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RESEARCH ARTICLE

COGNITIVE INNOVATIVE INFORMATION LITERACY COMPETENCIES REQUIRED OF INFORMATION PROCESSING SPECIALISTS FOR EFFECTIVE PERFORMANCE OF SMES IN ENUGU STATE

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Abstract

This study investigated the cognitive innovative information literacy competencies required of information processing specialists for effectiv e performance of small and medium-sized enterprises (SMEs) in Enugu State, Nigeria. Two research questions and two null hypotheses guided the study. A descriptive survey research design was adopted, and the population comprised 1,800 information processing specialists in registered SMEs in Enugu State. A sample size of 180 respondents was selected using stratified proportionate random sampling based on gender and years of work experience. Data were collected using a structured questionnaire titled Cognitive Innovative Information Literac y Competencies Required of Information Processing Specialists for Eff ective Performance Questionnaire (CIILCRIPSEPQ), which contained 16 items in two clusters on information retrieval and information management competencies. The instrument was face-validated by three experts in the field of education, and reliability coefficients of 0.76 and 0.79 (overall 0.78) were obtained using Cronbach's alpha. Out of 180 copies administered, 171 (95%) were returned and analyzed using mean, standard deviation, independent samples t-test, and one-way ANOVA at a 0.05 level of significance. Findings revealed that cognitive innovative information retrieval competencies and cognitive innovative information management competencies are highly required of information processing specialists for effective performance in SMEs in Enugu State. It was also found that gender and years of working experience were not significant factors on information specialists' mean ratings regarding information retrieval competencies and information management competencies required for effective performance in SMEs.

The study concluded that these competencies are required of information processing specialists for effective performance and productivity in SMEs. It was recommended that business education and Office Technology and

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Management (OTM) programmes in tertiary institutions should integrate cognitive innovative information literacy competencies into their curricula to equip graduates with the skills needed for effective performance in SMEs.

Introduction:-

Small and Medium Enterprises (SMEs) are independent business organizations characterized by limited capital, scope, workforce, and annual turnover. They play a pivotal role in national development by creating employment opportunities, reducing poverty, and fostering entrepreneurship. SMEs can be broadly defined using criteria such as firm size, number of employees, capital base, and annual turnover; however, there is no universally accepted definition, as these indicators vary across countries and regulatory bodies. In Nigeria, institutions such as SMEDAN, the Central Bank of Nigeria, and NERFUND provide varying thresholds, often describing SMEs as enterprises with limited capital, workforce, and turnover (SMEDAN, 2014). Despite these variations, Ambler, Kokkinaki and Puntoni (2018) stated that SMEs are consistently characterized as independently owned, small-scale businesses that utilize relatively simple technologies and operate across sectors such as trade, services, and manufacturing.

SMEs represent approximately 90% of the Nigerian business sector and employ about 70% of the workforce (Ndukwe, 2019; Emeasoba et al, 2026). Despite their economic significance, Suter (2021) noted that a high proportion of SMEs in Nigeria fail within their first five years, often due to inadequate funding, poor infrastructure, insufficient managerial expertise, and lack of skilled information personnel. For SMEs to sustain their critical roles in Nigeria's economic development, they need to modernize. This is through technology adoption and effective information processing practices that strengthen productivity, innovation, and overall economic transformation. Information processing is a core organizational activity involving the collection, organization, and distribution of information to support decision-making and goal achievement. Robertson (2015) described it as a structured process for transforming data into meaningful outputs. Information processing enhances organizational effectiveness, as properly processed information enables informed actions and competitiveness. Information processing requires systematic management of information resources similar to other organizational resources. Oliveira and Miranda (2019) in agreement asserted that its effectiveness depends on the competencies of information processing specialists who manage and utilize information to support organizational performance.

In modern SMEs, the role of an information processing specialist has become increasingly critical. An Information specialist also referred to as librarian, archivist, information manager and information professional is one employed to take care of the organization's information management. These professionals are responsible for acquiring, organizing, storing, analyzing, and disseminating information to support organizational decision-making, strategic planning, and innovation (Foss & Saebi, 2018). Efficient information management according to Usman (2019) enables SMEs to respond to competitive pressures, adopt emerging technologies, and optimize operational processes. Conversely, Ajayi and Olatokun (2022) asserted that inadequate competencies among information processing specialists particularly in information retrieval, management, and analytical thinking—can impede workflow, reduce decision-making quality, and constrain SME growth.

