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Abstract

Purpose: The aim of the study was to assess the effects of mobile news consumption on information retention and recall in Indonesia.

Methodology: This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

Findings: The study indicated that the convenience and accessibility of mobile devices make it easier for users to access news content anytime and anywhere, which can enhance information retention due to frequent exposure. However, the fast-paced nature of mobile news consumption may lead to shallow processing and reduced attention spans, affecting long-term retention and recall. Additionally, the constant notifications and distractions on mobile devices can interfere with focused reading and comprehension, further impacting information retention. Overall, while mobile news consumption offers advantages in terms of accessibility, it also presents challenges that can influence information retention and recall abilities.

Implications to Theory, Practice and Policy: Cognitive load theory, dual coding theory and theory of cognitive dissonance may be used to anchor future studies on assessing the effects of mobile news consumption on information retention and recall in Indonesia. News app developers should design interfaces that encourage longer, uninterrupted reading sessions by minimizing notifications and distractions. Governments and educational institutions should implement digital literacy programs that teach effective mobile news consumption strategies.

Keywords: *Mobile, News, Consumption, Information Retention, Recall*

INTRODUCTION

Information retention and recall, often measured through cognitive tests, are crucial indicators of cognitive health and educational efficacy in developed economies. In the USA, studies show that cognitive test scores in older adults have seen a modest increase over the past decade, suggesting improvements in cognitive health possibly due to better education and healthcare (Langa, 2021). A similar trend is observed in Japan, where a significant rise in cognitive test performance among the elderly has been linked to higher levels of social engagement and physical activity (Nishiyama, 2019). For instance, the average recall score on the Mini-Mental State Examination (MMSE) for Japanese adults aged 65 and older increased by 4% from 2015 to 2020 (Yamaguchi, 2020). These trends highlight the positive impact of societal factors and public health initiatives on cognitive abilities in these developed nations.

In developing economies, such as India and Brazil, cognitive test scores indicate varied outcomes due to differences in educational access and healthcare quality. In India, research indicates that cognitive performance among school children has improved due to increased investment in primary education and nutrition programs (Sharma, 2020). Brazil has also seen an upward trend in cognitive test scores among adults, which correlates with enhanced educational policies and health interventions over the past few years (Santos, 2021). For example, a study revealed a 3% increase in recall abilities among Brazilian students between 2016 and 2021, attributed to improved teaching methods and learning environments (Oliveira, 2022). These improvements underscore the importance of continued investment in education and healthcare to enhance cognitive function in developing regions.

Indonesia and Mexico are other examples of developing economies where cognitive test performance has shown notable improvements. In Indonesia, cognitive test scores among primary school children have increased by 6% from 2016 to 2021, attributed to the government's focus on improving educational quality and teacher training programs (Susanti, 2021). Mexico has also seen a positive trend, with adult cognitive performance improving by 4% over the last five years, largely due to better access to education and health services (Garcia, 2020). For example, the average score on the Rey Auditory Verbal Learning Test (RAVLT) for Mexican adults aged 30-50 rose by 3.5% between 2017 and 2022 (Martinez, 2022). These findings illustrate the importance of continuous efforts to enhance educational and healthcare systems to foster cognitive development in these regions.

In Vietnam and Turkey, cognitive test scores have seen a positive trajectory, attributed to ongoing educational reforms and improvements in public health. Vietnam has shown a steady increase in cognitive performance among students, with a 6% rise in average test scores from 2015 to 2020, largely due to enhanced teaching methods and better school infrastructure (Nguyen, 2021). Similarly, Turkey has experienced a 5% improvement in cognitive test scores among adults over the past five years, which can be linked to increased access to higher education and healthcare services (Yilmaz, 2022). For instance, the average score on the Raven's Progressive Matrices for Turkish students aged 12-16 increased by 4% between 2016 and 2021 (Demir, 2021). These trends indicate the critical role of policy and infrastructure improvements in enhancing cognitive abilities in developing countries.

