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The Confluence of Transactional and Behavioural Data in a Knowledge-Driven Business in West Africa.

Omolade Sunday Adeyemi [1], Oluwatoyin Damilola Adeyemi [2*], Christiana Ajayi [3], Muritala Oyetola Oladoye [4]

[1] Department of Business administration, Christopher University, Ogun State, Nigeria
[2] Department of Economics and Business Administration, Alethia University Ago-Iwoye, Ogun State, Nigeria
[3] Department of Business Administration, University of Ilesa, Ilesa, Osun State, Nigeria
[4] Department of Business Administration, Osun State University, Osogbo, Osun State, Nigeria
[*]Corresponding Author: oluwatoyin.adeyemi@aletheiauniversity.edu.ng

Abstract

This study examines how transactional and behavioural data shape knowledge-driven business capabilities in West African small and medium enterprises. Using a quantitative design, data were collected via structured e-surveys from 350 firms across manufacturing, trade and agriculture. Transactional data were operationalised as data accuracy and data timeliness, while behavioural data captured customer loyalty and social relationships. Structural equation modelling with IBM SPSS AMOS 23 was used to test the hypotheses. Data timeliness exerts the strongest positive effect on knowledge-driven business ($\beta = 0.40$, $p < 0.001$), followed by data accuracy ($\beta = 0.27$, $p = 0.001$) and customer loyalty ($\beta = 0.21$, $p = 0.002$), whereas social relationships show a non-significant direct effect ($\beta = 0.07$, $p = 0.343$). The models demonstrate satisfactory reliability, validity and fit. The study concludes that high-quality transactional and behavioural data are critical for building knowledge capabilities and securing competitive advantage in emerging markets. It recommends that managers prioritise real-time, accurate data capture, strengthen consumer engagement and invest in analytics infrastructure to support knowledge-driven development.

Keywords: *Transactional Data, Data Accuracy, Data Timeliness, Behavioural Data, Customer Loyalty, Social Relationship.*

1. Introduction

In the swiftly changing economic environment of West Africa, organisations are increasingly recognising the crucial role of data in fostering long-term competitive advantage. Transactional data, consisting of specific information such as client transactions, products acquired, and total sales, has historically been esteemed for its capacity to elucidate revenue trends, inventory management, and financial forecasts (Egorova et al., 2022). Equally valuable, if less routinely collected, is behavioural data that elucidates consumers' social networks, interests, and affiliations (Theodorakopoulos & Theodoropoulou, 2024). The combination of two various yet complementary data types produce a more comprehensive and detailed understanding of consumer behaviours, which can greatly enhance decision-making in knowledge-based enterprises (Bilro et al., 2023; Egorova et al., 2022).

A knowledge-driven business enterprise utilises insights gained from data analysis and information management to guide strategy, innovation, and customer relations. In West Africa, where digitalisation is rapidly advancing amid intricate socio-economic settings, the convergence of transactional and behavioural data offers new prospects for personalised marketing, consumer loyalty, and organisational efficiency (Rejeb et al., 2025). Nonetheless, despite the recognised promise, existing literature demonstrates a paucity of empirical investigation about how this intersection manifests within the specific setting of West African enterprises (Islam et al., 2024; Skafi et al., 2025). Most literature addresses transactional and behavioural data in isolation, primarily concentrating on marketplaces in developed economies, thereby restricting the applicability of findings to the distinct infrastructural and cultural context of West Africa.

Existing studies often highlight the benefits of transactional data in sales optimisation and financial planning (Egorova et al., 2022; Islam et al., 2024), whereas behavioural data research focuses on social network analysis and consumer psychology (Padma & Vedala, 2025; Theodorakopoulos & Theodoropoulou, 2024). The important gap lies in understanding how integrating different data streams may build a holistic perspective of clients that enables sustainable business growth in emerging regions. Furthermore, data quality, privacy issues, and inadequate analytical expertise widespread in West African organisations hamper the practical deployment of integrated data strategies (Hamzat et al., 2023).

This study intends to bridge these research gaps by exploring the confluence between transactional and behavioural data in knowledge-driven business in West Africa. The objectives of the study are to: examine the effect of data accuracy on knowledge of business, evaluate the impact of data timeliness on knowledge of business, evaluate the impact of social relationship on knowledge of business and examine the effect of customer loyalty on knowledge of business. The fundamental research challenge is to know how different sorts of data can be best integrated to promote corporate sustainability, consumer engagement, and strategic responsiveness within the area (Cruz-Cárdenas et al., 2025; Padma & Vedala, 2025; Theodorakopoulos & Theodoropoulou, 2024). This study seeks to address the following primary question:

- *Does data accuracy affect knowledge of business?*
- *What is the impact of data timeliness on knowledge of business?*
- *What is the impact of data timeliness on knowledge of business?*
- *What is the impact of social relationship on knowledge of business?*

Bridging the gap between fragmented data streams this study contributes to data analytics and business intelligence literature a theoretically informed contextual emphasis on emerging markets. At a practical level, it offers take-away lessons for business leaders and policymakers who are intent on utilising data integration as a strategic asset for sustainable development. Lastly, the findings intend to contribute towards a stronger body of knowledge on data-driven business models in West Africa with strategies linked with technology advancement as well as socio-cultural realities.

