7) and Azeteiro Ulysses Miranda (Cluster 5) demonstrate the interdisciplinary connections that characterize this field. The average publication years, which range from 2015 to 2021, reflect a continuous interest in the topic and the introduction of new perspectives over time. This temporal distribution suggests that the field remains active and dynamic, with ongoing contributions from both long-standing researchers and new entrants.

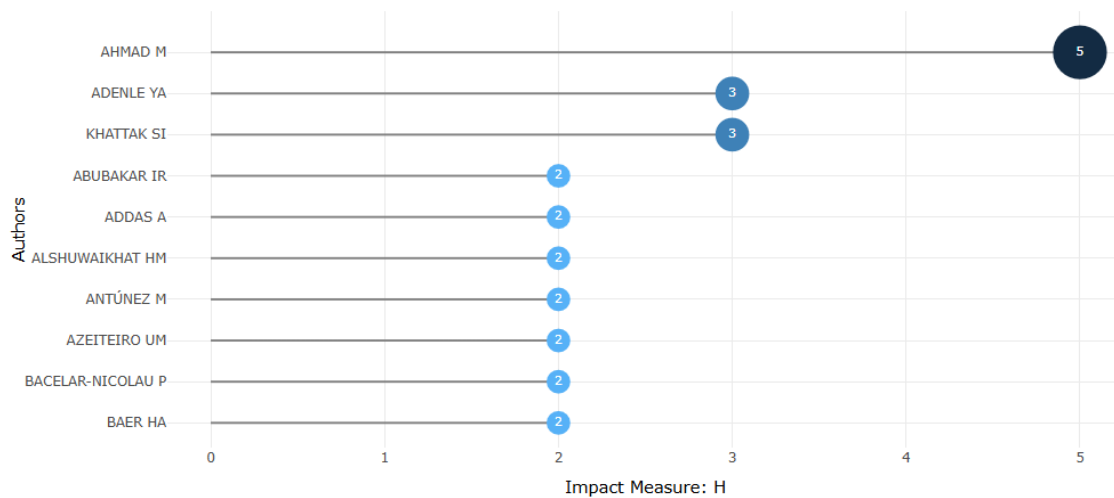


Figure 11: Top 10 Authors' Local Impact

Source: secondary data (processed, 2025)

The network structure, with its various interconnected nodes and clusters, implies potential opportunities for future collaborations, particularly among authors with limited connections to the broader network. This evolving structure suggests that upcoming research trends may focus on expanding these collaborative efforts to address emerging challenges in sustainability, particularly through international and cross-disciplinary partnerships. The increasing prominence of environmental, social, and governance (ESG) considerations in global research agendas may further stimulate these collaborative efforts, driving future investigations into more effective sustainability practices.

3.7 Opportunities for Future Research

Based on the bibliometric analysis, several research trends remain underexplored yet hold significant potential for future development. The thematic evolution presented in Figure 9 illustrates how academic research on university sustainability has continuously evolved. One area that has received limited attention is the application of digital technology in supporting campus sustainability. While the concept of smart campuses has emerged, studies on how technologies such as the Internet of Things (IoT), artificial intelligence (AI), and big data can be leveraged to optimize energy consumption, waste management, and resource efficiency remain scarce. These digital approaches could serve as effective solutions for creating greener and more efficient academic environments. Future research could focus on how universities can integrate technology-driven systems into their sustainability policies and how data-driven decision-making can enhance the effectiveness and scalability of sustainability initiatives.

Beyond technological aspects, research on the relationship between university sustainability policies and student well-being remains underexplored. Most studies emphasize environmental impacts and institutional governance, while the social and psychological dimensions of sustainability receive less attention. A university's commitment to green policies not only contributes to carbon footprint reduction but also fosters healthier and more conducive learning environments. For instance, increased green spaces can help reduce student stress levels, while sustainable transportation policies can improve mobility and promote healthier lifestyles. Therefore, further research could examine the correlation between campus sustainability initiatives and student well-being, as well as how student engagement in sustainability programs enhances their environmental awareness and participation in sustainability-related activities.

Another underexamined trend is the financial sustainability of universities in implementing green initiatives. Many higher education institutions, particularly in developing countries, face financial constraints that limit their ability to adopt sustainability policies. Consequently, research on innovative funding mechanisms such as green bonds, crowdfunding for sustainability projects, and private-sector partnerships could offer valuable insights. Current research primarily focuses on implementing sustainability policies, whereas studies on securing long-term funding sources for sustainability initiatives remain limited. Future studies could investigate the effectiveness of various

green financing models and how universities can design sustainable investment strategies that align with their academic and operational priorities.

Furthermore, the integration of management control systems (MCS) into university sustainability frameworks remains a relatively unexplored research area. While many universities have adopted sustainability reporting frameworks such as the Global Reporting Initiative (GRI) and the Sustainability Tracking, Assessment & Rating System (STARS), limited studies have examined how internal control systems influence the effectiveness of sustainability policies. Universities require concrete performance measurement tools to assess the success of their sustainability strategies, and MCS-based key performance indicators (KPIs) could serve as effective mechanisms for monitoring progress. Future research could explore how MCS can be leveraged to enhance accountability, transparency, and stakeholder engagement in university sustainability efforts. A well-structured management control system would ensure the consistent and measurable implementation of sustainability policies, thereby reinforcing institutional commitments to long-term environmental responsibility.

Beyond internal university frameworks, the role of universities in promoting sustainability within external communities remains an underdeveloped research avenue. Most existing studies focus on on-campus sustainability policies, while relatively few examine how universities can collaborate with local governments, industries, and communities to drive sustainable practices. Universities have the potential to serve as change agents by fostering partnerships with local stakeholders through initiatives such as environmental education programs, community-based waste management projects, and renewable energy solutions in surrounding areas. Given these research gaps, future studies should explore how universities can strengthen their collaboration with external stakeholders to enhance the impact of sustainability initiatives on a broader scale. By addressing these emerging research themes—including digitalization in campus sustainability, the impact of sustainability policies on student well-being, innovative financing models, management control systems, and community engagement—academia can contribute to the development of more resilient, innovative, and sustainable higher education institutions.

4. Conclusions

This research provides a comprehensive bibliometric analysis of sustainability research in higher education institutions (HEIs), identifying key trends, research gaps, and emerging themes. The study explores how research on university sustainability has evolved, highlighting dominant topics such as environmental sustainability, and green university initiatives. Over the past decade, there has been a consistent increase in the number of publications in this field, with occasional declines in output due to external factors such as economic downturns or global crises. The peak of sustainability research in HEIs occurred in 2019, followed by steady interest in subsequent years. The development of sustainability research has been influenced by contributions from various countries and academic journals that serve as publication hubs. The United States, the United Kingdom, and China are the dominant contributors. Journals such as *Sustainability* (Switzerland) and the *Journal of Cleaner Production* have been the most prominent platforms for publishing sustainability-related research. The analysis of collaborative authorship further indicates that international partnerships have strengthened research development, contributing to increased citation impact and academic influence.

The primary trends in sustainability research include campus sustainability policies, environmental education, and the integration of sustainability into university governance and management. Existing literature emphasizes the importance of HEIs in promoting sustainable development through research, education, and institutional policies. Universities are not only expected to implement sustainability practices but also to act as role models for society by fostering innovation and environmental awareness. However, previous studies highlight that the success of sustainability initiatives in HEIs depends on institutional commitment, financial resources, and effective governance structures. Additionally, interdisciplinary collaboration and stakeholder engagement are critical for driving sustainability initiatives forward. University leaders, faculty members, and policymakers must ensure that sustainability policies are aligned with long-term institutional goals and supported by adequate resources. The literature also points out that integrating sustainability into teaching and research enhances students' environmental consciousness and prepares them for sustainability-related challenges in their future careers.

Developing themes with potential for further research include the role of digital technologies such as Artificial Intelligence (AI), the Internet of Things (IoT), and blockchain in enhancing campus sustainability. Other underexplored topics include financial sustainability mechanisms, such as green bonds and sustainability-focused investment strategies, which can help universities secure funding for long-term sustainability projects. Additionally, future studies could investigate the impact of sustainability policies on student well-being and academic performance, as well as the role of management control systems (MCS) in tracking and optimizing sustainability efforts within universities. Further research could also explore how universities engage with external stakeholders, including local governments, industries, and communities, to promote sustainable development beyond campus boundaries. The relationship between sustainability governance and institutional performance remains an emerging area of interest, particularly in understanding how universities can leverage sustainability strategies to enhance their global reputation and competitive standing.

This research identifies several limitations, the first being that it primarily focuses on English-language publications, excluding studies published in other languages such as Spanish, Chinese, French, and German. Future research could address this limitation by incorporating a multilingual approach to gain a more diverse perspective. Secondly, this study relies exclusively on the scopus database due to its extensive coverage and high-quality content. However, future research could expand the dataset by integrating other databases, such as Web of science or Google Scholar, to provide a more comprehensive bibliometric review. Thirdly, this research employs bibliometric analysis based on metadata such as keywords, titles, abstracts, citations, and affiliations. Further studies could utilize additional analytical techniques, such as network analysis and content mapping, to explore the causal relationships and theoretical developments in sustainability research within HEIs. Despite these limitations, this study successfully addresses its research objectives and contributes to the understanding of sustainability in HEIs by consolidating previously fragmented research and identifying key areas for future exploration.

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Demographic and Socioeconomic Determinants Use of Financial Products/Service

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Abstract

The use of financial products/services in Indonesia is growing. And is one of the factors of economic growth. This study aims to investigate the demographic and socio-economic factors that influence the use of financial products/services. The data used are based on the 2023 National Socio-Economic Survey. The object of analysis is the population aged 15 years and over who use at least one financial product/service. There were 241,075,975 respondents in this study, of which 23.17% used at least one financial product/service. The dependent variable is the use of financial products/services. The independent variables used are Gender, Education, Island of residence, Urban/rural, and Marital status. The analysis was carried out using bivariate and multivariate methods. Multivariate analysis using a binary logistic regression model was used in the analysis. The results showed that higher use of financial products/services was associated with being male, college graduates, living in Java, living in urban areas, and being married.

Keywords: Financial Product/Service, Susenas 2023, Demographic And Socioeconomic Factors, Binary Logistic, Indonesia

1. Introduction

Recent research has provided strong evidence that financial development has a significant positive impact on economic growth (Papaioannou (2007), Ross Levine (2005), King and Levine (1993), Levine and Renelt (1992), Sala-i-Martin (1997), Ciccone and Jarocinski (2006). Financial development is related to economic growth even in industrial countries (Thiel (2001). A number of studies have also found the impact of financial inclusion or financial products on welfare (Chipunza, K. J., & Fanta, A. B. (2023), Campbell, J. Y. (2006), Munyegera, G. K., & Matsumoto, T. (2016), Hidayat, P., & Sari, R. L. (2022). Nanziri, E. L. (2016)). Not only on economic growth, financial products/services are positively associated with the welfare of a household and a country. Thus, financial

products/services are important and need to be studied. From the perspective of neoclassical growth theory, economic growth is driven by the accumulation of factor inputs and technical progress, with a potential role for finance in particular in assisting in capital accumulation. The endogenous growth approach emphasizes the role of entrepreneurship and innovation, allowing some leeway for finance to direct incentives toward research and innovation or rent-seeking. In this sense we can say that a developed financial system in a country is beneficial to growth. Sutton, C. N., & Jenkins, B. (2007). show that countries with well-established, efficient and well-used financial systems have lower poverty rates and better economic growth. Several studies have concluded that financial sector deepening contributes to poverty reduction (Beck et al. (2007), Jalilian & Kirkpatrick (2005), Quartey (2005)). Policy implications directed at developing a national strategic plan aimed at increasing access to finance combined with policies to improve the level of governance to maximize the impact of financial access on economic growth (Emara, N., & El Said, A. (2021).

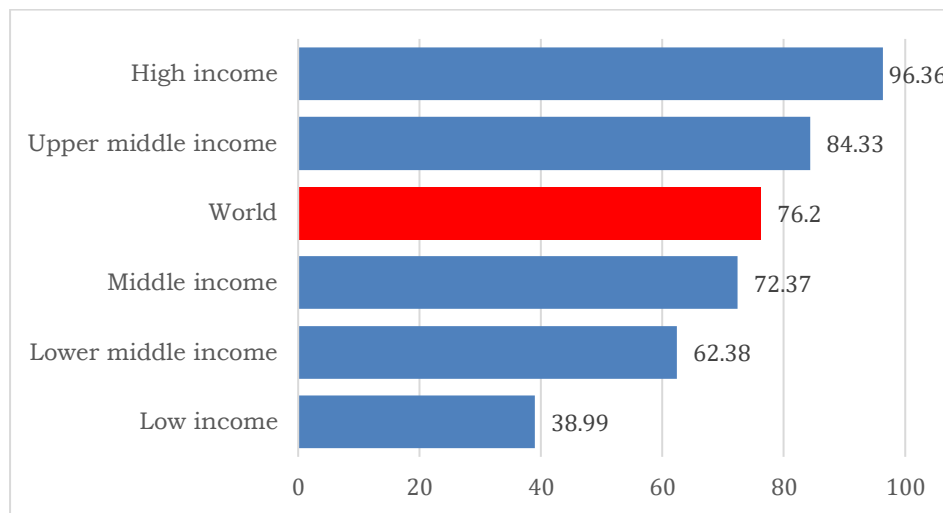


Figure 1. Percentage of formal financial services usage by Country Group, 2024

Source: World Bank, World Development Indicators. 2025. Own calculation

From Figure 1, it can be seen that the higher the use/utilization of financial services is associated with the level of economic development of a group of countries. High-income, upper-middle-income, middle-income, lower-middle-income, and low-income countries are respectively 96.36%, 84.33%, 72.37%, 62.38%, and 38.99%. While at the world level, the use of formal financial institutions is 76.2%.

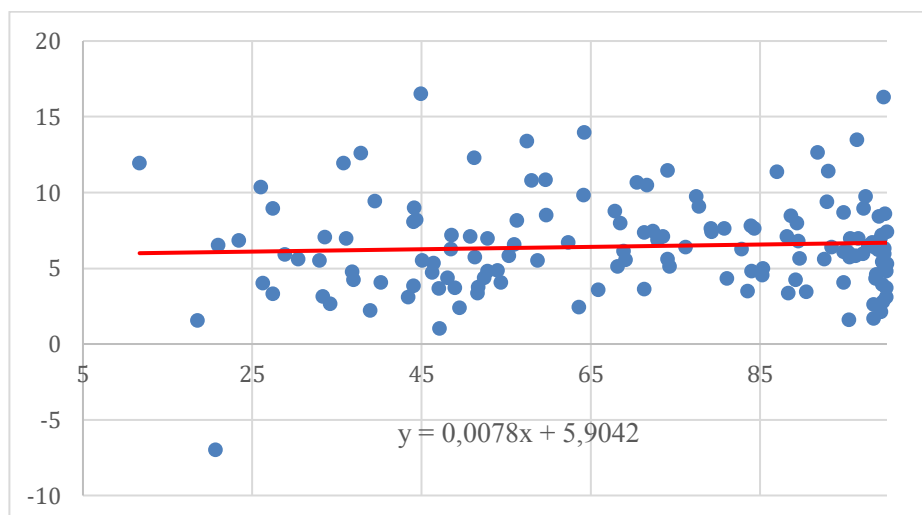


Figure 2. Account ownership at a financial institution (% of population ages 15+) with GDP growth (annual %), countries in the world. 2021

Source: World Bank, World Development Indicators. 2025. Own calculation

Figure 2 shows that every 1% increase in account ownership at a financial institution or with a mobile-money-service provider (% of population ages 15+) is associated with a 0.0078% increase in GDP Growth (%) across a number of countries in the world.