Competencies, encompassing knowledge, skills, attitudes, and behaviors, are critical for professional effectiveness. The Organisation for Economic Co-operation and Development (2020) described competencies as the integration of knowledge, skills, and attitudes required for effective functioning, while Oguejiofor and Ikedimma (2021) linked them to professional performance. Cognitive innovative competencies on the other hand are the combined cognitive skills, knowledge, and abilities that enable individuals to think critically, solve problems, and generate new ideas for improved performance. Cognitive competencies involve higher-order thinking such as reasoning and analysis for decision-making (European Centre for the Development of Vocational Training, 2016). Innovation competencies, however, focus on the ability to create and implement new ideas (Marín-García et al., 2023). When combined, they enable individuals to transform ideas into practical solutions, enhancing productivity and adaptability in modern organizations (Ojo & Volkova, 2023).

For information processing specialists, cognitive innovative competencies such as information literacy, analytical thinking, and problem-solving abilities are essential to navigate the complex, dynamic, and digital business environment (Man, 2018). These competencies as pointed out by Julien and Boon (2022) enable specialists to retrieve relevant data efficiently, evaluate its quality, integrate diverse sources, and apply information in decision-making processes. Specifically, Information literacy comprises the skills, attitudes, and values that enable information processing specialists to effectively locate, evaluate, use, and communicate information within

organizations. Information literacy includes ICT competencies that support access, processing, and sharing of information in digital environments. Furthermore, information literacy serves as a foundation for lifelong learning and requires competencies such as creativity, leadership, analytical thinking, information retrieval, and information management competencies (Ferrari, 2022).

Information retrieval competencies are task-oriented skills that enable information processing specialists to identify information needs, search for relevant data, and access appropriate sources using both digital and traditional platforms. Bakri et al. (2017) noted that these competencies enhance productivity and decision-making in SMEs by ensuring timely access to accurate information. In addition, Osita-Ejikeme (2021) stated that information retrieval competencies are vital for addressing organizational challenges and improving business outcomes. In agreement, Momoh-Musa (2024) highlighted their role in retrieving and interpreting accounting information. In contrast, information management competencies involve the organization, processing, storage, and application of information to support SME performance and competitive advantage. As pointed out by Don-Pedro and Onuoha (2025), these competencies facilitate effective information flow across organizational units. Similarly, Umar and Sambo (2021) stressed their importance in strengthening decision-making, whereas Bakri et al. (2017) further observed that information management competencies include evaluating, organizing, and synthesizing information to enhance efficiency and innovation.

The digital transformation of SMEs demands that information processing specialists continuously update their cognitive innovative information literacy competencies. Many authors express concern over the limited capabilities of information processing specialists in SMEs. Ajayi and Olatokun (2022) highlighted that information specialists often focus on routine administrative tasks, lacking innovation in information management. Earlier, Yusoff, Omar, and Zaharim (2019) lamented that the absence of information literacy competencies results in poor data interpretation, inefficient workflows, and weak decision-support systems. Additionally, Akpan and Ibidunni (2021) and Olinya, Nwandu, and Okpuzor (2024) caution that deficiencies in innovation skills limit service quality, hinder organizational learning, and restrict SME growth.

Furthermore, individual characteristics such as gender and years of working experience may influence the perceived importance and application of cognitive innovative information literacy competencies. Some studies suggest differences in analytical orientation and information evaluative approaches between male and female specialists (Dakare, 2019), while professional experience may affect exposure to training, job responsibilities, and problem-solving opportunities (Okrah & Irene, 2023). However, other evidence indicates that gender and experience may not significantly affect the mastery of competencies in information management tasks (Okafor & Ile, 2023). Given the pivotal role of information processing specialists in sustaining SMEs' survival, this study investigated cognitive innovative information literacy competencies required of information processing specialists for effective performance of SMEs in Enugu State**,**

Statement of the Problem:-

Small and Medium-Sized Enterprises (SMEs) are widely recognized as key drivers of economic growth in Nigeria; however, their continued survival and effectiveness increasingly depend on the competencies of information processing specialists. In today's digital business environment, cognitive innovative information literacy competencies particularly information retrieval and information management are essential for effective decision-making, efficient information handling, and improved organizational performance.