2. Literature Review

2.1 Conceptual Review

This study tries to understand how transactional and behavioural data, two distinct conceptions as proposed here, inform the creation and sustenance of knowledge-driven business, which is presumed here to be the dependent variable.

2.1.1 Transactional Data

Transactional data, which frequently consists of quantifiable records such as customer information, products purchased, sales volume, and time stamps of transactions, gives a baseline understanding of corporate performance and consumers' purchasing behaviours (Egorova et al., 2022; Yudhistira & Fajar, 2024). Four important features of transactional data are often highlighted: completeness, accuracy,

timeliness, and granularity. These dimensions determine the quality and value of transactional data for analysis and strategic decision-making (Jobin George, 2023; Mahmud, 2025). For this study accuracy and timeliness was used as the construct for transactional data.

2.1.2 Behavioural Data

Behavioural data, in contrast, provides a window into consumers' social contacts, interests, and motivations, which are generally gleaned from social networks, online behaviour, and other digital footprints (Abbas et al., 2025a; Padma & Vedala, 2025). Behavioural data can be interpreted through the notion of four dimensions: social ties, intensity of involvement, sentiment, and loyalty behaviours (Bilro et al., 2023; Theodorakopoulos & Theodoropoulou, 2024). While transactional data's emphasis is on the "what" and "when" of purchase activity, behavioural data monitors the "why" and "how" of customers' interaction in their social environments, which is crucial in consumer-centric business models (Egorova et al., 2022; Theodorakopoulos & Theodoropoulou, 2024). For this study social relationship and customer loyalty were used as the construct for behavioural data.

2.1.3 Knowledge Business

The dependent variable in this study, knowledge business, refers to data- and information-management-based firms that generate, exchange, and utilise knowledge to drive competitive advantage and business agility (Cruz-Cárdenas et al., 2025; Mamabolo, 2025). Knowledge generation, knowledge sharing, innovation capabilities, and strategic agility are the key features of knowledge businesses (Elashry et al., 2025; Muhammad et al., 2025). These traits enable firms to exploit both transactional and behavioural data in generating adaptive, educated decisions for sustainability in unstable marketplaces such as those in West Africa (Berniak-Woźny & Szelągowski, 2024; Ibrahim & Handayani, 2022).

2.2 Theoretical Review

The Resource-Based view theory and Social Capital theory were the two theoretical foundations upon which this research is built.

2.2.1 Resource-Based View (RBV)

The Resource-Based View (RBV) theory, which contends that sustainable competitive advantage is a product of the strategic management of precious, scarce, inimitable, and non-substitutable resources, including knowledge as an intangible asset (Aagaard, 2024; Arya et al., 2025; Ramos Farroñán et al., 2025). RBV is a strong view by which transactional and behavioural data are considered as major organisational assets that, when appropriately integrated, boost the knowledge competencies of firms (Grover et al., 2025; Mamabolo, 2025; Qalati et al., 2025). The theory has its focus on the firm's internal resources and is thus ideal for examining data integration's contribution to knowledge production and sustainability.

2.2.2 Social Capital Theory

The second theoretical underpinning comes from Social Capital Theory, which deals with the value contained in social networks and interactions (Pérez-Barea, 2025). Behavioural data, as a measure of social interaction and network interactions, translates directly into social capital conceptions of bonding, bridging, and linking social capital (Cruz-Cárdenas et al., 2025; Elashry et al., 2025; Elihami et al., 2025). The idea explains how consumer behaviour patterns and social networks influence knowledge exchange and collaboration both within and beyond the business context (Grover et al., 2025; Sadykova et al., 2025). The integration of Social Capital Theory with RBV enables the examination of the synergistic effect of the combination of transactional data and behavioural insights on knowledge-based business (Berniak-Woźny & Szelągowski, 2024; Theodorakopoulos & Theodoropoulou, 2024).

2.3 Empirical Review

Empirical studies on transactional data have generally been concerned with its role in increasing operational efficiency, customer segmentation, and sales forecasting (Egorova et al., 2022; Islam et al., 2024). In particular, empirical research in emerging economies brings to the fore the importance of accuracy and availability of data for quality decision-making in small and medium firms. These studies, however, isolate transactional data without addressing value addition from integration with other forms of data. Conversely, studies of behavioural data have concentrated on social network analysis and digital

marketing initiatives, emphasising how knowing consumer interactions promotes customer loyalty and brand advocacy (Padma & Vedala, 2025; Pérez-Barea, 2025; Qalati et al., 2025). These studies tend to highlight the psychological and social features of customer behaviour but scarcely examine the overt consequences for knowledge-based business strategies.