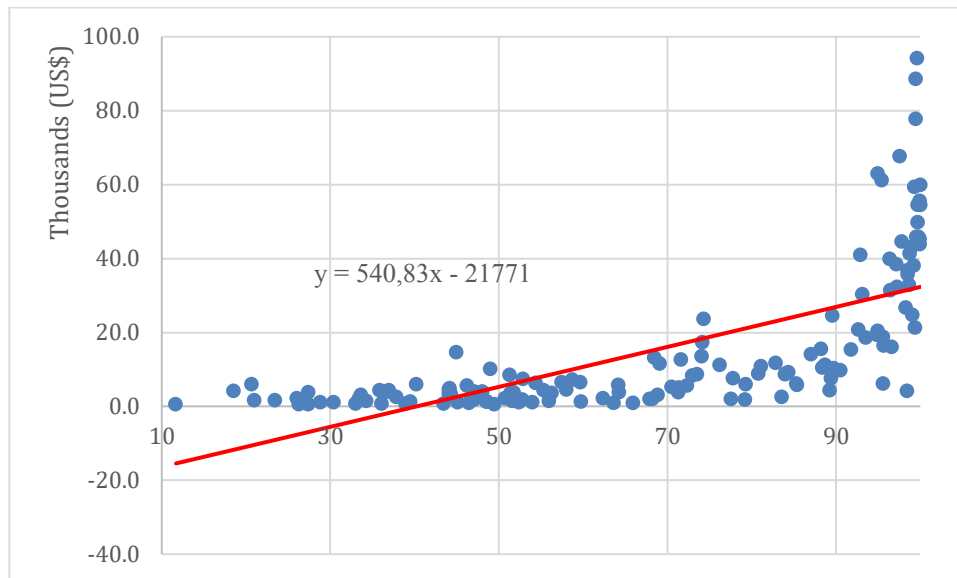


Figure 3: Account ownership at a financial institution (% of population ages 15+) with GDP per capita (US\$) of countries in the world. 2021

Source: World Bank, World Development Indicators. 2025. Own calculation

Figure 3 shows that every 1% increase in Account ownership at a financial institution is associated with an increase in GDP per capita of US\$ 540.85. From Figure 1, Figure 2, and Figure 3 it can be seen that at the global level, financial institutions are positively associated with economic growth and welfare. Boakye & Amankwah (n.d) conducted a study using interview data from 3643 citizens on the determinants of financial product usage in Ghana. It was found that financial literacy, income, income or expenditure stability, urban residence, access to income, access to communication channels, and local residents' perceptions of the inherent benefits of a product, as factors that determine whether someone will use a financial product. It was also found that financial literacy, financial products that accommodate unstable cash flows, communication about the inherent benefits obtained from financial products, and the use of mobile phones and the internet to provide services will increase the acceptance of financial products in Ghana.

Furthermore, the study wanted to conduct a study on the determinants of financial institution usage in Indonesia using data from the 2023 National Economic Survey. Susenas 2023 provides data on various aspects of economic levels and fulfillment of life needs such as clothing, food, shelter, income, security and employment opportunities. Susilowati, E. & Leonnard, L. (2019), found that in Indonesia there is a significant positive relationship between individual characteristics (gender, age, income level, age, employment sector) on the use of financial services, financial service inclusion, motivation to use financial services, and credit sources. Kumar, S., Pradhan, K.C. (2024) conducted research in South Asia on the determinants of financial product/service use. It was found that individuals who are male, older, richer, and more educated tend to have access to financial product services, it was also found that income and have a greater influence.

2. Data and Analysis Methods

2.1. Data

The data in this study uses/is taken from the 2023 National Socio-Economic Survey (SUSENAS). The 2023 National Socio-Economic Survey (Susenas) is a survey conducted by the Central Statistics Agency (BPS) to collect economic data. Data obtained from Susenas are used for national-level planning and evaluation. SUSENAS 2023

was implemented by the Central Statistics Agency in March and September and covers all provinces in Indonesia. SUSENAS 2023 is implemented to meet the need for data and economy at the district, provincial, and national levels, including data on the achievement of Sustainable Development goals. The sample of the March 2023 National Socio-Economic Survey (Susenas) is 345,000 households. This sample is used to produce statistical data at the national, district, and city levels. The 2023 SUSENAS data is cross-sectional data.

Table 1: Percentage distribution of using financial products/services aged 15 years and above by background characteristic

Background	Number of observation	Percentage
Gender		
Male	121,448,272	23.77
Female	119,627,703	22.57
Education		
Don't have a diploma	48,290,664	7.78
Elementary School Equivalent	59,797,855	13.65
Junior High School Equivalent	47,979,851	20.23
Senior High School	63,631,935	34.81
College	21,375,670	56.53
Island		
Sumatera	53,578,834	20.33
Jawa	136,014,459	24.77
Bali and Nusa Tenggara	13,289,436	22.86
Kalimantan	14,785,780	22.86
Sulawesi	17,498,199	22.28
Maluku and Papua	5,909,266	16.27
Urban/Rural		
Urban	14,1986,849	27.55
Rural	99,089,126	16.90
Marital Status		
Married	132,333,151	27.85
Unmarried	92,074,775	16.98
Divorced Living	4,026,992	25.83
Divorced Dead	12,641,058	18.51
Total	241,075,975	23.17

Source: SUSENAS 2023. Own calculation

2.2. Method of analysis

The data used in this study are presented in Table 1. There are 241,075,975 people as samples and 23.17% use financial products/services in Indonesia. The Central Bureau of Statistics uses the age of 15 years and above as the working age.

The dependent variable of this study is var R702 for "Using financial services/products" then a dummy variable 1 is created for respondents who use financial services/products and 0 for respondents who do not use financial services/products. Furthermore, the independent variables from the 2023 SUSENAS data from var R101 for "Province," var R105 for "Village/City," label var R404 "Status," label var R405 "Gender", label var R407 "Age", label var R614 "Highest education completed", and label var R702 for "Using financial services/products". The Gender variable is divided into two, namely (1). male and (2) female. The urban/rural variable is divided into (1). Urban, (2). Rural. The Martial Status variable is divided into (1). Unmarried, (2). Married, (3). Divorced Living,

and (4). Divorced Dead. The Island variable is divided into (1). Sumatra, (2). Java, (3). Bali and Nusa Tenggara, (4). Kalimantan, (5). Sulawesi, and (6). Maluku and Papua. The Education variable is divided into (1). Don't have a diploma, (2). Elementary School Equivalent, (3). Junior High School Equivalent, (4). Senior High School, and (5). College.

The data in this study were analysed using bivariate (Table 1) and multivariate analysis (Table 2). Bivariate analysis was used to examine the percentage of Using financial services/products based on demographic and socio-economic background characteristics. Multivariate analysis was conducted to investigate the relationship between demographic and socio-economic factors with Internet usage using binary logistic regression. The model is as follows.

$$\log\left(\frac{\pi_{ij}}{\pi_{ij^*}}\right) = x_i^T \cdot \beta_j; i \neq j \quad (1)$$

Where $\beta_j = (\beta_{1j} \beta_{2j} \dots \beta_{pj})^T$ and

To calculate π_{ij} dan $\pi_{ij^*} = (1 - \pi_{ij})$ used formula

$$\pi_{ij} = \frac{\text{Exp}(x_i^T \cdot \beta_j)}{1 + \sum_{k \neq j} \text{Exp}(x_i^T \cdot \beta_k)} \quad (2)$$

$$\pi_{ij^*} = \frac{1}{1 + \sum_{k \neq j} \text{Exp}(x_i^T \cdot \beta_k)} \quad (3)$$

The complete binary logistic regression model for this research (Hosmer DW, Lemeshow S (2000)) is written in the form

$$\ln\left(\frac{1}{1-p}\right) = \beta_0 + \beta_1 \cdot \text{Gender} + \beta_2 \cdot \text{Education} + \beta_3 \cdot \text{Island} + \beta_4 \cdot \text{Urban(rural)} + \beta_5 \cdot \text{Marital Status} + \varepsilon \quad (4)$$

Where p is the probability of using financial services/products. β_0 the intercept. β_k is the regression coefficient for the k -th independent variable, $k=1,2,\dots,5$. And ε is the error term. The results of the multivariate analysis are presented in Table 2.

Table 2. Odds ratio of the binary logistic regression of using financial products/services aged 15 years and above by background characteristic

Covariates	Odds ratio [95% CI]	p-value
Gender (ref: male)		
Female	0.920599 [-0.0928546 - -0.0726063]	< 0.001
Education (ref: Don't have a diploma)		
Elementary School Equivalent	1.493873 [0.0382542 - 0.4202018]	< 0.001
Junior High School Equivalent	2.270986 [0.8014108 - 0.8390174]	< 0.001
Senior High School	4.227074 [1.424899 - 1.46012]	< 0.001
College	9.981716 [22.280207 - 2.321304]	
Island (ref: Sumatera)		
Jawa	1.226992 [0.1914864 - 0.2176451]	< 0,001
Bali and Nusa Tenggara	1.233953 [0.1900476 - 0.2301756]	< 0,001
Kalimantan	1.130569 [0.108789 - 0.1456378]	< 0.001
Sulawesi	1.131374 [0.1072088 - 0.1396566]	< 0.001
Maluku and Papua	0.611131 [0.5140827 - 0.4708038]	
Urban/Rural (ref: urban)		
Rural	0.685258 [0.03885037 - -0.36417]	<0.001
Marital Status (ref: unmarried)		
Married	1.764833 [0.5563648 - 0.5797472]	< 0.001

Divorced Living	1.729943	[0.5130778 – 0.5830988]	< 0.001
Divorced Dead	1.799433	[0.563929 – 0.6110141]	< 0.001
Constant	0.048912	[-2.485378 - -2.446891]	< 0.001

Source: SUSENAS 2023. Own calculation

Table 2 presents the results of the multivariate analysis. It can be seen that all demographic and socioeconomic factors in the model have a statistically significant effect on the use of financial products/services.

Gender is associated with the use of financial products/services. After controlling for other factors, female respondents are less likely to use financial products/services by 0.920599 times than male respondents.

Education is associated with the use of financial products/services. After controlling for other factors, the higher the education, the more likely they are to use financial products/services. With (Don't have a diploma) as a reference, respondents with Elementary School Equivalent, Junior High School Equivalent, Senior High School, and College education have a tendency of 1.49, 2.27, 4.22, and 9.98 times the tendency of respondents who do not have a diploma.

Respondents with the island of residence are associated with the use of financial products/services. Using the island of Sumatra as a reference, respondents who live in Java, Bali and Nusa Tenggara, Kalimantan, and Sulawesi are more likely to use financial products/services. While respondents who live in Maluku and Papua are less likely to use financial services. The ratio of the tendency to use obsolete products/services for the islands of Java, Bali and Nusa Tenggara, Kalimantan, and Sulawesi is 1.23, 1.23, 1.13, 1.13 times that of Sumatra. Meanwhile, the ratio of the tendency to use financial products/services in the islands of Maluku and Papua is 0.611 times that of Sumatra.

The Urban/Rural variable is associated with the use of financial products/services. With urban as a reference, respondents living in rural areas are less likely to use financial products/services compared to respondents living in urban areas. The ratio of rural tendency is 0.685258 times Urban.

Marital status is associated with the use of financial instruments/products in Indonesia. Using unmarried as the reference variable, Married, Divorced Living, Divorced Dead respondents are more likely to use financial services/products by 1.76, 1.73, and 1.80 times respectively compared to unmarried respondents.

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Enhancing Public Sector Performance: A Knowledge-Based Approach through Performance Prism Integration

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Abstract

Performance management in ministerial organizations is crucial for bureaucratic reform as mandated by PermenPANRB No. 89 of 2021. Current implementation challenges include lack of correlation between performance indicators, poor alignment with stakeholder requirements, and preference for administrative over impact-oriented assessment. This study proposes integrating Knowledge Base Performance Management System (KBPMS) with Performance Prism for ministerial organizations. KBPMS offers strategy-driven management with organized indicator establishment using Analytical Hierarchy Process, while Performance Prism provides a holistic perspective incorporating stakeholder satisfaction and contributions. Using descriptive exploratory methodology with qualitative approaches (observation, interviews, FGDs), research conducted at the National Directorate of Digital Infrastructure (NDID) within the Ministry of Communication and Digital revealed a performance system focused on administrative indicators but lacking strategic and stakeholder alignment. The study recommends merging these approaches through the Integrated Stakeholder & Knowledge-Based Performance Framework (ISKPF), combining strategic and operational views to enhance performance management efficacy. This integration can better align indicators with stakeholder needs, enable contribution-based evaluation, and promote continuous improvement. Implementation through incremental pilot projects is recommended before wider deployment to evaluate efficacy in the ministerial context.

Keywords: Performance Management, KBPMS, Performance Prism, Public Sector, Bureaucratic Reform, ISKPF

1. Introduction

Performance management in ministerial organizations is an important factor in facilitating the bureaucratic reform initiated by the Indonesian government under PermenPANRB No. 89 of 2021. A challenge in performance management is integrating stakeholder interests and their contributions with the organization's objective (A. D. Neely et al., 2002). Initial observations performed in a government organization indicate that the establishment of performance indicators mostly evaluates outcomes without linking with inputs and processes. The reliance on budget absorption levels renders the assessment of the ministry organization's performance useless.

Knowledge Base Performance Management System (KBPMS) is designed to help public sector entities, including ministerial organizations, in formulating performance management systems by utilizing vision and mission to establish applicable performance indicators that fit the organizational context (Wibisono, 2023). The KBPMS performance framework has been developed with stakeholder interests incorporated (Wibisono, 2023). The Performance Prism offers a comprehensive structure for interpreting the link between businesses and stakeholders (A. Neely et al., 2001). Performance Prism illustrates the relationship between satisfying Stakeholder Interests and their influence on organizational success (A. D. Neely et al., 2002).

The performance management system under the present ministerial organization is primarily administrative and ceremonial, prioritizing the completion of reporting requirements over the enhancement of public services. The metrics employed primarily quantify internal outputs, such as the quantity of programs or reports generated, without evaluating their societal impact. The absence of ongoing evaluation leads to measurement outcomes being infrequently utilized to enhance methods (Modell, 2004). This gap indicates the need for a more adjustable methodology, as the combination of these two performance management frameworks is expected to produce a more adaptable performance management system applicable to public sector entities, particularly ministerial organizations in Indonesia. This study investigates the integration of KBPMS and Performance Prism to develop a performance management system that emphasizes the interconnection of vision, mission, strategy, efficiency, and organizational accountability.