Despite this, many SMEs in Enugu State still experience poor performance and high failure rates, partly due to inadequate competencies among information processing specialists in retrieving relevant information and managing organizational data effectively. The researchers are concerned that many specialists operate with limited skills in identifying information needs, accessing accurate data, organizing information, and applying it for strategic purposes, which often results in poor record management and weak decision-making. The main problem of this study, therefore, is the lack of clear empirical evidence on the specific cognitive innovative information retrieval and information management competencies required of information processing specialists for effective performance of SMEs in Enugu State. This gap may continue to hinder SMEs' productivity, innovation, and overall competitiveness if not addressed.

Purpose of the Study:-

The main objective of this study was to determine cognitive innovative information literacy competencies required of information processing specialists for effective performance of SMEs in Enugu State. Specifically, this study determined the cognitive innovative;

1. Information retrieval competencies required of information processing specialists for effective performance of SMEs in Enugu State.
2. Information management competencies required of information processing specialists for effective performance of SMEs in Enugu State.

Research Questions:-

The following research questions were raised to guide the study;

1. What are the cognitive innovative information retrieval competencies required of information processing specialists for effective performance of SMEs in Enugu State?
2. What are the cognitive innovative information management competencies required of information processing specialists for effective performance of SMEs in Enugu State.

Hypothesis:-

$H0_1$: There is no significant difference in the mean ratings of male and female information processing specialists on cognitive innovative information retrieval competencies required of for effective performance of SMEs in Enugu State.

$H0_2$: There is no significant difference in the mean ratings of information processing specialists on cognitive innovative information management competencies required of information processing specialists for effective performance of SMEs in Enugu based on years of working experience (1-5, 6-10, above 10 years).

Methodology:-

This study employed a descriptive survey research design to investigate the cognitive innovative information literacy competencies required of information processing specialists for effective performance of small and medium-sized enterprises (SMEs) in Enugu State, Nigeria. Enugu State, located in the South-East geopolitical zone of Nigeria, served as the study area. The population of the study comprised 1,800 information processing specialists working in SMEs registered with the Ministry of Small and Medium Enterprises and New Business Development in Enugu State. The population was categorized based on size and geographical location. A sample of 180 respondents was selected using a stratified proportionate random sampling technique to ensure adequate representation across relevant subgroups. Stratification was carried out based on gender and years of work experience. The sample included 104 male and 76 female information processing specialists. In terms of work experience, 31 respondents had 1–5 years, 84 had 6–10 years, and 65 had above 10 years of experience. Data were collected using a structured questionnaire titled "Cognitive Innovative Information Literacy Competencies Required of Information Processing Specialists for Effective Performance Questionnaire (CIILCRIPSEPQ)". The instrument consisted of two sections; A and B. Section A captured demographic information such as gender and years of work experience, while Section B comprised two clusters (B1 and B2) with a total of 16 items. Cluster B1 included eight items on cognitive innovative information retrieval competencies, whereas Cluster B2 contained eight items on cognitive innovative information management competencies. Responses were measured on a five points rating scale ranging from Very Highly Required (5) to Not Required (1).

The instrument was subjected to face validation by three experts. To ensure reliability, a pilot test was conducted, and data obtained were analyzed using Cronbach's alpha to determine internal consistency. The reliability coefficients obtained were 0.76 for Cluster B1 and 0.79 for Cluster B2, with an overall coefficient of 0.78, indicating acceptable reliability. The questionnaire was administered by the researcher with the assistance of four trained research assistants within the study area. Of the 180 copies distributed, 171 copies (95%) were duly completed and returned, and these were used for analysis. Data were analyzed using descriptive and inferential statistics. Mean and standard deviation were employed to answer the research questions, with the mean indicating the average responses and the standard deviation reflecting the degree of dispersion among respondents. For hypothesis testing, the independent samples t-test and one-way Analysis of Variance (ANOVA) were utilized at a 0.05 level of significance. The decision rule was to retain the null hypothesis when $p \geq 0.05$ and reject it when $p < 0.05$. Where significant differences were observed, post hoc Scheffé tests were conducted to identify the specific groups responsible for the differences, particularly across categories of work experience. All statistical analyses were performed using the Statistical Package for Social Sciences (SPSS), version 25.0.