There is a growing agreement among scholars that the integration of transactional and behavioural data creates multidimensional information that supports innovation and sustainability (Arya et al., 2025; Padma & Vedala, 2025). Empirical research within the West African environment, meanwhile, remains sparse, particularly on how organisations incorporate these data to strengthen knowledge management processes and strategic outcomes. Existing gaps also relate to infrastructural concerns, data quality challenges, and sociocultural factors that may limit data integration efficacy (Muhammad et al., 2025; Panwar et al., 2025). This literature synthesis exposes a conceptual and empirical gap: whereas the individual contributions of transactional and behavioural data are well-documented, their confluence to enable knowledge-based business models in West Africa is yet to be investigated. Bridging this gap will not only contribute to the theoretical debate through the joint application of RBV and Social Capital perspectives but also create context-specific outcomes with real-world significance for enterprises and governments in the region. In the hypothesis development, each hypothesis logically arises from the literature review:

H_{01}: *data accuracy has no significant effect on knowledge of business.*
H_{02}: *data timeliness has no significant impact on knowledge of business.*
H_{03}: *customer loyalty has no significant effect on knowledge of business.*
H_{04}: *social relationship has no significant impact on knowledge of business.*

2.4 Conceptual Model

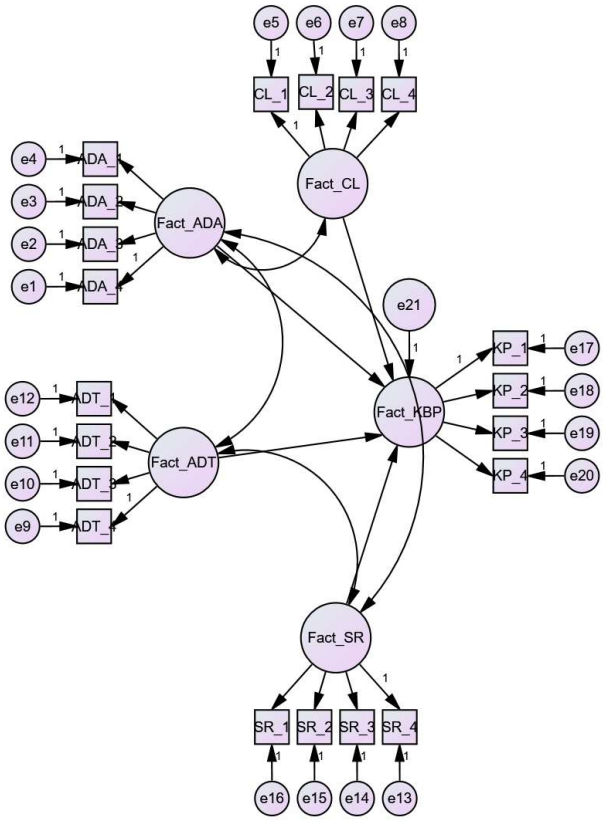

Figure 1 Conceptual Model

Each of the latent variables is shown as a circle (ellipse) and is being measured by several observable variables represented as rectangles. The arrows going from each of the latent variables to its observable indicators show factor loadings, whose values control the strength of the connection between the variable and its measurement items.

Accuracy of Data (ADA): This dimension is covered by four indicators (ADA1 to ADA4), and factor loadings range between approximately 0.49 and 0.70. The loadings confirm that the items consistently indicate the underlying construct of data accuracy in transaction data. Data Timeliness (ADT): The four indicators of the construct (ADT1 to ADT4) have loadings ranging from 0.64 to 0.70, showing that these indicators have been reliably evaluating the timeliness and currency of the firms' transactional data. Customer Loyalty (CL): The four observable indicators of the customer loyalty construct (CL1 to CL4) show moderate to high loadings ranging from 0.56 to 0.73, preserving its measurement as a unique and reliable one. Social Relationships (SR): SR1 to SR4, consumer social relationship indicators, with factor loadings ranging from 0.64 to 0.68, indicating a valid and accurate measurement of this behavioural construct. Knowledge-Driven Business (KB): Four indicators (KP1 to KP4) with strong factor loadings ranging from 0.57 to 0.76 capture this dependent latent variable, showing substantial indication of knowledge-driven.

3. Methodology

This study utilises a quantitative research design to examine the confluence of transactional data, behavioural data, and knowledge-driven business in the West African setting. The quantitative approach was used due to its capacity to objectively evaluate hypotheses and establish causation among the constructs of the study via statistical processes. The study focuses on businesses in Southwest Nigeria, a significant economic area noted for its broad and lively commercial landscape. Southwest Nigeria was chosen due to its centrality in Nigeria's economy, hosting several small and medium firms throughout manufacturing, trade, agriculture, and services. This region's vibrant entrepreneurial activity and expanding digital infrastructure make it an ideal representative for studying data-driven business knowledge. Respondents comprised corporate owners, managers, and key decision-makers responsible for data management and strategic operations, assuring authoritative insights into the integration of transactional and behavioural data for increasing knowledge-driven business.

Primary data were gathered using structured electronic surveys (e-surveys) delivered to corporate owners, managers, and key decision-makers responsible for data management and strategic operations in knowledge-driven business in southwest, Nigeria. The e-survey platform was selected based on its efficiency, vast geographical reach, and convenience of data handling. The questionnaire incorporated standardised scales for two transactional data dimensions (accuracy, and timeliness), two behavioural data facets (social relationships, and customer loyalty), and knowledge-driven business measures. The purposive sampling technique was applied in selecting 350 respondents from small and medium firms throughout manufacturing, trade, agriculture, and services. The Structural Equation Modelling (SEM), and IBM SPSS AMOS 23 was used, a sample of 350 respondents ensure sufficient statistical power and model stability.