2. Literature Review

2.1 Public Sector Organization

Public sector organizations are given responsibility for managing goals and responsibilities in the public interest, which may or may not related to finances (Mardiasmo, 2002). There are two types of public sector organizations: the first type includes entities that, in addition to serving the community, purpose to achieve financial profit; the other types comprise organizations that exclusively concentrate on delivering services to the community (Nasrudin, 2019). To support the President in organizing government, the Ministry organization is a public sector entity that is responsible for delivering services to the community in particular areas. These services are supposed to help the President of organization (PermenPANRB, 2021). The quality of the services that are provided by each ministry is an effective measure of the performance of each ministerial organization (Wibisono, 2023). The organization that is responsible for the ministry has to be able to satisfy the interests of its stakeholders in order to carry out its functions (Kasale et al., 2019). The following figure provides a list of stakeholders that are associated with the ministry organization:

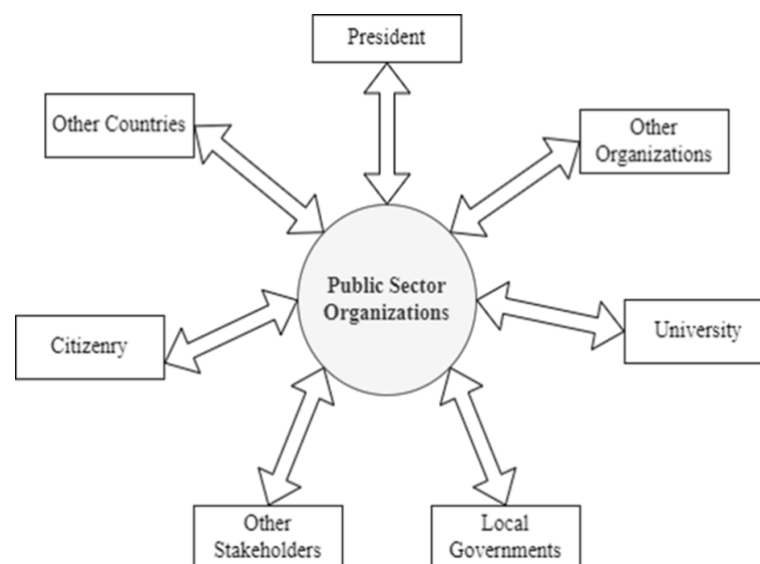


Figure 1: Stakeholders in Ministry Organizations

Source: *Mengelola Kinerja Kementerian: Panduan Praktis dan Akademis [Service Performance Management: A Practical and Academic Guide]* (Wibisono, 2023)

Performance management in the ministerial organization is a strategic process that desires to ensure that every area within the ministerial organization can contribute to national development goals. The reason is as it has been discussed that the ministerial organization's primary objective is to deliver services to the community (*UU Nomor 61 Tahun 2024*, 2024). The National Medium-Term Long-Term Development Plan (RPJMN) provides the primary reference for all ministerial organizations and government institutions. This plan is utilized in the process of planning organizational targets and goals that are carried out in ministerial organizations (*PP No 17 Tahun 2017*, 2017). In accordance with the RPJMN document, every ministerial organization is responsible for developing a Strategic Plan (RENSTRA) and a Work Plan (RENJA), both of which serve as operational guidelines for the purpose of accomplishing performance criteria (PermenPANRB, 2014). It is necessary to involve a wide range of stakeholders in the preparation of this performance planning document, including the following:

- 1) President and Vice President (*UU Nomor 61 Tahun 2024*, 2024)
- 2) National Development Planning Agency/BAPPENAS (*PP No 17 Tahun 2017*, 2017)
- 3) Ministry of Finance (*PP No 17 Tahun 2017*, 2017)
- 4) Indonesian Representative Council/DPR (*UU Nomor 27 Tahun 2009*, 2009)
- 5) Local Government/PEMDA (*PP Nomor 18 Tahun 2016*, 2016)
- 6) Financial Audit Agency (*UU Nomor 15 Tahun 2004*, 2004)

The collaboration of every interested party will be essential to the achievement of success in the establishment of successful work programs that have an influence on society. This will be the case in order to generate effective performance planning (Sedarmayanti, 2009). One of the challenges that ministerial organizations face when it comes to managing performance management is figuring out how to maintain a balance between administrative performance measurements and performance measurements that may have an effect on stakeholders (Pulakos & O'Leary, 2011). Several ministries concentrate on just achieving administrative indicators, such as report counts or compliance indices with regulations, without assessing the correlation between their performance indicators and the effectiveness of public service delivery (Wibisono, 2023). Lack of ability to recognize stakeholder involvement in performance indicators leads to a disconnect between the indicators and stakeholder needs (Felicio et al., 2021). Performance management systems in the public sector are also often too bureaucratic and limiting, making it difficult to respond to changes in the strategic environment (Pulakos & O'Leary, 2011). A more flexible and stakeholder-based approach, such as the integration of KBPMS and Performance Prism, can be a solution to building a performance management system that is more effective and accountable. As a result, ministerial organizations face difficulties in integrating stakeholder feedback into the performance evaluation process, which hinders continuous improvement in public services. To address this challenge, integrate KBPMS and Performance Prism.

2.2 Performance Prism

Numerous performance management frameworks have been developed today. The Balanced Scorecard (BSC) is a widely utilized performance management framework; nonetheless, its implementation in public sector companies necessitates adaptation, given that its original purpose was financially oriented (Akbar, 2018). One performance management framework that involves stakeholders is the Performance Prism, developed by Andy Neely (Wibisono, 2016). The performance prism encourages alignment between stakeholder contributions and interests concerning the organization's strategy, competencies, and business processes (A. D. Neely et al., 2002). Public sector entities, such as ministerial organizations, exhibit intricate relationships among stakeholders, making the performance prism method a viable solution for controlling performance in these organizations (A. Neely et al., 2001).

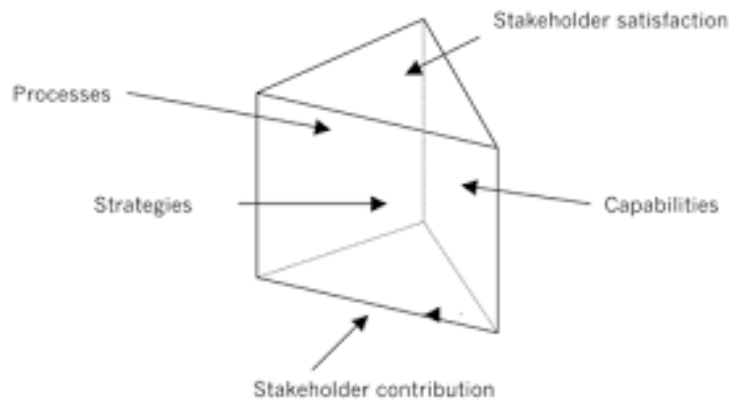


Figure 2: Performance Prism Framework

Source: *Performance Prism in Practice* (A. Neely et al., 2001)

The Performance Prism emphasizes the relationship between the organization and its stakeholders through five primary perspectives: Stakeholder Satisfaction, Stakeholder Contribution, Strategy, Process, and Capabilities, as stated in the Performance Prism framework (A. D. Neely et al., 2002). The performance prism effectively establishes the requirements and contributions of each stakeholder, enabling the company to formulate an appropriate strategy, implement efficient operational processes, and build the necessary capabilities to support these activities (A. Neely et al., 2001). By using this strategy, a ministry can develop a performance management system that addresses the requirements of stakeholders, including government, society, and employees, while ensuring that internal plans, procedures, and capabilities are synchronized to attain these objectives.

The Performance Prism starts performance analysis by identifying key stakeholders and understanding their needs and contributions, aligning with the characteristics of a ministry organization that involves multiple stakeholders to achieve its goals (Rahabistara et al., 2011). The performance prism approach emphasizes the interdependent relationship between stakeholders and the organization, which is important to the success of the developed work program (A. D. Neely et al., 2002). The performance prism framework highlights the necessity of stakeholder consideration and stresses the alignment among departments within the organization. This alignment is essential for coordinating and developing organizational capabilities that support strategies, ultimately leading to enhanced organizational effectiveness (A. Neely et al., 2001).

Previous explanations have indicated that the primary components of this performance prism approach consist of five (five) views that are interconnected with one another. There is a close connection between the perspectives of stakeholder satisfaction, stakeholder contribution, strategy, process, and capability. All these perspectives are interconnected. Support for the process that is supposed to put the plan into action is provided by the capability viewpoint. The process must ensure the strategy meets stakeholder requirements. A comprehensive comprehension of the requirements (satisfaction) and contributions made by stakeholders is the foundation upon which strategy is built (A. D. Neely et al., 2002). The performance prism will really be very effective when applied to organizations in the public sector once this concept is implemented. Public sector organizations must serve diverse stakeholders with varying needs.

Table 1: The Role of Each Element in Performance Prism in Ministry Organizations

Element of Performance Prism	Need of Ministry Organization	Implementation in Organization
Stakeholder Satisfaction	The primary focus must be the needs of stakeholders, including the community, government, employees, and partners.	<ul style="list-style-type: none"> • Find out stakeholder expectations • Identify KPIs that represent stakeholder requirements • Conduct a satisfaction survey

Element of Performance Prism	Need of Ministry Organization	Implementation in Organization
Stakeholder Contribution	The effectiveness of a ministerial organization relies on the backing and involvement of stakeholders.	<ul style="list-style-type: none"> • Encourage stakeholder engagement in performance management. • Establish platforms for stakeholder engagement • Identify KPIs that assess the extent of stakeholder contribution.
Strategy	The ministry's organizational plan must focus on anticipated outcomes and align with stakeholder requirements.	<ul style="list-style-type: none"> • Ensure that strategies are formulated based on outcomes. • Aligning vision and mission with organizational strategy
Processes	To implement the strategy, it is essential to define the processes associated with each component of the ministry's organization.	<ul style="list-style-type: none"> • Enhance the organization's fundamental processes • Minimize bureaucratic processes and adopt digital technology to enhance public services.
Capabilities	Ministerial organizations require comprehensive competencies in human resources, technology, and organizational culture to meet performance objectives.	<ul style="list-style-type: none"> • Enhance competence • Establish a performance management information system for the purpose of performance monitoring. • Build a flexible and inventive organizational culture

In its implementation, the performance prism will face challenges in the integration aspect of the five perspectives, this is because the complexity of each perspective will require commitment from top management and the availability of human resources needed to support the implementation process of this approach (Mardiono et al., 2011), so that the performance prism will experience challenges in determining a relevant and measurable performance indicator and accommodating stakeholder (Kennerley & Neely, 2003). According to Feliciano's study, "Adoption of Management Control Systems and Performance in Public Sector Organizations," the success of this approach will also be contingent on the managerial staff's capabilities in both the implementation of this framework and the provision of ongoing training in order to be able to adapt to developments in the information technology sector (Felício et al., 2021). When it comes to gathering performance, indicators based on urgency and strategic relevance, KBPMS utilizes an analytical hierarchy method (Wibisono, 2023). This is where KBPMS might be a useful supplement to Performance Prism.

2.3 Knowledge Base Performance Management System (KBPMS)

Dermawan Wibisono's book, **Managing Ministry Performance: Practical and Academic Guide**, presents a performance management approach. This approach offers the capability of adapting performance indicators in line with the strategic objectives of the company. KBPMS is considered a solution designed to answer the challenges of traditional performance management systems, which are often less adaptable to the needs of organizations, including public sector organizations (Wibisono, 2023). The KBPMS framework is specifically designed to suit the characteristics of organizations in Indonesia or developing (Wibisono, 2016). This is the reason why KBPMS is considered a solution.

This performance management framework was established to support ministerial organizations in enhancing the effectiveness of performance management. It is based on the fundamental principles of an integrated, relevant, and measurable data-driven performance management system. This performance framework comprises three principles.

- 1) Collaboration and empowerment

Performance management involves collaboration among all organizational components, including management, leaders, and employees, to foster a sense of ownership within the organization.

2) Integrated Performance Improvement

All components within the organization must be integrated to create synergy among them, ensuring a comprehensive focus rather than concentrating on a single indicator.

3) Independence

Performance management should be conducted with maximal objectivity to ensure that a team operates independently and free from conflicts of interest, thereby enhancing the effectiveness of performance management.

The KBPMS performance framework is comprised of four viewpoints, all of which are interconnected and are shown in Table 2.

Table 2: Applying KBPMS for Ministry Organizational Performance Management

Perspective of KBPMS	Description
Organization Output	This perspective highlights the significance of outputs generated by ministerial organizations, specifically in the context of public policies and services that benefit society, environment, and the government overall. Indicators assess public satisfaction with ministry services, policy effectiveness, and regulatory impacts.
Internal Proses	This perspective emphasizes the potential for ministerial organizations to enhance effectiveness and efficiency in their internal work processes. Indicators in this context encompass organizational innovation, operational effectiveness, the establishment of a public organizational image, and the sustainability of services.
Resource Capability	This perspective emphasizes the significance of managing human resources, technology, and infrastructure in facilitating achieving of the ministry's strategic objectives. Indicators involve human resource capacity, digital technology adoption, and organizational resource management.
Monetary Support	This perspective emphasizes the effectiveness and efficiency of implementing the ministry's budget. The ministry organization, as a non-profit public institution, must manage its budget efficiently to meet established performance targets.

Source: Mengelola Kinerja Kementerian: Panduan Praktis dan Akademis [Service Performance Management: A Practical and Academic Guide] (Wibisono, 2023)

The KBPMS framework comprises three stages for managing organizational performance. Starting with an analysis of the organizational environment, both internal and external, to gather fundamental information regarding political dynamics within the ministry organization, as well as stakeholder expectations and other relevant factors. Performance planning involves the formulation of performance indicators and measurement systems that align with the strategic objectives of the ministry organization. These indicators must be quantitatively measurable. Additionally, continuous evaluation and improvement are necessary to ensure that the adopted strategy remains relevant to environmental changes (Wibisono, 2023).

One of the strengths of the KBPMS performance framework is the Analytical Hierarchy Process (AHP)-based approach that serves as a tool for defining the priority of performance indicators. This is done in order to guarantee that the indicators that are implemented by the organization are relevant. The AHP-based method gives organizations the ability to evaluate and choose indicators that are appropriate for their strategic goals in the most effective manner. The method in question is a hierarchical analysis that is carried out in a methodical manner. Within this method, performance criteria and sub-criteria are selected, weighted, and compared to one another (Wibisono, 2023).

The KBPMS performance framework has a number of benefits that could make it useful for application inside ministerial organizations in Indonesia; nonetheless, the adoption of this framework is not without its limits. The

fact that it places an inordinate amount of emphasis on internal organization while ignoring the relationship with stakeholders is one of its limitations.