Thailand and Egypt have also shown progress in cognitive test scores, reflecting their investments in education and health sectors. In Thailand, cognitive test scores among children have improved by 5% from 2016 to 2021, driven by initiatives to improve early childhood education and nutrition

(Chaiyasit, 2020). Egypt has seen a 4% increase in cognitive performance among adults over the last five years, attributed to better educational opportunities and health interventions (Ahmed, 2022). For example, the average score on the Stroop Test for Egyptian adults aged 25-40 increased by 3.5% between 2017 and 2022 (Hassan, 2021). These improvements underscore the importance of continued focus on educational and health policies to foster cognitive development in these regions.

In South Africa and Ghana, cognitive test performance shows diverse trends due to varying levels of educational quality and access to resources. South Africa has experienced a 4% increase in cognitive test scores among school children over the past five years, linked to improved educational funding and teacher training (Maseko, 2020). Ghana, on the other hand, shows mixed results, with urban students performing better than their rural counterparts due to disparities in educational access and quality (Boateng, 2021). For example, the average score on the Wechsler Intelligence Scale for Children (WISC) in South African students aged 10-14 increased by 3% from 2016 to 2021 (Nkosi, 2022). These findings highlight the need for equitable educational policies to enhance cognitive development in sub-Saharan Africa.

Tanzania and Zambia exhibit similar trends, where educational and health investments have led to modest improvements in cognitive test scores. Tanzania has seen a 3.5% increase in cognitive test performance among primary school children from 2016 to 2021, driven by national education reforms and nutritional programs (Mwanza, 2021). Zambia, on the other hand, has witnessed a 4% rise in cognitive scores among adults over the past five years, linked to better educational outreach and health initiatives (Chilufya, 2022). For example, the average score on the Digit Span Test for Zambian adults aged 20-35 increased by 3% from 2017 to 2022 (Banda, 2021). These trends underscore the importance of sustained educational and health efforts to enhance cognitive development in sub-Saharan Africa.

In sub-Saharan Africa, Ethiopia and Uganda are experiencing mixed trends in cognitive test performance due to disparities in educational access and quality. In Ethiopia, there has been a 4% increase in cognitive test scores among school-aged children from 2016 to 2021, attributed to improved educational policies and community-based health programs (Tadesse, 2020). Uganda, however, shows significant regional differences, with urban areas seeing a 5% improvement in cognitive test scores over the past five years, while rural areas lag behind due to inadequate educational resources (Nakimuli, 2021). For instance, the average score on the Kaufman Assessment Battery for Children (KABC) in urban Ugandan students aged 8-12 rose by 3.8% between 2017 and 2022 (Okello, 2021). These findings highlight the urgent need for equitable educational interventions to bridge the cognitive performance gap in sub-Saharan Africa.

Sub-Saharan African economies, such as Kenya and Nigeria, present unique challenges and opportunities in terms of information retention and recall. In Kenya, recent studies show a gradual improvement in cognitive test scores among young adults, primarily due to educational reforms and better access to learning resources (Mwangi, 2019). Conversely, Nigeria faces significant disparities, with cognitive test performance varying widely based on socioeconomic status and regional educational infrastructure (Adetunji, 2020). For instance, Nigerian primary school students in urban areas exhibited a 5% increase in cognitive test scores from 2017 to 2022, while rural students' scores remained relatively unchanged (Okeke, 2021). These findings illustrate the critical need for targeted educational and health policies to bridge the cognitive performance gap in sub-Saharan Africa.

Mobile news consumption, characterized by its duration and frequency, has significant implications for information retention and recall. Studies suggest four primary patterns: short duration/high frequency, long duration/low frequency, long duration/high frequency, and short duration/low frequency (Peters, 2020). Short duration/high frequency consumption, often involving quick, repetitive checks, may lead to fragmented attention and lower information retention due to constant context switching (Chen, 2019). In contrast, long duration/low frequency consumption, where users engage deeply with content less frequently, can enhance retention and recall as it allows for more in-depth processing of information (Smith, 2021). Long duration/high frequency consumption might improve retention through repetition but could also lead to cognitive overload, negatively affecting recall (Roberts, 2022).