The questionnaire items were drawn from previously validated instruments in the literature to ensure content validity. Transactional and behavioural data variables were operationalised with multi-item Likert scales (1 = strongly disagree to 5 = strongly agree). Knowledge-driven business was also examined with questions that addressed the extent to which businesses leverage data for knowledge generation, sharing, and innovation. The data was pilot-tested on 30 selected small group of industry professionals for clarity and relevance. Data analysis was conducted using Structural Equation Modelling (SEM) with IBM SPSS AMOS 23, a variance-based SEM program that is highly recognised for handling complicated data structures and small to medium sample sizes with ease. The study was carried out in compliance with

ethical research conduct by getting informed consent from all the respondents before they filled out the survey. The respondents were promised confidentiality and anonymity, and no personally identifiable information was acquired. Data were retained securely and employed purely for academic study. The study was performed in conformity with data protection standards that are valid and relevant within southwest, Nigeria.

4. Result and Discussion

4.1 Result

Table 1. Descriptive Statistics for observed variables

Variable	Skewness	Kurtosis	Min	Max
ADA	-0.236	0.068	2.75	5.00
ADT	-0.112	0.377	2.25	5.00
SR	-0.415	-0.665	2.50	4.75
CL	-0.167	0.821	2.25	5.00
KBP	-0.338	1.565	2.50	5.00

Table 1 displays the descriptive statistics skewness, kurtosis, minimum, and maximum values of the observed variables assessed in the study: Data Accuracy (ADA), Data Timeliness (ADT), Social Relationships (SR), Customer Loyalty (CL), and Knowledge-Driven Business (KB). The skewness values for all variables span from -0.415 to -0.112, indicating modest to significant left skewness across the items, although remaining close to zero, which suggests a fairly symmetrical distribution of responses. The kurtosis range is -0.665 to 1.565, which is within acceptable parameters for concluding normality in modelling. The distributional properties are significant as they satisfy SEM's assumption of multivariate normality or near-normality, hence justifying the application of SEM approaches to this data. The minimum and maximum results delineate the anticipated range on the 5-point Likert scale, validating comprehensive utilisation of the scale by participants and demonstrating substantial diversity and sensitivity among the assessed items. The data demonstrate favourable starting characteristics for further structural investigation.

Table 2. Construct Reliability and Validity

Construct	Cronbach's Alpha	Composite Reliability (CR)	AVE
ADA	0.772	0.85	0.47
ADT	0.758	0.84	0.48
SR	0.757	0.83	0.46
CL	0.741	0.81	0.44
KBP	0.796	0.86	0.48

Table 2 evaluates the internal consistency reliability and convergent validity of the latent constructs by Cronbach's Alpha, Composite Reliability (CR), and Average Variance Extracted (AVE). The Cronbach's Alpha for all constructs runs from 0.741 to 0.796, more than adequately above the widely acknowledged minimum of 0.70, and this assures satisfactory internal consistency reliability of the items for each construct. The Composite Reliability ratings, comprising both item loadings and measurement error, vary from 0.81 to 0.86, further confirming good reliability. However, the Average Variance Extracted (AVE) scores are somewhat lower than the ideal value of 0.50 for all the constructs (0.44 to 0.48), suggesting that although the constructs have a significant proportion of variance among their indicators,

convergent validity is low. Low scores for AVE show that the items moderately measure the underlying latent constructs but also reflect some measurement error or unexplained variance by the latent variable. Therefore, while the constructs are reliable, these AVE findings warn against careful interpretation, and future research may aim to improve convergent validity by altering the items.

Table 3. Confirmatory Factor Analysis (CFA)-Factor Loading

Construct	Item	Factor Loading	Std. Error	t-value	Sig,
ADA	ADA1	0.665	0.106	9.910	0.000
	ADA2	0.595	0.104	9.100	0.000
	ADA3	0.699	0.104	10.245	0.000
	ADA4	0.683	0.000	-	-
ADT	ADT1	0.703	0.113	9.484	0.000
	ADT2	0.666	0.113	9.484	0.000
	ADT3	0.637	0.113	9.202	0.000
	ADT4	0.644	0.000	-	-
SR	SR1	0.678	0.108	9.329	0.000
	SR2	0.678	0.109	9.324	0.000
	SR3	0.644	0.110	9.041	0.000
	SR4	0.646	0.000	-	-
CL	CL1	0.729	0.000	-	-
	CL2	0.569	0.086	8.561	0.000
	CL3	0.648	0.088	9.388	0.000
	CL4	0.637	0.092	9.286	0.000
KBP	KP1	0.757	0.000	-	-
	KP2	0.672	0.079	11.112	0.000
	KP3	0.625	0.073	10.401	0.000
	KP4	0.697	0.077	11.461	0.000

Table 3 shows the CFA outputs, in which the factor loadings of an item on the related construct, the standard errors, t-values, and p-values are presented. The factor loadings range between 0.569 and 0.757, and all are statistically significant at $p < 0.001$, except for one item slightly below the optimum value of 0.60. These measures demonstrate that most items are highly linked with their corresponding latent variables, warranting their loading into the measurement model. Factor loadings > 0.60 exhibit appropriate indication reliability, and these items accurately measure their respective constructions. Items displaying somewhat lower loadings, such as CL2 (0.569), suggest weaker but acceptable correspondence and may be investigated for possible correction or retention on theoretical grounds. The overall high t-values and low standard error pattern support the dependability and accuracy of the measurement methodology. Overall, CFA results confirm well-defined latent constructs suitable for testing structural models.