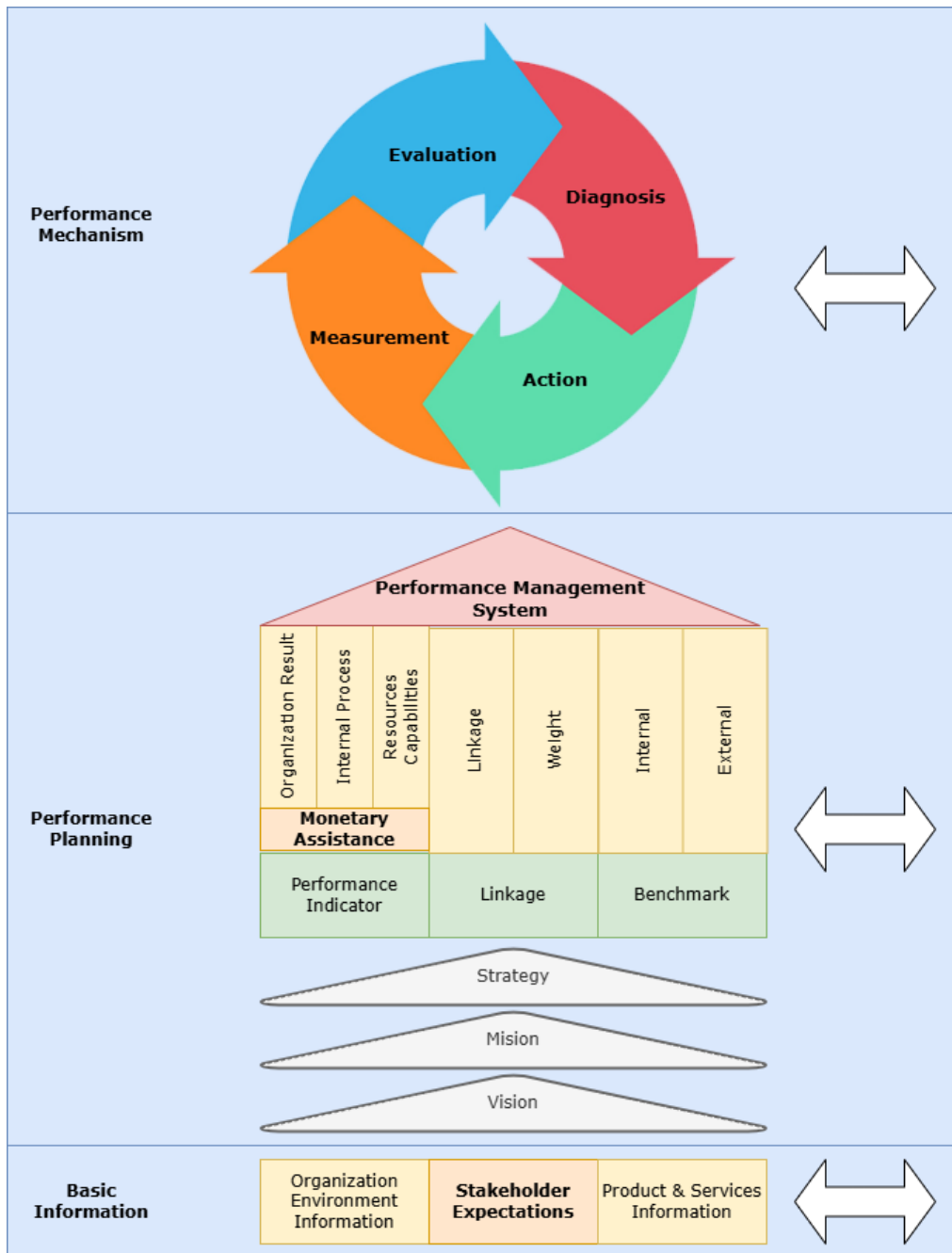


Figure SEQ Figure * ARABIC 3: Conceptual Framework of KBPMS

Source: Mengelola Kinerja Kementerian: Panduan Praktis dan Akademis [Service Performance Management: A Practical and Academic Guide] (Wibisono, 2023)

The performance prism can enhance the stakeholder linkage elements that are inadequately addressed in KBPMS. While KBPMS is intended to aid ministries in developing performance management systems grounded in internal strategies and effectiveness, it remains limited in its ability to incorporate stakeholder satisfaction and contribution as primary factors in performance evaluation (Wibisono, 2023). The performance prism, encompassing five perspectives, ensures that the indicators generated by KBPMS are aligned not only with internal achievements but also with stakeholder expectations and their contributions to the organization. The integration of KBPMS and Performance Prism results in a balanced performance management system. KBPMS provides measurable and relevant performance indicators, while Performance Prism ensures that performance strategies and evaluations

align with the needs of ministry stakeholders. The integration of KBPMS with the performance prism offers a solution for developing a performance management system.

3. Methodology

This study applies exploratory descriptive methods and qualitative design, as outlined by Creswell, to analyze the integration of KBPMS and Prism within the context of the ministry organization. This approach facilitates a comprehensive exploration of the performance management phenomenon, which has not been previously examined (Creswell & Clark, 2014). This approach offers flexibility in identifying and elucidating the relationships among various components of the performance management system. Saunders et al. propose that applying an exploratory approach is suitable for analyzing the existing conditions within a ministerial organization, thereby enabling a foundational comprehension of performance management in these contexts (Saunders et al., 2012). This study examines the potential integration of two performance management frameworks, KBPMS and Performance Prism, which provide unique perspectives that may enhance each other. An exploratory approach will provide a comprehensive analysis of the performance management components within a ministerial organization and the possible integration of the two performance frameworks (Denzin & Lincoln, 2018).

3.1 Data Collection

This study will make use of two different types of primary data. To begin to get the primary data, observations and interviews or focus group discussions (FGD) were conducted with performance management managers working for a ministerial organization in Indonesia. Furthermore, the analysis of regulatory documents, including PermenPANRB no. 89 of 2018, PermenPANRB no. 53 of 2014, and current performance planning documents utilized as references in ministerial organizations (RPJMN, RENSTRA, RENJA), will serve as the second primary information source. This study will use literature reviews on KBPMS and performance prisms from reputable journals as secondary data sources.

During the development of this research, the ministerial organization that served as the subject of the study was the Ministry of Communication and Digital (Komdigi). The selection of the Komdigi organization was based on the strategic role of Komdigi in Indonesia to accelerate digital transformation (Kementerian Komunikasi dan Digital, 2024). Komdigi is expected to contribute to the growth of the national economy as a result of its role in the development of digital infrastructure and the increase in the utilization of digital connectivity in order to achieve economic growth of 8% (Kementerian Komunikasi dan Digital, 2024). For this reason, efficient performance management at Komdigi is crucial to implementing the government's strategic initiatives and impact the people of Indonesia.

An institution that is being explored in further detail for the purpose of integrating KBPMS and Performance Prism is the Directorate General of Digital Infrastructure (NDID), which is one of the entities. NDID was selected because of its strategic role within the Komdigi organization. NDID plays a strategic role in the development of digital infrastructure, the development of digital connectivity infrastructure, the development of 5G networks, and the preparation of smart city roadmaps. As a result, it is a directorate general responsible for playing a strategic role within Komdigi (Kementerian Komunikasi dan Digital, 2025).

The data collection process carried out through semi-structured interviews designed for collecting information regarding factors that impact performance management at Komdigi, specifically NDID. The focus was on evaluating the effectiveness of the current performance management system, its alignment with organizational strategy, and identifying opportunities for enhancing the performance management system. The participants included around 9 individuals, comprising both external and internal members. External consultants are those engaged in performance management, academics, or performance management roles from organizations outside of Komdigi. Internal actors are those who are directly engaged in the management of performance within the Komdigi organization, particularly in relation to NDID.

All collected information will be validated through focus group discussions (FGD). Focus group discussions will improve the interview process and facilitate dialogue among stakeholders (Shabina et al., 2024). FGD identifies common challenges, highlights variations, and promotes consensus on critical performance management strategies.

3.2 Conceptual Framework

In formulating a strategy that integrates KBPMS and the performance prism, concentrate on the five perspectives of the performance prism (A. D. Neely et al., 2002), together with the principles of KBPMS, specifically partnership, empowerment, continuous improvement, and independence (Wibisono, 2023). The objective is to evaluate the compatibility between the perspectives of these two performance frameworks to identify relevant performance indicators for application in ministerial organizations in Indonesia. In addition to understanding the integration of pertinent performance indicators, Dermawan, in his book, advocates for a priority analysis of these indicators aligned with organizational strategy (Wibisono, 2023). This priority analysis employs the Analytical Hierarchy Process method, which involves weighing each indicator through the collaboration of stakeholders and experts in performance management (Saaty, 1987). The following table shows the alignment among approaches to analysis.

Table 3: Alignment Between Methods of Analysis

Method of Analysis	Objective
Objective Alignment (KBPMS)	Establish a clear vision, mission, and organizational strategy.
Stakeholder Analysis (Performance Prism)	Examining the correlation between ministerial organizations and stakeholders
Analytical Hierarchy Process	Define priority of performance indicators
Thematic Analysis	Classifying interview outcomes into key themes for the examination of framework integration

Exploring the potential relationship between the two performance frameworks will provide the initial understanding required to develop a new theory (Creswell & Clark, 2014). Sage Publications, Thousand Oaks, CA. The complexity of performance management in ministerial organizations involves flexibility to adapt to changes or new findings during the research process, enabling researchers to effectively capture the intricacies inherent in public sector performance management (Denzin & Lincoln, 2018). The proposed conceptual framework model for integrating KBPMS and Performance Prism is illustrated in the following figure:

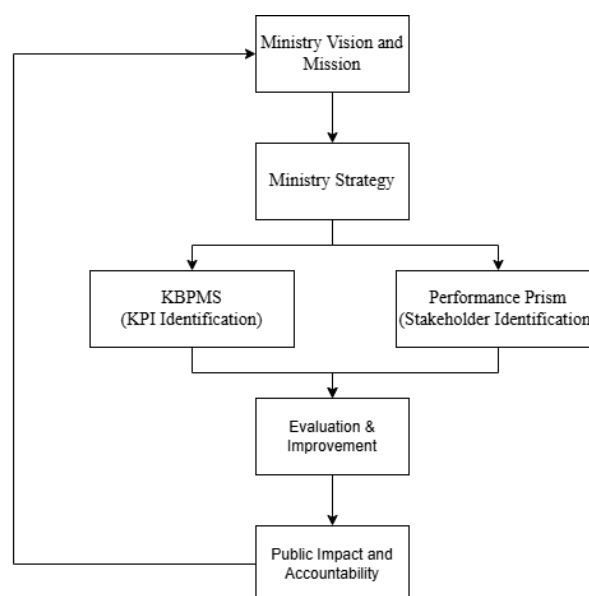


Figure SEQ Figure * ARABIC 4: Conceptual Framework KBPMS & Performance Prism

The integration of the KBPMS framework and Performance Prism in the ministry organization begins with the identification of the ministry's vision and mission. The formulation of the ministry's vision and mission should reliably align with the president's vision and mission, as the greatest authority of the government. A well-defined vision and mission will be used as the primary foundation for developing the Ministry's strategy, aligning its goals and objectives within a specified timeframe (Wibisono, 2023). The ministry's strategy describes a framework for realizing its vision and mission. Within the context of performance management, this strategy then identifies the chosen performance indicators. The appropriate strategy will serve as a framework for identifying and managing performance metrics, ensuring that all organizational operations align with the ministry's objectives.

KBPMS is a framework for knowledge-based performance management, designed to identify suitable KPIs and facilitate continuous performance improvement. KBPMS is instrumental in the comprehensive identification of key performance indicators. Conversely, Performance Prism serves as a performance management framework driven by stakeholder interests. This framework enhances KBPMS by incorporating the viewpoints of all key stakeholders in performance management, rather than solely concentrating on internal perspectives. The KBPMS-Performance Prism integration framework emphasizes that performance evaluation encompasses not only internal metrics but also stakeholder feedback. Stakeholder input is a critical component of the evaluation and improvement phase.

The expected result of integrating KBPMS and Performance Prism is an improvement of positive effects for the public and a reinforcement of accountability within the ministry organization. The integration of KBPMS, which enhances internal efficiency and effectiveness, with Performance Prism, which aligns ministry actions with stakeholder expectations, will yield outcome-oriented performance that garners public trust. The ministry has shifted its focus from internal bureaucracy to delivering tangible value for the public.

3.3 Findings

3.3.1 Ministry Organization

The National Directorate of Digital Infrastructure (NDID) is an entity responsible for the development of digital infrastructure, encompassing telecommunications networks and internet accessibility (Peraturan Presiden, 2024). Observations conducted at NDID indicate that performance planning within the organization aligns with the National Medium-Term Development Plan (RPJMN). In accordance with the RPJMN, each ministry organization formulates a strategic plan (RENSTRA) and a work plan (RENJA) (PermenPANRB, 2014).

Every National Directorate shall formulate a hierarchical performance contract starting with the Directorate (Level 2), continuing to the National Directorate (Level 1), and concluding at the ministerial level (Level 0). The performance contract includes performance indicators that must be met annually by the position. The analysis of performance documents at the Ministry of Communication and Information via NDID indicates that the assessment and allocation of performance require enhancement. The findings from the observation process and informal discussions are as follows:

- 1) Employees within the Ministry of Communication and Information organization lack comprehension of performance management, which is predicated on an understanding of the organization's purpose and vision, which are then translated into objectives and indicators of organizational success (Wibisono, 2023).
- 2) The distribution of current indicators has not demonstrated that subordinate indications provide greater detail than their superior counterparts (Kaplan & Norton, 2008).
- 3) No framework was identified for managing performance in the Komdigi organization, resulting in the measurement of only final outcomes rather than the process. A framework would facilitate the ongoing improvement process

besides previous findings, a situation analysis is conducted to better understand the complex structure of stakeholder relationships (Barbrook-Johnson & Penn, 2022). This representation will assist in the capture of perceptions within a context, specifically for the Komdigi, providing a comprehensive overview of the entire

environment, including one of the general directorates, its organizations, and stakeholders, encompassing both central and local government, as well as other institutions (Burge, 2010).

Figure 5 shows that the ministry faces significant challenges in performance management due to a lack of a defined framework and weak alignment between the organization's vision, goal, and strategy. Performance Prism provides a solution by prioritizing the mapping of stakeholder satisfaction and contributions, so increasing the comprehensiveness of the performance system. Additionally, KBPMS will identify knowledge-based performance indicators, ensuring the correlation between indicators for performance effectiveness. Furthermore, internal obstacles, like insufficient employee understanding of the performance system, impede optimal implementation; thus, training and capacity building are essential to enhance awareness of the performance management system. The ministry must cooperate with stakeholders, including local governments, academia, and industry partners, to enhance the performance system. By integrating KBPMS and Performance Prism, the ministry can enhance transparency and the efficacy of public operations within its performance management system.

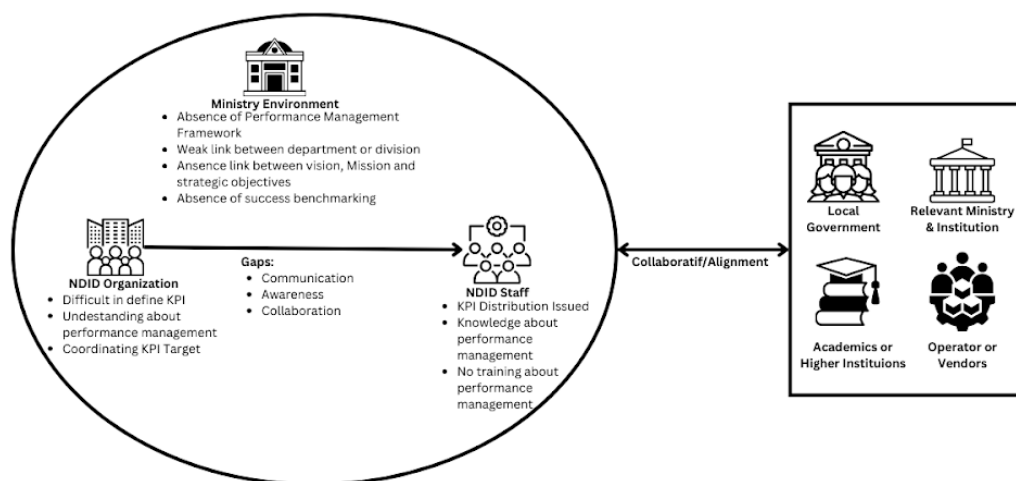


Figure SEQ Figure * ARABIC 5: Rich Picture of Komdigi Organizations

Overall, a comparison between the current settings and the optimal conditions for performance management, as presented in Table 2, indicates that improvements are necessary in the management of the performance management system within the Komdigi organization. The challenges in managing performance within the Komdigi organization begin with employees' comprehension of performance management through informal training, which is essential for achieving effectiveness. Furthermore, communication and coordination among individuals, divisions, and departments within a single ministry organization require enhancement to ensure that the distribution and determination of KPIs and their derivatives at each level are clear and indicative of a continuous performance management process.

Table 4: Comparison Between Existing and Ideal Condition

Performance Management Element	Existing Condition	Ideal Condition
Framework	Currently Komdigi does not use any framework for managing organizational performance.	Performance framework is needed because it can improve service quality (Moullin, 2017).
Vision and Mission Statement	Komdigi does not determine the vision and mission of the organization but follows the vision and mission of the president.	Determining the organization's vision and mission helps align the organization's national and operational goals (Joshi et al., 2003).
KPI Determination	The distribution of KPIs lacks a systematic approach, with one KPI Leader assigned without	The Leader's KPI is distributed to the subordinate level and thereafter redistributed to the next level, taking into account the role and contribution of

Performance Management Element	Existing Condition	Ideal Condition
	established criteria for deciding the weight of each KPI.	each tier to the KPI of the level above (Arlina et al., 2019).