Short duration/low frequency consumption typically results in lower retention and recall, as brief interactions with content do not provide enough engagement time for effective memory encoding (Brown, 2020). The relationship between these consumption patterns and cognitive outcomes highlights the need for balanced news consumption habits to optimize information retention. For instance, engaging in long, less frequent sessions may be more beneficial for memory than constant short bursts of news (Peters, 2020). Additionally, cognitive tests have shown that individuals who consume news in more focused, less frequent intervals tend to perform better on recall tests compared to those with fragmented consumption habits (Smith, 2021). Thus, understanding and optimizing mobile news consumption patterns can significantly impact cognitive health and information retention.

Problem Statement

The rapid rise in mobile news consumption has significantly transformed how individuals engage with news content, yet its effects on information retention and recall remain underexplored. Current research indicates that different patterns of mobile news consumption, such as short duration/high frequency and long duration/low frequency, have varying impacts on cognitive processes (Peters, 2020; Smith, 2021). Short duration/high frequency consumption often leads to fragmented attention, which may impair information retention and recall due to constant context switching (Chen, 2019). Conversely, long duration/low frequency consumption allows for deeper engagement with content, potentially enhancing memory retention and recall (Roberts, 2022). Despite these insights, there is a lack of comprehensive studies that systematically examine how these consumption patterns affect cognitive outcomes over time. Therefore, it is crucial to investigate the specific effects of mobile news consumption on information retention and recall to inform media consumption guidelines and cognitive health strategies.

Theoretical Framework

Cognitive Load Theory

Cognitive Load Theory, originated by John Sweller, posits that the human cognitive system has a limited capacity for processing information. It distinguishes between intrinsic, extraneous, and germane cognitive loads, suggesting that learning is optimized when cognitive load is effectively managed. This theory is highly relevant to the research on mobile news consumption because frequent, short-duration engagements with mobile news can increase extraneous cognitive load. This increased load can lead to fragmented attention, making it harder for individuals to retain and recall information effectively. As such, understanding cognitive load dynamics can provide insights into optimizing mobile news consumption patterns to enhance information retention and recall (Roberts, 2022).

Dual Coding Theory

Dual Coding Theory, proposed by Allan Paivio, asserts that information is processed through two distinct channels: verbal and non-verbal (visual). This dual processing aids in memory retention as it allows for the integration and reinforcement of information. This theory is particularly relevant to mobile news consumption because news content often includes multimedia elements such as texts, images, and videos. These elements can either enhance or hinder information retention and recall, depending on how effectively they are integrated and processed by the reader. Thus, Dual Coding Theory helps in understanding how different types of media content can impact cognitive processing and memory outcomes (Mayer, 2019).

Theory of Cognitive Dissonance

Developed by Leon Festinger, the Theory of Cognitive Dissonance suggests that individuals experience psychological discomfort (dissonance) when holding two or more contradictory beliefs, ideas, or values simultaneously. This discomfort motivates them to reduce the dissonance by changing their attitudes or beliefs. This theory is relevant to the study of mobile news consumption because individuals are often exposed to conflicting information through mobile news platforms. This exposure can create cognitive dissonance, affecting how information is processed and subsequently recalled. Understanding cognitive dissonance can thus provide valuable insights into the psychological impacts of mobile news consumption on information retention and recall (Harmon-Jones, 2019).

Empirical Review

Peters (2020) aimed to determine how different consumption patterns impact memory. Using a mixed-methods approach involving surveys and cognitive tests, the study involved a diverse sample of mobile news consumers, assessing their news consumption habits and subsequent recall abilities. The findings revealed that high-frequency, short-duration consumption impairs recall, as constant context switching prevents deep cognitive processing. Participants who frequently checked news in short bursts struggled to remember specific details compared to those who engaged with news less frequently but for longer periods. Peters' analysis suggests that the fragmented attention caused by frequent interruptions detracts from the cognitive resources needed for effective information retention. Additionally, the study highlighted that the type of content consumed also plays a role, with sensational news further exacerbating memory fragmentation. Peters recommends more balanced consumption habits, such as setting dedicated times for in-depth news engagement, to improve retention. This approach allows for deeper cognitive processing, aiding long-term memory. The research provides valuable insights into optimizing news consumption patterns for better cognitive outcomes.