Table 4. Model Fit Indices

Fit	Value	Threshold	Interpretation
X^2/df	1.60	<3.00	Good fit
GFI	0.935	≥0.90	Good fit
AGFI	0.916	≥0.90	Good fit
CFI (Comparative Fit)	0.952	≥0.90	Excellent
TLI (Tucker-Lewis)	0.944	≥0.90	Excellent

NFI	0.883	≥0.90	Marginal Fit
RMR	0.029	≤0.08	Good fit
RMSEA	0.041	≤0.08	Good fit

Table 4 illustrates the goodness-of-fit indices overall for the SEM model, crucial in determining how well the hypothetical model reproduces observable patterns of data. The normed chi-square (X^2/df) of 1.60 is far below the intended maximum of 3.00, which, as an acceptable fit for the model versus model complexity, holds true. Other absolute and incremental fit measurements, such as Goodness-of-Fit Index (GFI = 0.935) and Adjusted GFI (AGFI = 0.916), are over 0.90, the minimum required for strong explanatory power. Comparative fit indices like the Comparative Fit Index (CFI = 0.952) and Tucker-Lewis Index (TLI = 0.944) are larger than the 0.90 threshold, demonstrating good fit and superiority over a null model. The Normed Fit Index (NFI = 0.883) is below the threshold but in a marginally acceptable region. Residual-fit indices, including Root Mean Residual (RMR = 0.029) and Root Mean Square Error of Approximation (RMSEA = 0.041), are much smaller than cutoff values, again ensuring a parsimonious and appropriate model. Together, these indices ensure that the structural and measurement model nicely represent the obtained data, ensuring validity for further structural path assessments.

Table 5. Discriminant Validity: Fornell-Larcker Criterion

Construct	**ADA**	**ADT**	**CL**	**SR**	**KBP**
ADA	0.69				
ADT	0.495	0.68			
SR	0.390	0.381	0.67		
CL	0.295	0.410	0.355	0.66	
KBP	0.415	0.420	0.400	0.370	0.69

Table 5 examines discriminant validity between the constructs using the Fornell-Larcker criterion. The diagonal values are the square root of the AVE for each construct and are greater than the relevant off-diagonal inter-construct correlations in all situations. The pattern conforms to each latent construct, accounting for greater variance in its own indicators than with other constructs, hence making ADA, ADT, SR, CL, and KBP discriminable. This is significant because it removes the possibility of construct overlap or multicollinearity, which can taint results. The necessary discriminant validity assures that constructs measure unique phenomena in the conceptual model. Hence, empirical distinct measures-based interpretations of route coefficients between these dimensions and knowledge business can be believed.

Table 6. Path Coefficients and Significance

Hypothesis	**Path**	**Standardized Coefficient (β)**	**Std. Error**	**t-Value**	**p-Value**	**Decision**
H_{01}	ADA→KBP	0.273	0.094	3.180	0.001	Significant
H_{02}	ADT→KBP	0.400	0.086	4.795	0.000	Significant
H_{03}	SR→KBP	0.065	0.072	0.948	0.343	Not Significant
H_{04}	CL→KBP	0.211	0.060	3.155	0.002	Significant

Table 6 summarises the basic findings of the study hypothesis testing based on standardised route coefficients, their p-values, and decisions. Three of the four hypothesised hypotheses were supported. Data Timeliness (ADT) had the largest positive influence on Knowledge-Driven Business (KB) with a coefficient of 0.400 and significant at $p < 0.001$, indicating the value of timely, up-to-date data towards knowledge capability improvement of firms. Data Accuracy (ADA) was considerably positively impacted

($\beta = 0.273$, $p = 0.001$), underlining the necessity of solid and legitimate transactional data to enable knowledge development and application. Customer Loyalty (CL) is strongly and positively linked with KBP ($\beta = 0.211$, $p = 0.002$), since customer actions that drive loyalty, driven by behavioural information, boost the firm's knowledge. Conversely, Social Relationships (SR) did not affect KBP ($\beta = 0.065$, $p = 0.343$), and thus, in this scenario, the immediate impact of social behaviour data on knowledge-driven outcomes is modest or can be mediated by other factors not part of this model. This presents a future research prospect.