3.3.1 Performance Management System

The key component of good performance management in public sector organizations is the management of stakeholder interests and the assurance of service efficacy (Pulakos & O’Leary, 2011). The management of performance in public sector organizations, especially ministries, has issues due to low resources and corruption in developing nations (Mimba et al., 2013). The performance management system in Indonesia is significantly shaped by organizational commitment, internal regulations, workplace culture, and the quality of human resources (Noordiatmoko & Anggriawan, 2023).

Public sector organizations, including ministerial organizations, commonly apply the Balanced Scorecard (BSC). However, the implementation of the BSC often emphasizes administrative indicators that reflect internal activities, such as the number of reports completed or compliance levels, while neglecting the broader community impact. This issue is further compounded by a limited understanding of performance management and the strategic objectives of BSC implementation, which should prioritize enhancing the quality of public services (Wibisono, 2023). Moreover, numerous ministerial organizations adopt the BSC without tailoring it to their specific vision, mission, and needs, resulting in the use of indicators that are predominantly more applicable to private sector organizations (Northcott & Ma’amora Taulapapa, 2012). Performance measurement is often conducted merely to fulfill administrative obligations rather than serving as a decision-making instrument for ongoing enhancement (Modell, 2004).

The regulation of PermenPANRB frequently emphasizes the establishment of quantitative key performance indicators (IKU) while neglecting a thorough examination of their relevance to organizational objectives, leading to a disconnect between the internal ministry and public expectations. The shortcomings in the implementation of performance management within public sector organizations indicate the necessity for an approach that aligns more closely with the unique characteristics of these entities. This approach should also incorporate non-financial indicators and engage stakeholders in the design of a performance management system tailored for public sector organizations.

4. Result

4.1 Framework Performance Management

Performance management involves the processes of measurement, management, and improvement designed for achieving efficient objectives (Helmold & Samara, 2019). Performance Measurement Systems serve as objective instruments for guiding, regulating, and enhancing accountability within organizations (Hood, 1991). Literature research and observations within a ministry organization indicate the necessity of a stakeholder-oriented performance management approach. The Performance Prism paradigm involves stakeholder satisfaction and contribution, offering a more pertinent assessment of organizational (A. Neely et al., 2001), yet, its implementation encounters significant complexities. One of the challenges is aligning the diverse dimensions of stakeholder satisfaction, stakeholder contribution, strategy, process, and capability within a single bureaucratic framework, making the establishment of performance indicators a primary challenge (Kennerley & Neely, 2003).

The Knowledge Based Performance Management System (KBPMS) is an approach designed to delivering performance management solutions tailored to the complex and bureaucratic nature of ministerial organizations in Indonesia. KBPMS emphasizes not only results and output but also processes, organizational capacities, and stakeholder satisfaction, making it applicable to ministerial organizations with varied task requirements (Wibisono, 2023). KBPMS is compatible with existing performance management frameworks, such as the performance prism utilized by ministerial organizations. This compatibility arises from KBPMS's focus on

addressing local organizational needs in Indonesia while simultaneously enhancing the performance prism framework by aligning strategies with stakeholder requirements and bolstering organizational capabilities through advancements in human resources and technology.

4.2 KBPMS and Performance Prism Integration

As was mentioned before, the KBPMS and Performance Prism frameworks each have their own set of benefits to provide. The capability of KBPMS to systematically establish performance indicators and the priorities of each performance indicator is one of its most distinguished features. On the other hand, performance prism can be utilized to recognize important stakeholders and gain an understanding of the contributions made by members of these stakeholders. The association between KBPMS and Performance Prism is illustrated in the table that has the following form:

Table 5: Integration KBPMS and Performance Prism Element

Performance Prism Elements	KBPMS Elements	The Integration
Stakeholders Satisfaction	Partnership and Empowerment	Identifying and understanding stakeholder needs within the ministry and linking them to performance indicators.
Stakeholder Contribution	Independence	Analyze stakeholder contributions to the organization and how the organization can leverage those contributions independently.
Strategy	Integrated Performance Management	Aligning ministry strategies with national vision, mission and priorities through the KBPMS approach.
Process	Integrated Performance Improvement	Identify the organization's core processes to determine appropriate performance indicators.
Capabilities	Capabilities & Technology	Improve organizational capabilities, both human resources and technology infrastructure, to support performance management.

Based on the data presented in the table, it is clear that the KBPMS principle has the potential to enhance the application of Performance Prism in the educational sector. As an illustration, the Stakeholder Satisfaction principle found in the Performance Prism can be linked with the Partnership and Empowerment concept found in the KBPMS. This combination is intended to guarantee that the expectations of the stakeholders are not only recognized but also taken into account while the ministry organization is planning its performance. There are a number of procedures that need to be carried out in order to successfully implement the integration of these two frameworks into the organization of the ministry. These mechanisms are as follows:

1) Identify alignment of organizational and stakeholder goals

Every ministry organization must consistently align with the government's targets and objectives. After that, the ministry organization should define its vision and mission in accordance with these targets and objectives, while also identifying relevant stakeholders associated with the ministry organization. By recognizing this, performance indicators can be established based on the duties and responsibilities of each ministry organization.

2) Establish Balanced performance indicators

Performance indicators should accurately represent stakeholder expectations while being prioritized in alignment with the organization's goals and strategies.

3) Implementation and Continuous Improvement

Assess all performance indicators through data collection methods and quantify stakeholder contributions and satisfaction regarding the implemented policies. The potential stages of implementation are outlined as follows:

Stage 1: Identify tasks and responsibilities, ensuring alignment with stakeholder needs.

Stage 2: Identify suitable indicators that align with organizational strategy and stakeholder satisfaction, and prioritize these performance indicators using the Analytic Hierarchy Process (AHP).

Stage 3: Implement a pilot project within a limited segment of the organization.

Stage 4: Assess the outcomes of the pilot project and implement ongoing enhancements.

For instance, in the context of Komdigi, if an organization aims to enhance the efficiency of digital services, an indicator may be established based on operational efficiency, while simultaneously assessing its influence on user satisfaction with these services.

5. Conclusion

Performance management in ministerial organizations necessitates an approach that encompasses not just the attainment of internal metrics but also the engagement of stakeholders throughout the entire process. This study has examined the potential amalgamation of KBPMS and Performance Prism to develop a performance management system that is more adaptable and sensitive to the requirements of public sector enterprises. The analysis results indicate that Performance Prism offers a robust framework for identifying and comprehending the relationship between organizations and stakeholders, whereas KBPMS presents a hierarchical analysis approach that aids ministerial organizations in identifying more pertinent and strategic performance indicators.

The integrated framework of the performance prism and KBPMS constitutes a performance management system that prioritizes internal management efficacy while simultaneously addressing stakeholder interests. The amalgamation of the two frameworks is referred to as the Integrated Stakeholder & Knowledge Based Performance Framework (ISKPF). This framework's model integrates the perspectives of the two frameworks, as detailed in the subsequent table:

Table 6: Perspective ISKPF Framework

ISKPF Perspective	Definition	Description
Stakeholder Satisfaction and Contribution	Integration between Stakeholder Satisfaction & Contribution Perspective on Performance Prism Framework and Organizational Output on KBPMS	This perspective is a starting point regarding the target of how the ministry can meet the needs of its stakeholders.
Strategy & Internal Process	Integration between the Strategy perspective in the performance prism framework and Internal Processes in KBPMS	This perspective will show the alignment between the strategy of the ministry and the operational processes within the organization.
Resource Capability	Integration between the Capabilities perspective in the performance prism framework and resource capabilities in KBPMS	This perspective will show the capabilities of existing resources to support internal strategies and processes.
Monetary Assistance	Integration between capabilities in the performance prism framework and financial support in KBPMS	This perspective shows how financial support will affect the resource capabilities of the organization.

By integrating these two frameworks, the ministry's performance management can be enhanced by ensuring that the performance indicators account for both internal organizational efficiency and stakeholder expectations and contributions. This integration facilitates more systematic performance management through the Analytical Hierarchy Process (AHP) to prioritize indicators, with a continuous improvement evaluation method. Visualization of ISKPF is shown in the following figure.

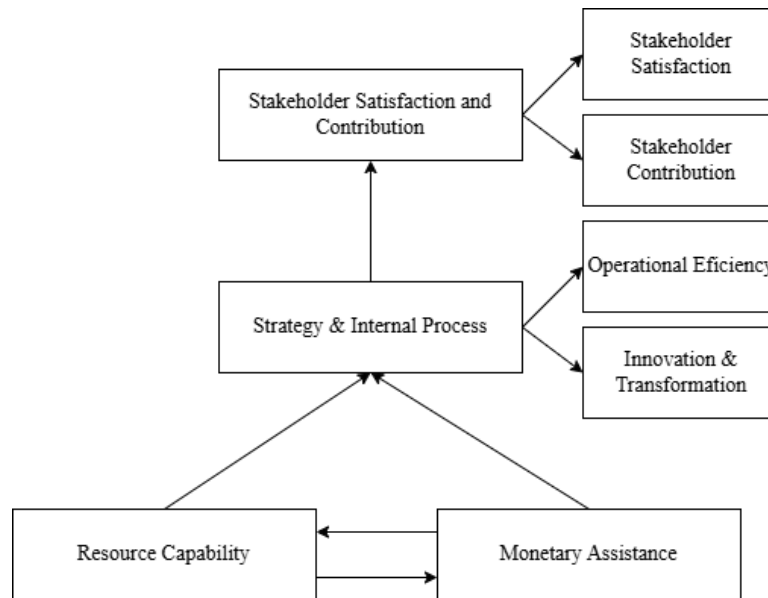


Figure 6: Conceptual Model ISKPF Framework

The ministry must navigate multiple strategic phases to execute this merger. The ministry has to first determine the connection between organizational objectives and stakeholder interests through the stakeholder analysis methodology from Performance Prism. The ministry must develop balanced performance measures that integrate internal components of KBPMS with stakeholder satisfaction and contributions from Performance Prism. Third, a perpetual implementation and assessment process is conducted to guarantee that the approved framework can adjust to alterations in the strategic environment and governmental legislation. The final strategic phase that can enhance the preceding three stages involves the advancement of human resources and information technology systems, which can facilitate firms in managing their performance management systems more efficiently and effectively.

This work has enhanced scholarly discourse on performance management in the public sector; nonetheless, numerous limitations must be acknowledged. This study is confined to a single ministry organization, specifically the National Directorate of Infrastructure Digital (NDID); hence, additional research is required to assess the applicability of this integration approach in other ministries or institutions with distinct features. Moreover, obstacles in executing this integration, including constrained human resources, managerial commitment, and technology preparedness, require additional focus in forthcoming study.

Given the escalating complexities surrounding accountability and effectiveness in the public sector, an integrated methodology utilizing Performance Prism and KBPMS may serve as a more pertinent alternative for achieving the ministry's strategic objectives aligned with stakeholder interests. Consequently, the primary suggestion of this study is the gradual implementation of this integration model, commencing with a pilot project in select work units prior to broader application within the ministry context.

Author Contributions: D.K.H. conceptualized the study and designed the research framework. D.K.H. and D.W. developed the methodology. N.B.M. conducted data validation and formal analysis. D.K.H. led the investigation and data curation. D.K.H. and D.W. prepared the original draft, while N.B.M. reviewed and edited the manuscript. D.K.H. and N.B.M. handled visualization. D.W. supervised the project and contributed to project administration. All authors read and approved the final manuscript and agreed to be accountable for its content.

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Carbon Emission Disclosure in Business & Economics: A Bibliometric Exploration of Trends and Insight

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Abstract

Climate change has emerged as a critical global issue, prompting increased corporate responsibility in disclosing carbon emissions. Carbon emission disclosure plays a vital role in corporate transparency and sustainability, influencing investor perceptions, regulatory compliance, and financial performance. This study employs a bibliometric analysis to explore trends and insights in carbon emission disclosure within business and economics research. Utilizing the Scopus database, we analyzed 178 scholarly articles published between 2014 and 2024. The findings indicate a significant growth in carbon-related research, with China leading in publication volume, followed by Australia, the UK, and Indonesia. Additionally, the study identifies key research themes, including carbon performance, climate change, and corporate governance, highlighting their interconnections through network analysis. The PRISMA framework and VOSviewer software were used to map research patterns, collaboration networks, and citation relationships. The results suggest an increasing emphasis on corporate sustainability, regulatory frameworks, and financial implications of carbon disclosure. This study contributes to the understanding of evolving research directions in carbon emission disclosure, providing insights for academics, policymakers, and business leaders on integrating sustainability into corporate strategies.

Keywords: Carbon Emission Disclosure, Bibliometric Analysis, Corporate Sustainability, Climate Change

1. Introduction

1.1 Introduce the Problem

Climate change has become one of the biggest challenges facing the world today, driving many to raise awareness and take action on carbon emissions (Elsayih et al., 2021). In the business world, disclosure of carbon emissions is increasingly becoming a key concern as part of corporate sustainability practices (Oyewo, 2023). These disclosures not only reflect a company's transparency towards its environmental impacts, but can also influence the perceptions of investors, stakeholders and government regulations. Some studies show that companies that are more transparent in disclosing carbon emissions tend to get long-term benefits, such as improved reputation and better access to funding (Kılıç & Kuzey, 2019).

The relationship between carbon emissions disclosure and corporate financial performance is a topic of interest in economics and business. The study by Reichelstein, (2020) shows that carbon disclosure mandates in the UK can help reduce emissions without negatively impacting financial performance. By requiring companies to report their carbon footprint, these regulations encourage businesses to adopt more sustainable practices, such as improving energy efficiency, minimizing waste, and investing in green technologies. Increased transparency also enhances corporate reputation, attracting environmentally conscious investors and consumers. Moreover, many companies find that effective emission reduction strategies lead to operational efficiencies and cost savings, ultimately benefiting their long-term financial stability. Thus, carbon disclosure policies contribute to climate change mitigation while ensuring economic resilience for businesses.

In Indonesia, research by Rahmawati et al., (2024) revealed that corporate financial performance has an influence on carbon emissions disclosure, but is not significantly driven by environmental performance. This suggests that the main motivation for companies to disclose carbon emissions is still closely related to economic factors and regulatory compliance, rather than environmental awareness. As environmental and sustainability policies continue to evolve, it is important for companies to understand how carbon disclosure can affect their business and how sustainability strategies can be integrated into company operations more effectively.

2. Methods

This study uses a bibliometric approach to analyze trends in scientific publications related to disclosure of carbon emissions, carbon performance, and climate change in business and economics. This bibliometric method refers to the framework developed by Setiawan et al., (2023), which includes four main stages: data acquisition, data pre-processing, data analysis, and visualization and interpretation of results. This approach enables the identification of research patterns, collaboration between authors, and the development of topics of focus in academic studies.

The first stage in this study was data acquisition, which was conducted by collecting scientific articles from the Scopus database because it possesses unique attributes in the context of social and humanities; therefore, Scopus provides a better representation of the literature than WoS (Pranckutė, 2021), which is more suitable for bibliometric review (Abhilash et al., 2023; Ahmad et al., 2023; Antwi et al., 2022). The search process was carried out using specific keywords, namely "climate change," "carbon," "carbon emission disclosure," and "carbon performance," with a limitation of publication years between 2014 and 2024, or with the keywords (TITLE-ABS-KEY ("climate change") OR TITLE-ABS-KEY ("carbon") OR TITLE-ABS-KEY ("carbon emission disclosure") AND TITLE-ABS-KEY ("carbon performance")) AND PUBYEAR > 2013 AND PUBYEAR < 2025 AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "ECON")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (SRCTYPE , "j")). In addition, this study only includes journal articles from the field of business and economics and indexed in Scopus. After the data was obtained, the data pre processing stage was carried out by filtering relevant publications based on titles and abstracts, eliminating duplicates, and adjusting the data format so that it could be analyzed further.