Results:-

Research Question 1: What are the cognitive innovative information retrieval competencies required of information processing specialists for effective performance of SMEs in Enugu State?

Table 1: Respondents' Mean Ratings and Standard Deviation on Cognitive Innovative Information Retrieval Competencies Required of Information Processing Specialists for Effective performance (N = 171)

S/N	Information Retrieval Competencies	X	SD	Remarks
1	Ability to recognize a need for information	4.10	.69	Highly Required
2	Ability to identify and locate appropriate information sources	3.62	.73	Highly Required
3	Ability to know how to gain access to information sources	3.78	.66	Highly Required
4	Ability to search for information using digital tools and databases	4.21	.70	Highly Required
5	Ability to apply effective search strategies (keywords, Boolean operators)	4.05	.68	Highly Required
6	Ability to retrieve relevant information efficiently from multiple sources	3.85	.70	Highly Required
7	Ability to navigate online platforms and information systems	4.18	.71	Highly Required
8	Ability to understand different information structures and formats	4.52	.68	Very Highly Required
	Cluster Mean	**4.04**		**Highly Required**

Table 1 data show that out of 8 cognitive innovative information retrieval competencies listed for effective performance of SMEs, respondents indicated that item 8 is very highly required of information processing specialists with a mean score of 4.52. Seven items (1, 2, 3, 4, 5, 6, and 7) are highly required with mean scores ranging between 3.62 and 4.21. The cluster mean score of 4.04 indicates that, overall, cognitive innovative information retrieval competencies are highly required of information processing specialists for effective performance in Enugu State. The standard deviations for all the items are within a close range, suggesting that the respondents are not widely dispersed in their ratings.

Research Question 2: What are the cognitive innovative information management competencies required of information processing specialists for effective performance of SMEs in Enugu State.

Table 2: Respondents' Mean Ratings and Standard Deviation on Cognitive Innovative Information Management Competencies Required of Information Processing Specialists for Effective performance (N = 171)

S/N	Information Management Competencies	X	SD	Remarks
9	Ability to evaluate the quality of information obtained	3.83	.67	Highly Required
10	Ability to organize information effectively for use	4.72	.72	Very Highly Required
11	Ability to use and communicate information to solve problems	3.49	.66	Moderately Required
12	Ability to store and manage information using digital tools	4.11	.69	Highly Required
13	Ability to synthesize information from multiple sources	4.20	.65	Highly Required
14	Ability to apply information ethically (citation, plagiarism avoidance)	4.33	.66	Very Highly Required
15	Ability to update and maintain relevant information records	3.95	.71	Highly Required
16	Ability to apply information for decision-making and task performance	4.15	.68	Highly Required
	Cluster Mean	**4.10**		**Highly Required**

Table 2 data show that out of 8 cognitive innovative information management competencies listed for effective performance of SMEs, respondents indicated that items 10 and 14 are very highly required of information processing specialists with mean scores of 4.72 and 4.33 respectively. Five items (9, 12, 13, 15, and 16) are highly required with mean scores ranging between 3.83 and 4.20, while the remaining one item (item 11) is moderately

required with a mean score of 3.49. The cluster mean score of 4.10 shows that, on the whole, cognitive innovative information management competencies are highly required of information processing specialists for effective performance in Enugu State. The standard deviations for all the items are within a close range, indicating that the respondents are not widely dispersed in their ratings.

$H0_1$: There is no significant difference in the mean ratings of male and female information processing specialists on cognitive innovative information retrieval competencies required of for effective performance of SMEs in Enugu State.

Table 3: Summary of t-test analysis of mean ratings of male and female information processing specialists on cognitive innovative information retrieval competencies required of information processing specialists for effective performance of SMEs

Gender	N	$\overline{X}$	SD	df	t-value	P-value	Decision
Male	101	4.00	.70				
				169	.26	.79	Not Significant
Female	70	3.98	.68				

Table 3 data show that male respondents has $\overline{X}$ = 4.00, SD = .64 and female respondents had $\overline{X}$= 3.98, SD = .56. The t-value is .26 with 169 degree of freedom and p-value of .79 which is greater than the significant value of 0.05; (**t**(169) = .26, **p** = .79). Since the p-value is greater than the alpha level, the null hypothesis was therefore accepted. This means that male and female information processing specialists do not significantly differ in their mean ratings on the cognitive innovative information retrieval competencies required for effective performance of SMEs in Enugu State.