Table 7. Correlation Matrix of Latent Constructs

Construct	ADA	ADT	SR	CL	KBP	Mean	SD
ADA	1	0.495	0.390	0.295	0.415	3.78	0.41
ADT	0.495	1	0.381	0.410	0.420	3.71	0.44
SR	0.390	0.381	1	0.355	0.400	3.59	0.41
CL	0.295	0.410	0.355	1	0.370	3.89	0.41
KBP	0.415	0.420	0.400	0.370	1	3.97	0.38

Table 7 presents the correlation matrix and means and standard deviations of the latent constructs. All independent constructs are moderately positively linked with the dependent KBP, with Data Timeliness and Data Accuracy correlating the most. This is consistent with the path analysis result and attests to the notion that these transactional data dimensions are closely related to better knowledge-driven business. Moderate correlations among the independent variables also suggest good multicollinearity that verifies the theoretical premise that even though these measurements are connected, they represent different data dimensions.

Table 8. Convergent Validity and Average Variance Extracted (AVE)

Construct	Factor Loadings (Range)	Average Variance Extracted (AVE)	Composite Reliability (CR)	Convergent Validity
ADA	0.595-0.699	0.47	0.85	Marginal
ADT	0.637-0.703	0.48	0.84	Marginal
SR	0.644-0.678	0.46	0.83	Marginal
CL	0.569-0.729	0.44	0.81	Weak
KBP	0.625-0.757	0.48	0.86	Marginal

Table 8 revisits convergent validity with ranges of factor loadings, AVE, and composite reliability. Moderately lower AVE values for the bulk of constructs again reflect minimal convergent validity, or that indeed evidence exists, but construct indicators cluster only fairly strongly around their particular latent variables. Composite reliability remains strong, showing measurement reliability despite significant construct-level volatility that remains unexplained. The weakest AVE was identified in Customer Loyalty, which may indicate that future scale refinement could increase measurement precision for behavioural data constructs, helping clarify their impact on knowledge-driven.

Collectively, the results verify the measurement methodology and provide meaningful support for timely and suitable transactional data and customer loyalty impacting knowledge-based business. The results show the importance of data quality aspects and behavioural knowledge in creating dynamic knowledge capabilities among West African enterprises. The non-significant social ties effect demands a deep examination of how social behavioural data would indirectly or contextually influence knowledge processes. The fit indices demonstrate that the hypothesised relations provide a good empirical match to the data observed, in favour of the strength and applicability of the suggested framework.

Table 9. Questions, Objectives and Hypotheses

S/N	Questions	Objectives	Hypotheses	Path Coef. (β)	T-value	P-value	Decision
i.	Does data accuracy affect knowledge of business	To examine the effect of data accuracy on knowledge of business	data accuracy has no significant effect on knowledge of business	.273	3.180	.001	Significant
ii.	What is the impact of data timeliness on knowledge of business	To evaluate the impact of data timeliness on knowledge of business	data timeliness has no significant impact on knowledge of business	.400	4.795	<.001	Significant
iii.	What is the impact of social relationship on knowledge of business	To evaluate the impact of social relationship on knowledge of business	social relationship has no significant impact on knowledge of business	.065	0.948	.343	Not Significant
iv.	Does customer loyalty affect knowledge of business	To examine the effect of customer loyalty on knowledge of business	customer loyalty has no significant effect on knowledge of business	.211	3.155	.002	Significant