Data analysis was conducted using the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) approach to ensure transparency and systematicity in the study screening process (Hansen et al., 2022). Furthermore, VOSviewer software was used for network analysis, including author collaboration mapping, keyword analysis, and citation relationships. In addition, R Studio was utilized for further bibliometric analysis, such as the distribution of publications by time, the most influential journals, and the relationship between research topics. By using a combination of these methods, this study aims to provide a comprehensive overview of research trends in the field of carbon emissions disclosure and carbon performance in the context of business and economics.

3. Results and Discussion

Document general characteristics Table 1 shows the research over the period 2014 to 2024, with a total of 178 documents coming from 90 different sources, such as journals, books and other publications. The annual growth

rate of documents reached 26.39%, indicating a significant increase in publications over the period. With an average document age of 3.7 years, the data reflects a high level of relevance to current research. Each document has an average of 40.25 citations, reflecting considerable academic influence. Overall, the data is supported by 11,298 references, providing a strong foundation for further analysis.

In terms of collaboration, the study involved 454 authors, with 12 of them producing single documents. There were only 13 individually authored documents, while there were an average of 3.13 authors per document, indicating a high level of collaboration. A total of 36.52% of the documents involved international collaboration, indicating that this research has a fairly broad global scope. In addition, there were 594 additional keywords (Keywords Plus) and 584 original author's keywords, indicating the diversity of topics studied. All documents analyzed were articles, confirming that the focus of this study was on research-based publications.

Table 1: Document general characteristics

Description	Results
MAIN INFORMATION ABOUT DATA	
Timespan	2014:2024
Sources (Journals, Books, etc)	90
Documents	178
Annual Growth Rate %	26.39
Document Average Age	3.7
Average citations per doc	40.25
References	11298
DOCUMENT CONTENTS	
Keywords Plus (ID)	594
Author's Keywords (DE)	584
AUTHORS	
Authors	454
Authors of single-authored docs	12
AUTHORS COLLABORATION	
Single-authored docs	13
Co-Authors per Doc	3.13
International co-authorships %	36.52
DOCUMENT TYPES	
article	178

3.1. Evolution in the number of publications

Figure 1 shows the development of the number of publications (Production) and average citations per document (Average Citations) from 2014 to 2024. The number of publications increased significantly over time, with a steady rise until 2022, followed by sharp spikes in 2023 and 2024. In 2024, the number of publications peaked at 52 documents, indicating increased attention to research or related fields of study. This trend reflects growing interest, research activity or greater investment in the field.

On the other hand, the average citations per document show a different trend. The highest average citations were recorded in the early years, such as in 2015 with 12.79 citations, but tended to decrease gradually until 2024, where the figure reached 2.58. This decline may indicate that while the number of publications is increasing, the impact or influence of individual documents on the academic community may be diminishing. This could be due to various factors, such as an increasing number of publications that have not had enough time to receive many citations or a broader change in research focus. The combination of these two trends reflects the complex dynamics between research productivity and citation relevance.

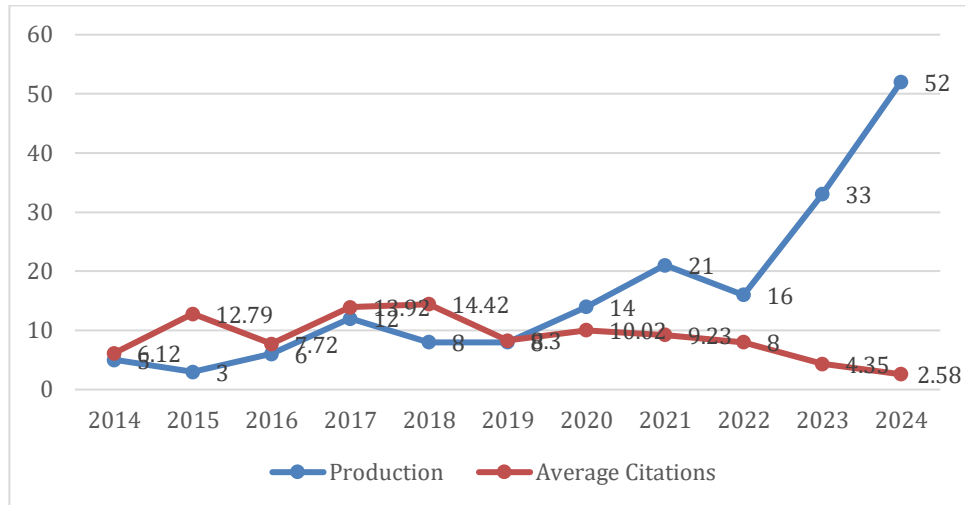


Figure: 1 Evolution in the number of articles production and average citations

3.2. Distribution across global regions and organizations

Figure 2 shows the distribution of research contributions or publications by country, with the intensity of the blue color indicating the level of contribution. China dominates significantly, as seen from the striking dark blue color, indicating that the country has a much higher level of research activity or number of publications than other countries in this dataset. This reflects China's great efforts in supporting research and development, including through large investments in higher education institutions and international collaborations. This dominance also indicates China's central role in the global research community over the period covered by the data.

Besides China, countries such as the United States, Australia, the United Kingdom, and Germany also show significant contributions, albeit at a lower intensity, as seen from the lighter blue color. These countries remain global research hubs with consistent activity. However, other regions, such as South America, Africa and most of Southeast Asia, show much smaller contributions or are not even recorded in this dataset. This reveals a global gap in research contributions, where academic activity is more concentrated in regions with more developed research infrastructure. This inequality poses a global challenge to promote equitable access to research resources and increase participation from underrepresented regions.

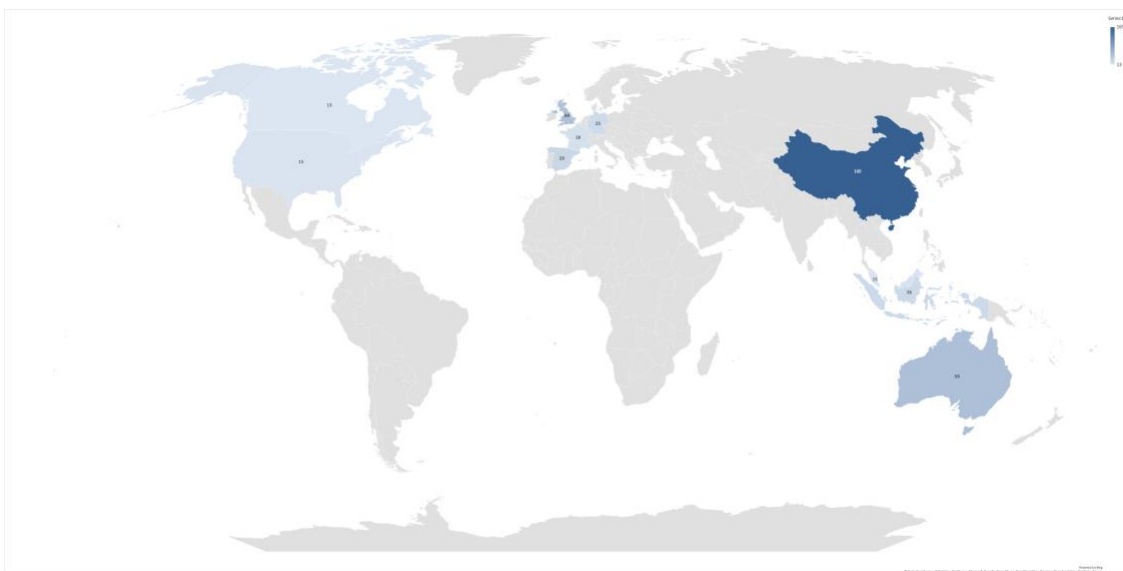


Figure 2: Global distribution of publication density

Table 2: Top 10 organizations contributing to research on carbon

Region	Frequency
CHINA	165
AUSTRALIA	55
UK	54
SPAIN	29
INDONESIA	26
GERMANY	25
FRANCE	18
MALAYSIA	15
USA	15
CANADA	13

The table above shows the top ten countries contributing to carbon-related research based on the frequency of their contributions. China dominates with 165 frequencies, demonstrating its leading role in carbon research at a global level. In second and third place, Australia and the UK recorded contributions of 55 and 54 frequencies respectively, which while significant, is still far below China. Countries such as Spain (29), Indonesia (26) and Germany (25) are in the middle tier of contributions, showing a more limited but still relevant participation in carbon research. On the other hand, countries such as France (18), Malaysia (15), the United States (15) and Canada (13) show lower contribution levels than the countries above them. This disparity in contributions reflects the different research capacities and priorities of each country on carbon issues. China's dominance may reflect a greater commitment to climate change mitigation or internal demands to reduce carbon emissions, while smaller contributions from other countries could be due to factors such as limited resources or a focus on other environmental issues.

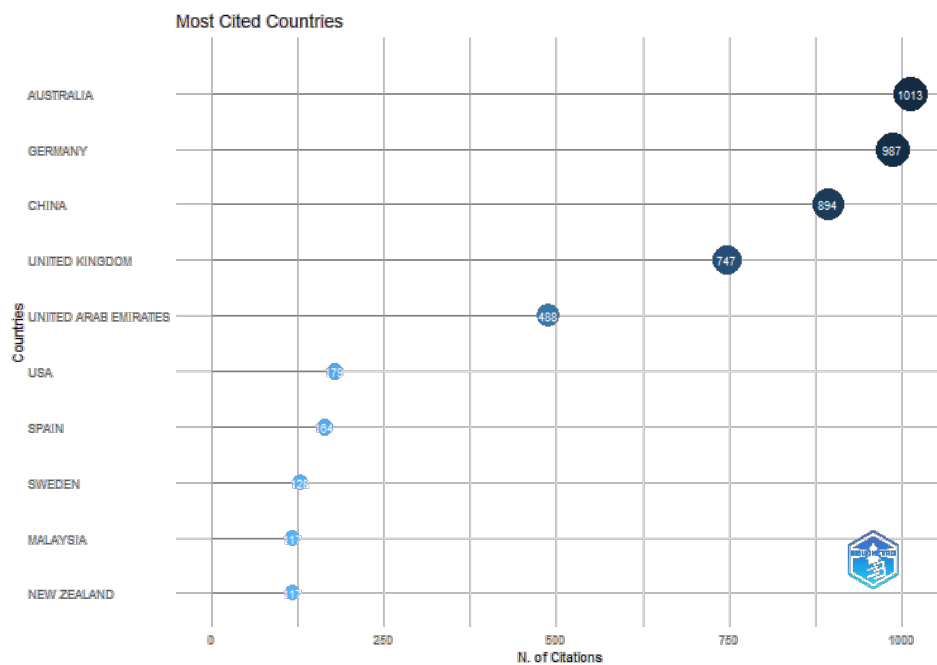


Figure 3: Top Most Cited Countries

Figure 3 shows the most cited countries in the study based on the number of citations. Australia took first place with 1,013 citations, followed by Germany (987) and China (894). These three countries significantly lead in the number of citations, reflecting the great influence of their research in related fields. The UK came in fourth with 747 citations, followed by the United Arab Emirates (489), indicating that research from this country is also widely recognized in the academic community.

Other countries such as the United States, Spain, Sweden, Malaysia, and New Zealand have lower citation counts, with numbers below 500. This indicates a relatively smaller influence compared to the top-ranked countries. However, their presence in this list still indicates an important contribution to the global research literature. This disparity in citation counts may reflect differences in their level of research investment, international collaboration, or the thematic relevance of their research to global issues.

3.3. Journal analysis

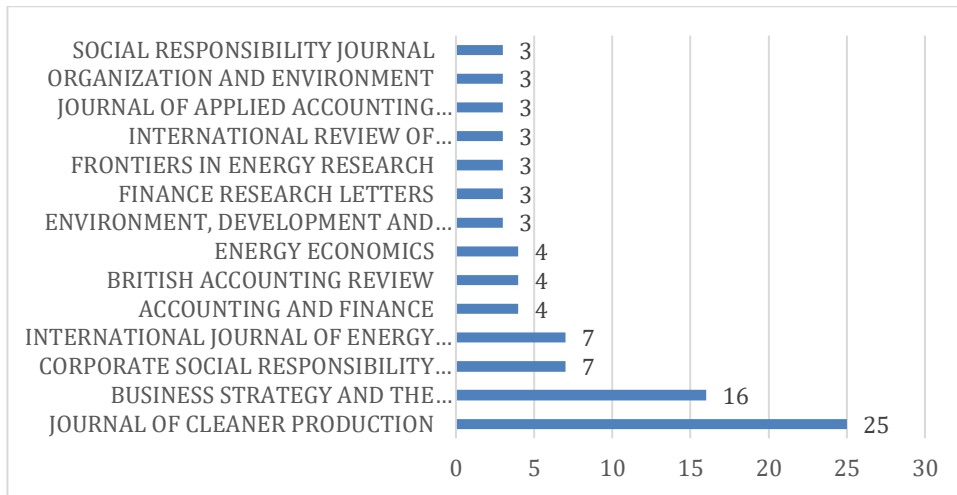


Figure 4: Top 14 journals by production

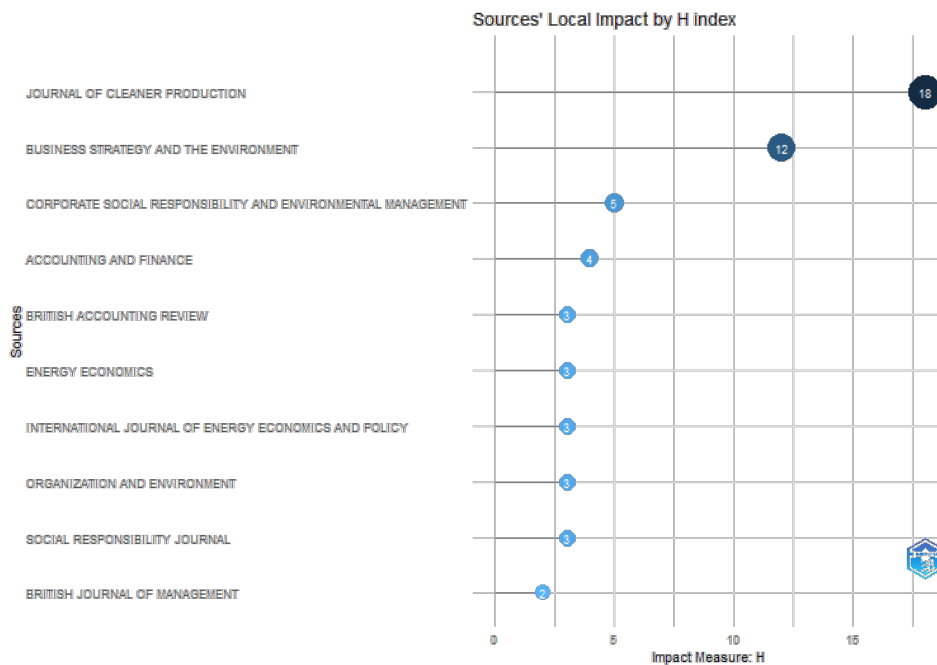


Figure 5: Top 10 Sources' Local Impact

The journal analysis in Figure 4 shows the top 14 journals based on the number of articles published. The Journal of Cleaner Production took first place with 25 articles, followed by Corporate Social Responsibility and Environmental Management with 16 articles. Other journals such as Accounting and Finance and Energy Economics had 7 and 4 articles respectively, while some journals such as Finance Research Letters and International Review of Economics produced 3 articles. This shows that sustainability and social responsibility topics are top of mind in some of the leading journals.