$H0_2$: There is no significant difference in the mean ratings of information processing specialists on cognitive innovative information management competencies required of information processing specialists for effective performance of SMEs in Enugu based on years of working experience (1-5, 6-10, above 10 years).

Table 4: Summary of one-way Analysis of Variance (ANOVA) on the mean ratings of information processing specialists on cognitive innovative information management competencies required for effective performance of SMEs based on years of working experience

Source of Variance	SS	df	MS	F	P-value	Decision
Between Groups	4.39	2	2.19	.33	.72	Not Significant
Within Groups	1112.61	158	6.63			
Total	1117.00	171				

Table 4 data show one-way ANOVA results showed that there was no statistically significant difference in cognitive innovative information management competencies required based on years of working experience, F(2,168) = .33, p = .72.. Since (**p** > .05), the null hypothesis was therefore accepted. This means Information processing specialists do not significantly differ in their mean ratings on cognitive innovative information management competencies required for effective performance of SMEs in Enugu State based on years of working experience.

Discussion of Findings:-

The finding of the study show that cognitive innovative information retrieval competencies are highly required of information processing specialists for effective performance in Enugu State.. This highlights the importance of identifying information needs, locating relevant sources, and retrieving accurate information in modern business environments. The finding is consistent with Julien and Boon (2022), Odede (2018), and Igbinovia (2016), who emphasized that strong information retrieval skills are fundamental to effective professional performance. Furthermore, the study revealed that there was no significant gender difference in the perception of information processing specialists on cognitive innovative information retrieval competencies required for effective performance in SMEs in Enugu State. This indicates that both male and female specialists equally recognize the importance of information retrieval competencies for their performance. This finding aligns with Yemi-Peters, Gwarzo, and

Oladokun (2024), who reported no gender disparity in information literacy competencies needed by job performance.

The findings of the study show that cognitive innovative information management competencies are highly required of information processing specialists for effective performance in SMEs in Enugu State. This finding corroborates the view of Ezedialu, Ezekwere and Adibeli (2025) that effective information management is a key determinant of productivity among information professionals. Likewise, Julien and Boon (2022) emphasized that beyond retrieval, the ability to critically evaluate and utilize information is essential for informed decision-making in organizations. Bakri et al. (2017) reported that information management competencies provide SMEs with the tools to analyze market trends, customer behaviour, and operational performance in real-time, leading to more accurate and timely decisions. Moreover, the study revealed that information processing specialists did not significantly differ in their mean ratings on cognitive innovative information management competencies required for effective performance in SMEs in Enugu State based on years of working experience. This finding suggests that the perception of the importance of these competencies is consistent regardless of whether the specialists are early-career or highly experienced. This aligns with the findings of Imam, Okoro, and Ilori (2024), who noted that digital information management competencies are fundamental requirements for all information professionals irrespective of experience level.

Conclusion:-

The findings of this study clearly demonstrate that both cognitive innovative information retrieval and information management competencies are indispensable for effective performance among information processing specialists in SMEs in Enugu State. Based on these findings, the study concludes that equipping information processing specialists with cognitive innovative information literacy competencies will significantly enhance their performance and overall contribution to SMEs success in Enugu State.

Recommendations:-

Based on the findings of this study, the following recommendations are made:

1. SME managers and owners in Enugu State should proactively provide supportive and technology-driven environments by investing in modern information systems and digital tools that will enable information processing specialists to efficiently identify, access, and retrieve relevant information for improved organizational performance.
2. Business education and Office Technology and Management (OTM) programmes in tertiary institutions should integrate cognitive innovative information retrieval competencies into their curricula, thereby equipping students with practical and analytical skills needed to effectively search, access, and utilize information in SMEs upon graduation.
3. SME operators in Enugu State should prioritize continuous training and capacity-building programmes for information processing specialists to update their cognitive innovative information management competencies for improved and effective job performance.
4. Educational institutions and professional bodies in Nigeria should emphasize the development of cognitive innovative information management competencies by incorporating practical courses on data management, digital record keeping, and knowledge sharing systems to prepare students (future information specialists) for efficient performance in modern SMEs upon graduation.

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