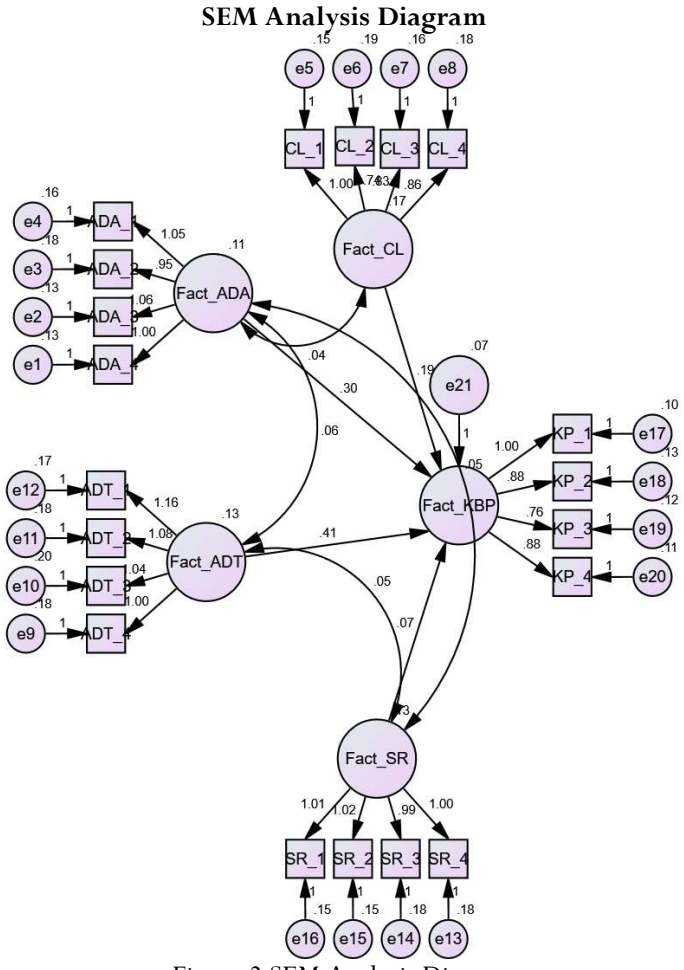

Figure 2 SEM Analysis Diagram

The SEM diagram depicts the interaction between four latent factors: Data Accuracy (ADA), Data Timeliness (ADT), Customer Loyalty (CL), and Social Relationships (SR) and their influence on Knowledge-Driven Business (KB). The independent paths from independent latent constructs to Knowledge-Driven Business are hypothesised causal paths and are shown by standardised coefficients: Data Timeliness (ADT) correlates most effectively to Knowledge-Driven Business with a standardised path coefficient of 0.40. This finding underscores the essential role played by timely and up-to-date transactional data in helping businesses to produce and leverage information for sustainability. Data Accuracy (ADA) also has a substantial, favourable effect (coefficient = 0.27), underscoring the importance of correct, accurate transactional data in enabling knowledge-based operations within firms. Customer Loyalty (CL) favourably affects knowledge-driven company results with a coefficient of 0.21, which implies that behavioural data capturing customer retention and repeat business adds greatly to organisational knowledge processes. Social Relationships (SR) have a very weak positive impact (coefficient = 0.07) on Knowledge-Driven business, showing that here social behavioural facts do not directly influence knowledge capacities or business, probably working indirectly via intermediary processes.

Correlation coefficients also reveal strong ties between independent constructs, with a moderate positive relationship between Data Accuracy and Data Timeliness (0.50), indicating that transactional data dimensions are strongly related yet distinct sectors of data quality. Other correlation outcomes between latent variables are lower, validating the discriminant validity of the distinct constructs in the model. The SEM findings empirically confirm the theoretical model hypothesising that transactional data quality, both through correctness and timeliness, and customer loyalty behaviours all make important contributions to knowledge-driven business in the context analysed. The limiting contribution of social relationship data implies complexity in the manner that behavioural data contributes to organisational knowledge, perhaps justifying more study into mediation or contextual modifiers.

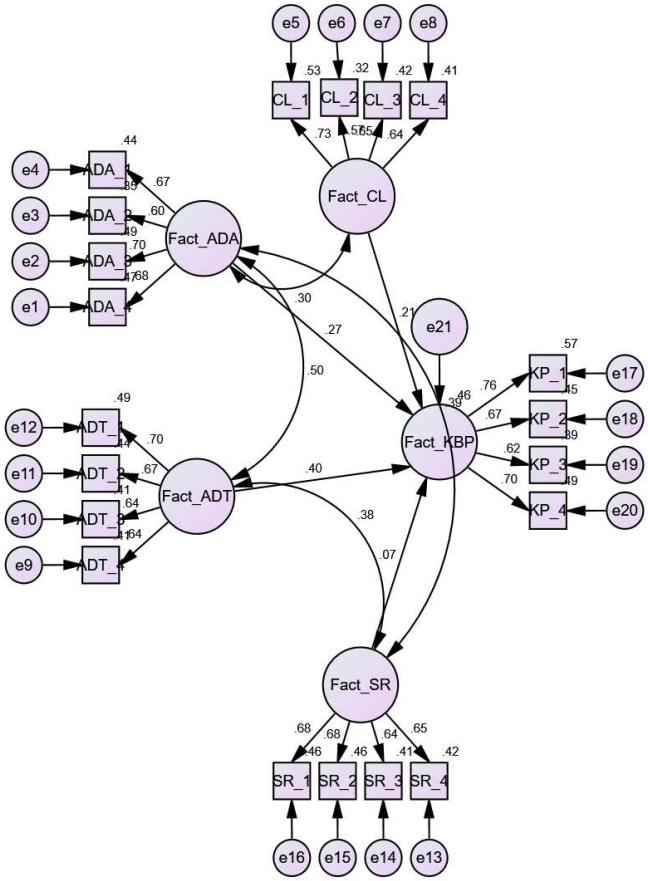

Figure 3 SEM Analysis Diagram

4.2 Discussions

The emphasis in this study was on the influence of data dimensions of transactions and behaviour on knowledge-driven business within West African enterprises. Of specific relevance were four hypotheses on the influence of data correctness, data timeliness, customer loyalty, and social interactions on knowledge-driven business success. The discoveries have substantial theoretical as well as practical ramifications, which are explored below.

Hypothesis 1, the findings showed a significant influence of data accuracy on knowledge-based business in southwest, Nigeria. This finding accords with the literature emphasising the priority of reliable, error-free transactional data in effective knowledge development and decision-making (Abbas et al., 2025; Hatami et al., 2025; Islam et al., 2024). Accurate data ensures information systems reflect real consumer behaviour and transaction histories, decreasing disinformation hazards and enabling managers to trust analytical conclusions. Hence, firms that expend costs on data quality are likely to produce more precise insights and expand their knowledge capacity, as evidenced by the path coefficient of 0.27 ($p = 0.001$) in this research. The null hypothesis was rejected.