Figure 5 displays the local impact of the top 10 journals based on the H index. Journal of Cleaner Production has the highest H index of 15, indicating significant influence in related research. Other journals such as Business Strategy and the Environment and Corporate Social Responsibility and Environmental Management also show important contributions, albeit with lower H indices. In contrast, some journals such as Social Responsibility Journal and British Journal of Management have relatively smaller local impacts. These findings highlight the major role of leading journals in driving research in sustainability and social responsibility.

3.4. Network analysis of conceptual structure

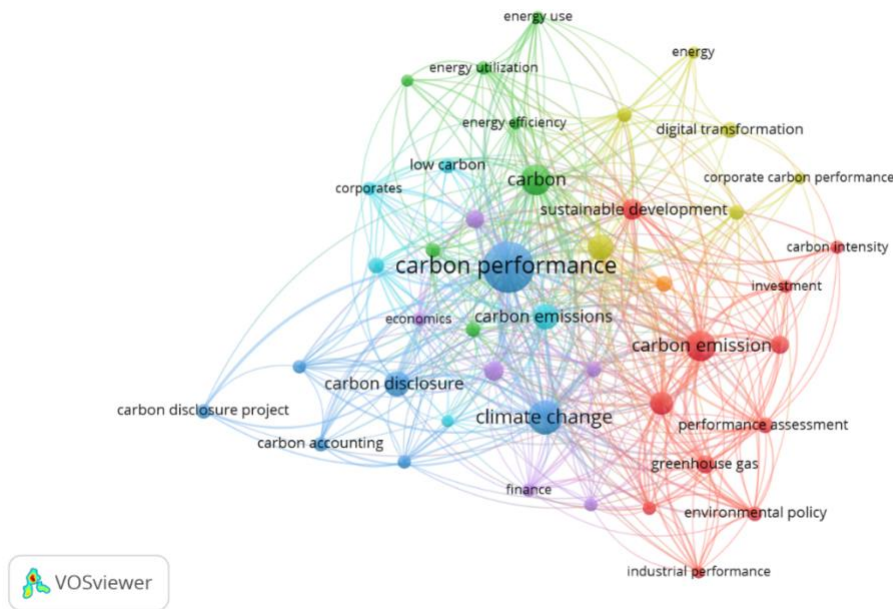


Figure 6: Graphical representation of the co-word network

Figure 7 shows a graphical representation of the conceptual network analysis based on the co-word network. This bibliometric network consists of nodes and edges (Eck & Waltman, 2014). Circular nodes denote keyword occurrences, with larger nodes indicating more extensive research on these keywords (Donthu et al., 2021). The concept of "carbon performance" is at the center of the network with strong connections to other terms such as "carbon emissions," "climate change," and "carbon disclosure," indicating that this topic is a major focus of related research. Close connections between terms such as "sustainable development," "greenhouse gas," and "environmental policy" indicate the integration of carbon performance and sustainability efforts globally. In addition, themes such as "energy efficiency," "digital transformation," and "low carbon" highlight the importance of technological innovation and energy efficiency in addressing carbon emissions. Overall, the network reflects the complexity of the relationships between various factors in carbon performance and sustainability research.

Table 3: Variables used in Carbon Performance research

Variable	Cluster	Total connection strength	Occurrences	Avg. Pub. Year
Carbon performance	3	233	87	2021.60
Climate change	3	152	40	2020.78
Carbon emissions	1	144	31	2020.84
Carbon	2	139	31	2020.68
Emission control	4	126	23	2020.91
Environmental economics	1	97	18	2021.22
Carbon emissions	6	85	22	2021.91
Sustainable development	1	85	14	2020.50
Carbon disclosure	3	69	22	2021.83
Environmental management	5	48	11	2019.73

Enviromental performance	5	48	13	2020.92
Greenhouse gas	1	48	11	2019.64
Performance assessment	1	47	9	2020.89
Enviromental policy	1	40	8	2019.88
Carbon footprint	6	39	9	2021.56
Corporates	6	39	6	2022.50
Corporates strategy	1	38	6	2020.83
Sustainability	1	38	11	2021.91
Carbon dioxide	4	37	7	2019.29
Economics	5	37	6	2020.00
Greenhouse gases	2	36	7	2018.43
Finance	5	34	6	2020.33
Carbon disclosure	3	33	6	2020.91
Energy utilization	2	33	6	2018.17
Corporate governance	7	32	9	2021.22
Corporate social Responsibility	4	31	7	2021.00
Energy use	2	29	5	2018.60
Financial performance	5	26	7	2019.43
Industrial performance	1	26	5	2019.60
Energy efficiency	2	25	5	2018.60
Ghg emissions	5	25	6	2019.00
Carbon accounting	3	24	7	2021.71
Investment	1	24	6	2022.17
Carbon management	3	22	6	2020.83
Greenhouse gas emissions	2	20	7	2019.00
Low carbon	6	20	7	2021.57
Energy policy	2	19	5	2019.40
Carbon sequestration	6	18	5	2022.60
Energy	4	18	5	2021.00
Digital transformation	4	17	9	2023.67
Carbon intensity	1	15	6	2022.33
Carbon disclosure project	3	14	7	2019.00
Corporate carbon performance	4	9	5	2023.83

Table 3 shows the variables used in carbon performance research, including clusters, total connection strength, number of occurrences, and average year of publication. The variable "carbon performance" has the highest connection strength (233) and the most occurrences (87), indicating that this topic is the main focus of research. Other variables such as "climate change" and "carbon emissions" also have high connection strengths, 152 and 144 respectively, with the most recent average publication around 2020. Variables such as "environmental management," "greenhouse gas," and "sustainable development" have lower connections but remain relevant, with average publication years approaching 2019-2020. Meanwhile, more specific variables such as "digital transformation," "carbon intensity," and "corporate governance" show fewer appearances but remain part of recent research, as seen by the average publication year approaching 2022-2023. This data reflects the diverse research focus, with the dominance of key themes related to carbon performance, climate change, and carbon emissions.

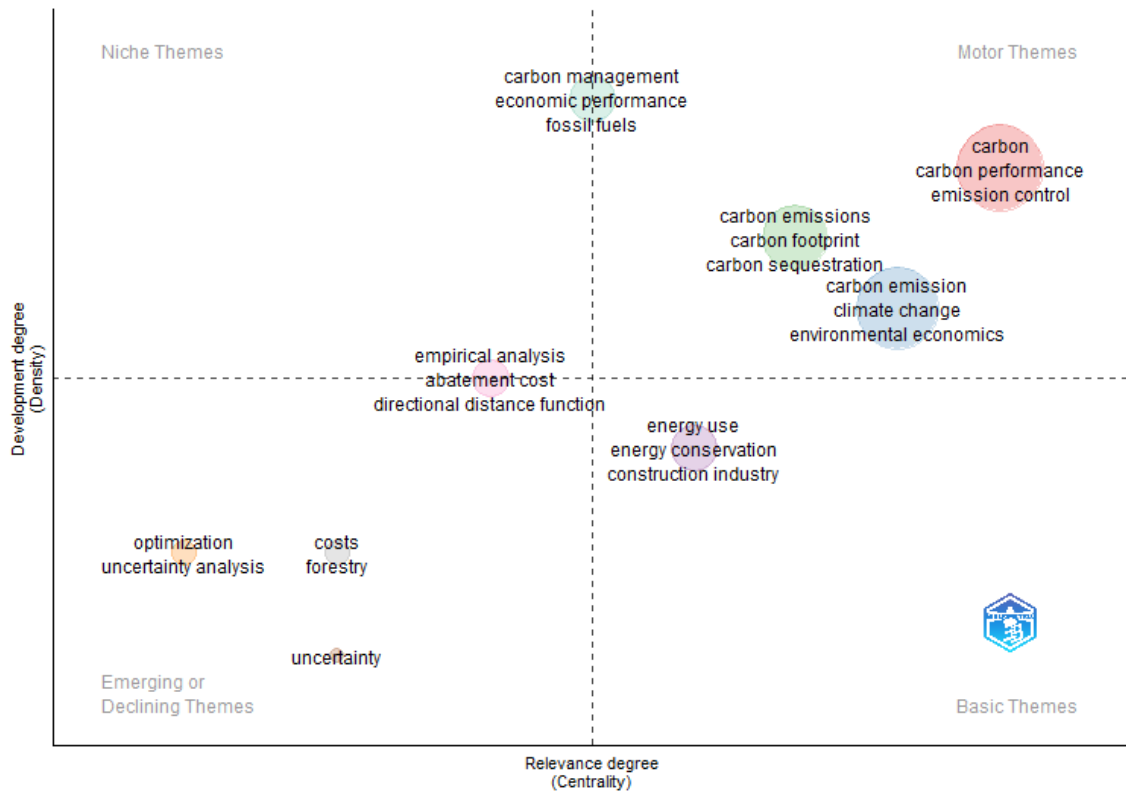


Figure 7: Thematic map by keyword

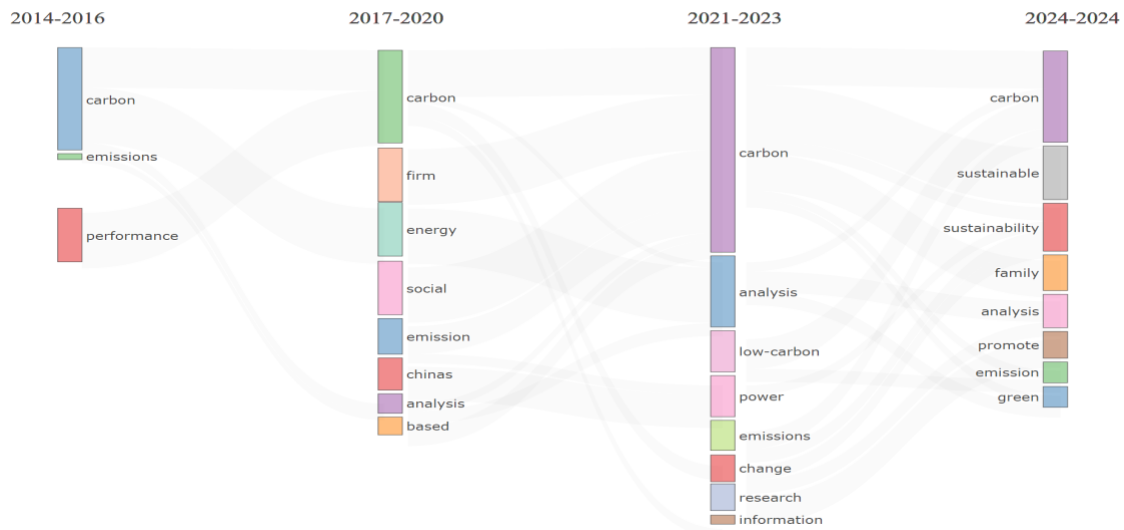


Figure 8: Thematic evolution by titles.

Figure 7 shows a keyword-based thematic map that categorizes research themes based on two main dimensions: degree of development (density) and degree of relevance (centrality). Motor themes such as "carbon", "carbon performance" and "emission control" are located in the upper right quadrant, indicating that these topics have a high level of relevance and development. Themes such as "carbon emissions", "carbon footprint", "climate change", and "environmental economics" are in the lower right quadrant as basic themes, reflecting their importance as research foundations but with a lower level of development. Themes in the upper left quadrant, such as "carbon management" and "economic performance", fall into the category of niche themes, which are highly developed but less central. Meanwhile, themes in the lower left quadrant, such as "optimization" and "uncertainty analysis", are considered emerging or declining themes.

Figure 8 illustrates the thematic evolution by title from 2014 to 2024. In the 2014-2016 period, the main focus was on "carbon", "emissions", and "performance". In the 2017-2020 period, themes began to branch out into new areas such as "firm", "energy", and "social". Furthermore, in the 2021-2023 period, there is more emphasis on themes such as "low-carbon", "power", and "change". For the period 2024-2024, research trends began to focus on the concept of sustainability, with keywords such as "sustainable", "family", "promote", and "green". This shows a shift in research focus from technical and performance aspects towards a more holistic and sustainability-oriented approach.

3.5. Network analysis of social structure

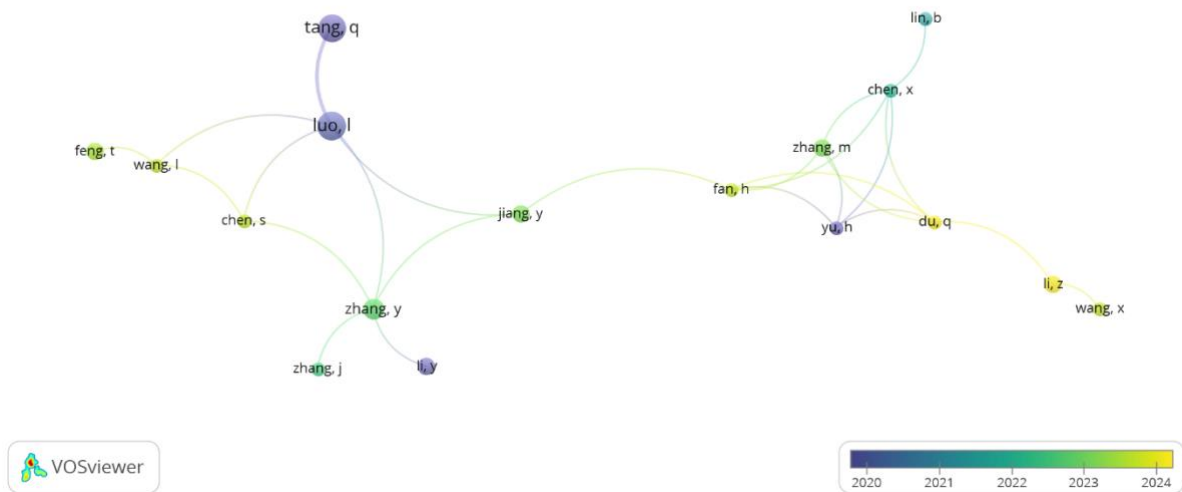


Figure 9: Graphical representation of the author’s network

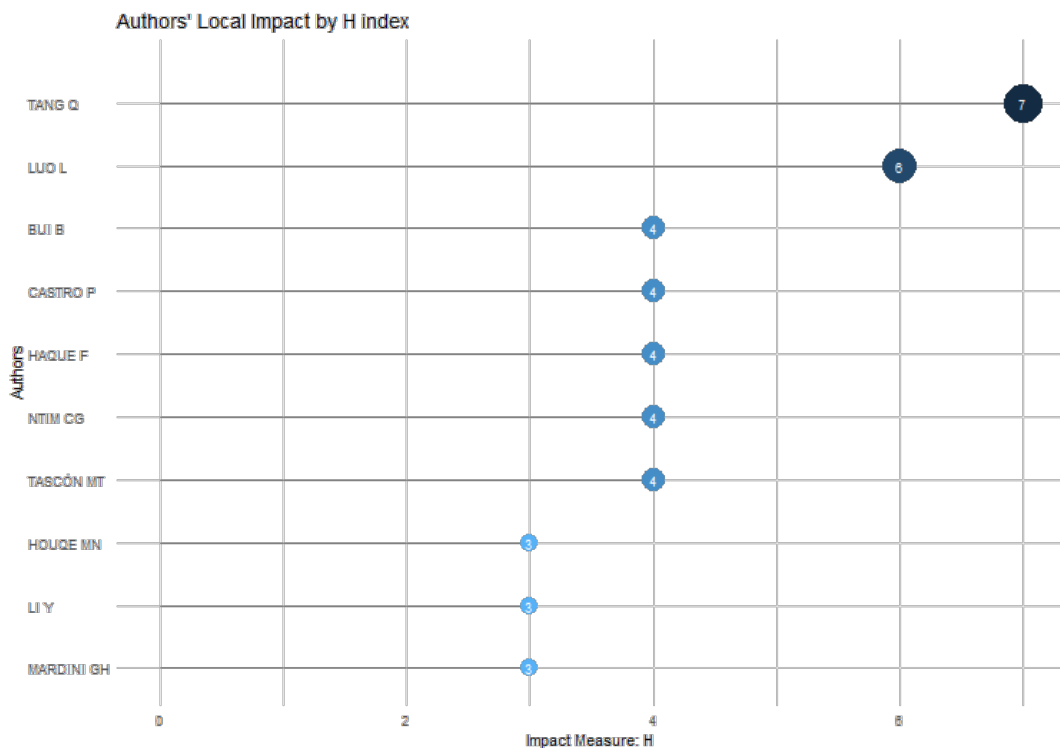


Figure 10: Top Authors’ Local Impact

In figure 9, the graph generated using VOSviewer software shows the relationship between authors in the research network. The colors in this graph reflect the year of publication, with a spectrum of colors from purple (2020) to yellow (2024). Relationships between authors are indicated by connecting lines, indicating collaboration or citations in their academic work.