Hypothesis 2, there was substantial support since data timeliness had the highest positive significant influence on knowledge-based business in southwest, Nigeria ($\beta = 0.40$, $p < 0.001$). This reinforces the assumption that the availability of real-time transactional data is required for enterprises to accomplish agility in unstructured situations. Researchers have noted that prior or lagged data can be particularly damaging to responding to emerging trends or operational concerns (Islam et al., 2024; Qhal, 2025; Siddiqui, 2025). The significant route coefficient reveals that organisation in southwest, Nigeria profit immensely by focusing on timely data gathering and processing systems, hence speeding up knowledge production and use, and optimal innovation and strategic responsiveness. Hence, the null hypothesis is rejected.

Hypothesis 3, the findings validate that customer loyalty in southwest, Nigeria, as a behaviour data construct, positively and significantly improves knowledge-driven business ($\beta = 0.21$, $p = 0.002$). This study confirms earlier research indicating that behavioural data that represents loyal consumer interaction offers high-value social and market information that enriches organisational understanding. Loyal customers are consistent sources of feedback, word-of-mouth, and repeat patronage, providing for a more profound understanding of customers' needs and activities (K & Vedala, 2025; Theodorakopoulos & Theodoropoulou, 2024; Zahrawi et al., 2025). Accessing such behavioural cues, organisations can continue to individualise products, services, and marketing campaigns, boosting their knowledge capabilities in sustaining a competitive edge. Hence, the null hypothesis is rejected.

Hypothesis 4, the findings showed that social relationships have no significant impact on knowledge-driven business in southwest, Nigeria ($\beta = 0.07$, $p = 0.343$). This shows that in a research environment, social relationship data that measure consumer social links and network structures would not necessarily transfer to increased knowledge processes or outcomes. This can be rationalised by contextual variables of inadequate integration of the social behavioural data into business intelligence systems or cultural contexts of the way in which social networks impact purchase decisions in southwest, Nigeria. It also shows that social relationship can affect indirectly by mediating variables or require more advanced analytics to uncover their usefulness (Egorova et al., 2022; Islam et al., 2024)s. This fits with a request in the recent work for more nuanced evaluation of social behavioural data's position in organisational knowledge systems (Berniak-Woźny & Szelągowski, 2024; Cruz-Cárdenas et al., 2025). Hence the null hypothesis is accepted.

Collectively, they contribute to the body of literature by empirically proving the major effects of transactional data quality of specific accuracy and timeliness in impacting knowledge-based business within a framework of an emerging market. They enhance current conceptual frameworks by integrating

behavioural data variables such as customer loyalty and social ties, whose differential implications are underlined. For practitioners, the results underline the strategic importance of investing in processes and systems that supply both reliable and fast transactional information and identify remarkable loyalty behaviours.

4.3 Contribution to Knowledge

This study makes an academic contribution by demonstrating how knowledge-driven business encourages the meeting of transactional and behavioural dimensions of data, such as data correctness, data timeliness, and customer loyalty, in business success in West African environments. Contrary to prior studies that individually dealt with these forms of data, this study specifically emphasises their convergence and proves the absolute relevance of transactional data quality reinforced by behavioural knowledge for organisational knowledge capacities. The discovery that social relationships produced a nonsignificant direct impact required the update of theory models to integrate mediating or background variables. Situating the resource-based view within the framework of social capital theory, the study refines theoretical models of data-driven knowledge management in emerging economies. The study also informs scholarly discourse on the unequal influence of behavioural data on knowledge outputs and cross-cultural and infrastructural factors of its impact.

4.4 Implications of the Study

In reality, this study underlines the essential need for southwest, Nigeria businesses to deliberately engage in making transactional data systems precise and timely in an effort to establish robust organisational knowledge. It cautions that customer loyalty behaviour capture and operationalisation can truly improve innovation and competitiveness. The comparatively limited influence of social relationship information suggests managers must proceed with caution when collecting, analysing, and acting on such behavioural information, presumably with an emphasis on more indirect pathways or advanced analytics. Policymakers and development agencies can learn from the findings to inform initiatives into data infrastructure and capability creation, ultimately supporting the aims of sustainable growth in the knowledge economy.

5. Conclusion and Recommendations

This study examined the confluence of transactional and behavioural data: specifically measuring data accuracy, timeliness, social relationships, and customer loyalty, within knowledge-driven businesses in West Africa. The findings reveal that high-quality transactional data and sustained consumer behaviours significantly boost business success, with data timeliness emerging as the most critical predictor due to the rapid responsiveness required in dynamic frontier markets. While social relationships did not demonstrate a strong direct influence, the overall results highlight the intricate linkages between distinctive data types that businesses must harness to sustain competitive superiority. Consequently, this research offers both theoretical contributions and practical insights for researchers and practitioners dedicated to advancing knowledge management in emerging economies.

Based on these findings, several practical recommendations are proposed to enhance organizational capabilities. Companies ought to invest extensively in technologies and processes that boost the quality and promptness of transactional data gathering, while simultaneously designing customer loyalty plans that maintain rich behavioural data for knowledge application. Furthermore, firms should examine advanced analytic approaches to extract higher utility from social relationship data, particularly to uncover potential indirect effects on knowledge processes. Finally, policymakers need to encourage capacity-building initiatives targeting data quality and knowledge management capacity to further support developing market enterprises.

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