Meanwhile, Figure 10 presents the local impact analysis of authors based on the H index. This diagram displays several authors with different H index values, where Tang Q has the highest value, followed by Lud L and Bui B. The size of the dot indicates the level of impact of each author in this research network. This graph provides an overview of an individual's contribution to research in a given field.

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Conflict of Interest: The authors declare no conflict of interest.

Informed Consent Statement/Ethics Approval: Not applicable.

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Bibliometric Analysis of Corporate Strategy and Digital Transformation Literature

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Abstract

There is tremendous growth in Digital Transformation as Corporate Strategy, where accelerated the adoption of digital tools and platforms as companies sought to maintain connectivity, improve efficiency, and engage customers online. Digital Transformation is a business strategy that uses digital technology to improve an organization's processes, products, and operations. With this study, it is aimed to conduct a bibliometric analysis of the publications that were published between 2011-2025 and can be accessed through Scopus, which is considered a qualified database. As a result of the analysis made by the Vosviewer program, the publications produced by individuals or institutions in a specific period and a specific region and the relationships between these publications are revealed numerically and visually. According to results; China is the country with the highest number of publications and citations. Germany follows it in the second place. For institution, Free University of Bozen-Bolzano at front with 2 documents and 187 citations. the journal with the most citations in the literature is School of Accounting, Zhongnan University and Research Center of Finance, Shanghai. The most publication is Free University of Bozen-Bolzano. The most occurrence for keywords are Digital Transformation, Corporate Strategy and Innovation.

Keywords: Digital Transformation, Corporate, Business Strategy

1. Introduction

Corporate strategy and digital transformation have become intertwined as businesses navigate an increasingly digitalized economy. Organizations must integrate digital technologies into their strategic frameworks to maintain competitiveness, improve efficiency, and enhance customer engagement (Bharadwaj et al., 2013).

The COVID-19 pandemic brought unprecedented challenges for businesses worldwide, transforming industries and compelling organizations to rethink their strategies. It underscored the significance of corporate resilience, adaptability, and innovation in responding to global crises.

As companies faced disruptions in supply chains, workforce management, consumer behavior, and operational frameworks, leaders had to adopt flexible approaches to navigate uncertainty. Business strategies during the pandemic evolved to emphasize several key aspects:

- a. Crisis Management and Business Continuity: Organizations focused on swift responses to sustain operations and protect employees. Many adopted remote work, reinforced safety measures, and developed contingency plans.
- b. Digital Transformation: The pandemic accelerated the use of digital technologies, enabling companies to

- maintain communication, enhance efficiency, and engage customers online.
- c. Stronger Supply Chains: Businesses reassessed their supply networks to minimize reliance on single sources, diversify suppliers, and prioritize local sourcing to mitigate risks.
 - d. Employee Well-being: The crisis highlighted the importance of supporting employees' physical and mental health through flexible work arrangements, wellness initiatives, and clear communication.
 - e. Customer-Centric Innovations: With shifts in consumer priorities and behaviors, businesses pivoted their products, services, and marketing approaches to meet new demands.
 - f. Sustainability and ESG Initiatives: Many organizations recognized the importance of sustainability and social responsibility, integrating environmental, social, and governance (ESG) factors into their strategies to align with evolving stakeholder expectations.

By analyzing the strategies adopted during the COVID-19 pandemic, businesses can gain valuable insights into how to build resilience, adapt to disruptions, and thrive in a volatile and uncertain world. These lessons remain relevant for navigating future crises and achieving long-term success.

This work aims to undertake a comprehensive bibliometric review, outlining the key element of connection between Corporate Strategy and Digital Transformation for the next theoretical and empirical studies. We use bibliometric meta-analysis, data visualization and content analysis tools (Alon et al., 2018). As of now, there are some researches regarding Corporate Strategy and Digital Transformation that have explained the connection and relation between them. This study is structured as follows, section 2 explores Literature Review, section 3 discusses methodological, Section 4 Results and Findings and Section 5 conclusion.

2. Method

Data for this research were extracted from the Scopus database using the document analysis method. The systematic analysis and review of printed and electronic documents are defined as document analysis. The Scopus database search using both the keywords “Corporate Strategy” and “Digital Transformation” covering certain years (2011-2025). Additionally, among these results, the particle filter was used to assess only the articles. At least 1 article, using the code below to Scopus, we define those 132 documents fulfill the criteria.

The code is as below

TITLE-ABS-KEY (Corporate Strategy AND Digital Transformation) AND PUBYEAR > 2010 AND PUBYEAR < 2025 ANF (LIMIT- TO (PUBSTAGE, “final”))

Table 1: Number of Publications on Corporate Strategy and Digital Transformation

No.	Year	Number of Article
1.	2011	1
2.	2016	1
3.	2017	1
4.	2018	2
5.	2019	1
6.	2020	7
7.	2021	19
8.	2022	23
9.	2023	28
10.	2024	46
11.	2025	31

As seen in Table 1, the articles on Corporate Strategy and Digital Transformation are the most published in 2024. The language of the all publications in searches done expressly for Scopus is English.

Table 2: List of Keywords

No	Keyword	Number of Articles
1	Corporate Strategy	70
2	Digital Transformation	79
3	China	34
4	Innovation	24
5	Digitalization	21
6	Sustainability	16
7	Sustainable Development	14
8	Corporates	11
9	Decision Making	15
10	Governance Approach	9

Author, institution, country and source were used to examine the data. One hundred thirty-two publications on Corporate Strategy and Digital Transformation ran simultaneously with these analysis to eliminate overlap. The study's main limitation is that there is only one database, Scopus, through which the publications could be retrieved.

3. Results

3.1. Top Streaming Countries

Data was analyzed at the program according to citation. The top 10 countries that produce the most publications for article studies on Corporate Strategy and Digital Transformation are listed in Table 3. The nation with the most publications and citations is China. Germany follows it in the second place.

In Figure 1 where the bibliometric network analysis is shown, it is possible to see the connections between countries with the display of common colors. The size of the circle indicates the excess number of publications belonging to the countries. Circle colors denote the existence of joint work between countries. The lines between the circles show which countries have relations with others.

Table 3: Top Streaming Countries

Country	Document N.	Citation N.
Australia	2	9
Austria	3	136
Belgium	1	1
Brazil	5	149
Bulgaria	4	14
Canada	2	77
Chile	1	17
China	46	792
Colombia	2	1
Czech Republic	2	30
Denmark	3	112
Finland	1	2
France	2	302
Georgia	1	3
Germany	13	154
Greece	1	135
Hongkong	1	4
Hungary	1	3
India	5	37
Indonesia	1	1

Israel	1	7
Italy	4	214
Latvia	1	0
Liechtenstein	1	4
Malaysia	3	7
Mexico	2	5
Mirkus Inc	1	1
Netherlands	3	34
New Zealand	1	17
Nigeria	1	0
Pakistan	1	9
Philippines	1	26
Portugal	3	182
Russian Federation	11	65
Saudi Arabia	1	5
Singapore	1	1
Slovakia	2	135
South Korea	7	70
Spain	3	111
Switzerland	3	207
Taiwan	3	318
Tunisia	1	14
Turkey	5	70
Ukraine	2	3
United Kingdom	9	299
United States	10	231
University of Alicante	1	49
Vietnam	1	2

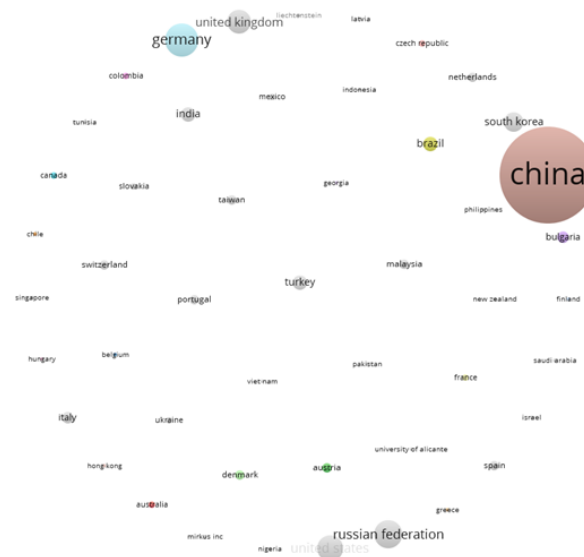


Figure 1: Country Network Map (Corporate Strategy and Digital Transformation)

When findings are evaluated in terms of linkage strength, there are no countries with the highest power.

3.2. Top Publishing Institution

In the program, data were analyzed under the citation. The top 16 institutions that provide the most papers for article research on Corporate Strategy and Digital Transformation are listed in Table 4. School of Accounting, Zhongnan University and Research Center of Finance, Shanghai with 1 document and 307 citations.

Table 4: Top Publishing Institutions

Institution	Document N.	Citation N.
Department of Applied Informatics, University of Macedonia	1	135
Department of Manufacturing Management	1	132
Department of Production Engineering	1	139
Ecole de management leonard de vinci	1	225
Em Normandie, 64, rue ranelagh	1	225
Engineering Management, College of	1	139
Free University of Bozen-Bolzano	2	187
Group of Sustainability, School of Management	1	139
IPAG Business School	1	225
ISEG – Lisbon School of Economics	1	176
Mountainuniversitat Leoben	1	132
National Taiwan University	1	306
Neoma Business School	1	225
Research Center of Finance, Shanghai	1	307
School of Accounting, Zhongnan University	1	307
University Aberta	1	176

In figure 2 where the network maps are shown, it is possible to see the connections between institutions with the display of common colors.



Figure 2: Top Publishing Institutions Network (Corporate Strategy and Digital Transformation)

3.3. Sources with the Most Publications

Data was analyzed at the program according to citation As seen in Table 5, the journal with the most citations in the literature is Technological Forecasting and Social Change. The most publication is Sustainability (Switzerland).

Table 5: Top Publishing Institutions

Publisher	Document N.	Citation N.
Aip Conference Proceedings	2	1
Applied Economics	5	12
Applied Economics Letters	2	21

Business Strategy and The Environment	5	161
Industry 4.0 for smes: challenges	2	187
Journal of Business Research	3	273
Journal of Environmental Management	2	4
Lecture notes in Business Information	2	4
Resources Policy	2	10
Sustainability (Switzerland)	16	250
Systems	2	3
Technological Forecasting and Social Change	8	368
Technology Analysis and Strategic Marketing	2	7
Technology in Society	4	363

In Figure 3 where the network analysis is shown, it is possible to see the connections between sources with the display of common colors. There is no linkage. The top documents and citations number is Technological Forecasting and Social Change

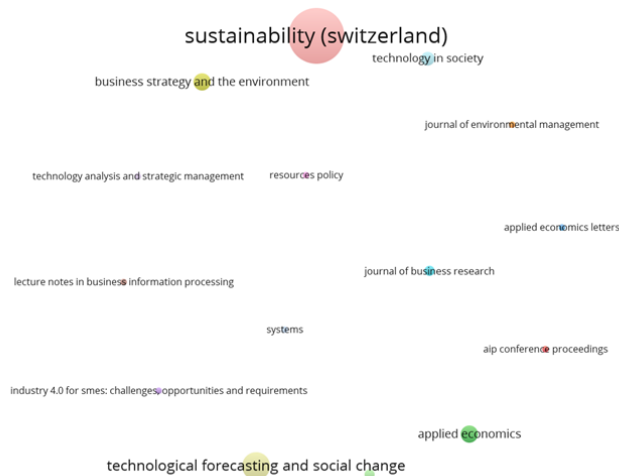


Figure 3: Public Network Map (Corporate Strategy and Digital Transformation)

3.4. Co-occurrence Keywords

The keyword analysis was done to assess the subject matter of related scientific articles. Two were determined to be the bare minimum of occurrences in this investigation. The most occurrence for keywords are Digital Transformation, Corporate Strategy and Innovation.

Table 6: Keyword Occurrence

Keyword	Occurrences
Digital Transformation	64
Corporate Strategy	16
Digitalization	8
Business Strategy	6
Corporate Governance	5
Industry 4.0	7
Innovation	9
Big Data	4

Strategic Management	4
Digital Strategy	5

Figure 4 displays the most popular terms associated with the idea of Corporate Strategy and Digital Transformation or the map of research trends. The circle size depicts the overuse of the keywords, the circle colors show which keywords are used in conjunction, and the lines connecting the circles demonstrate that the keywords are connected. The most linkage for occurrence keywords are Digital Transformation, Corporate Strategy and Innovation.

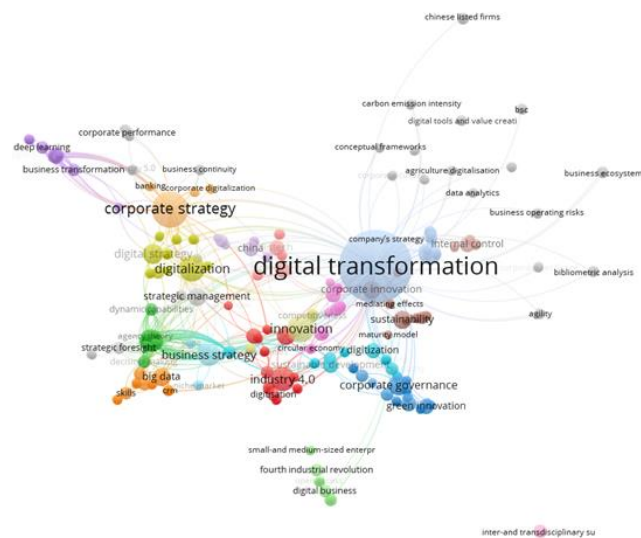


Figure 4: Keyword Network Map

4. Discussion

The Scopus database has been used in this study to review the literature on connection between Corporate Strategy and Digital Transformation. It uses Vosviewer, an application that makes easier to comprehend and see the data, analyses conducted regarding the keywords “country”, “institutions”, “sources”, “author” and “keyword occurrence”. The field literature is dominated by China and Germany. This circumstance also demonstrates the link between academic research and sectoral indicators. According to results; China is the country with the highest number of publications and citations. Germany follows it in the second place. For institution, Free University of Bozen-Bolzano at front with 2 documents and 187 citations. the journal with the most citations in the literature is School of Accounting, Zhongnan University and Research Center of Finance, Shanghai. The most publication is Free University of Bozen-Bolzano. The most occurrence for keywords are Digital Transformation, Corporate Strategy and Innovation.

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