Chen (2019) assessed the impact of context switching in mobile news readers. The study involved a controlled laboratory setting where participants were exposed to news content with varying frequencies of interruptions. Chen found that frequent interruptions, typical of mobile news consumption, lead to fragmented information retention. Participants who experienced constant notifications and switching between news stories showed significantly lower recall scores than those who consumed news in uninterrupted sessions. This experiment underscores the detrimental effects of multitasking on cognitive processes, as the brain struggles to encode fragmented information into long-term memory. Chen's findings suggest that to enhance information retention, individuals should minimize interruptions during news consumption. Recommendations include turning off notifications and dedicating specific times to consume news without

distractions. Furthermore, the study indicated that uninterrupted, focused consumption helps in forming more coherent mental representations of the information, which are crucial for effective recall. This research highlights the importance of managing external distractions to maintain cognitive health in the digital age.

Smith (2021) explored the relationship between deep engagement and memory in the context of mobile news consumption. Over a period of one year, the study tracked participants' news consumption habits and their performance on memory tests. The results revealed that long-duration, low-frequency consumption enhances retention. Participants who engaged deeply with news content in fewer, longer sessions exhibited better recall and comprehension of news stories. Smith's research suggests that engaging deeply with content in fewer sessions allows for more effective cognitive processing and memory retention. This pattern enables the brain to create stronger neural connections, facilitating long-term recall. The study also explored the role of engagement strategies, finding that active reading, such as taking notes or discussing news with others, further enhances retention. Smith recommends that users adopt consumption patterns that promote deep engagement, such as setting aside specific times for focused news reading. Additionally, incorporating active learning techniques can help reinforce memory. These findings provide a roadmap for individuals looking to optimize their news consumption for better cognitive outcomes.

Roberts (2022) examined cognitive overload through a cross-sectional survey, focusing on the effects of high-frequency mobile news consumption on cognitive processing. The survey collected data from a large sample of mobile news consumers, analyzing their consumption frequency and perceived cognitive load. The study highlighted the negative effects of frequent consumption, which leads to cognitive overload and impaired information retention. Participants who consumed news multiple times a day reported higher levels of stress and cognitive fatigue, which correlated with poorer recall of news content. Roberts' findings suggest that the constant barrage of information can overwhelm cognitive resources, making it difficult to process and remember information effectively. To manage cognitive load, Roberts recommends reducing the frequency of news checks and creating a structured consumption schedule. This approach helps prevent cognitive fatigue and allows for more thorough processing of information. The study also emphasizes the need for digital detox periods, where individuals take breaks from news consumption to reset their cognitive resources. This research provides valuable insights into the cognitive impacts of high-frequency news consumption and offers practical strategies for maintaining cognitive health.

Brown (2020) conducted a randomized control trial to study the effects of brief media interactions on information retention. The trial involved dividing participants into two groups: one that engaged in short, repetitive sessions of mobile news consumption and another that consumed news in longer, uninterrupted sessions. The study found that short, repetitive sessions reduce retention, as brief interactions do not allow sufficient time for effective memory encoding. Participants in the short-session group struggled to recall specific details and exhibited lower overall comprehension. Brown's findings suggest that the fragmented nature of brief interactions impedes the formation of coherent mental representations necessary for long-term memory. To improve retention, Brown recommends engaging with news in longer, uninterrupted sessions. This approach provides ample time for deep cognitive processing, aiding in the consolidation of information into long-term memory. Additionally, the study highlights the importance of reducing multitasking during news

consumption to enhance focus and comprehension. Brown's research offers practical advice for individuals looking to optimize their news consumption habits for better cognitive outcomes.

Mayer (2019) investigated the effects of multimedia learning in mobile news contexts through observational studies. The study examined how different multimedia elements, such as text, images, and videos, impact information retention and recall. Mayer found that integrated multimedia elements can enhance retention and recall if properly managed. Participants who engaged with well-structured multimedia content exhibited better recall and comprehension compared to those who consumed text-only news. The study suggests that multimedia elements provide multiple channels for information processing, aiding in the creation of more robust mental representations. However, Mayer also warns that poorly designed multimedia content can lead to cognitive overload, detracting from retention. The study recommends using multimedia content judiciously, ensuring that it complements rather than overwhelms the main information. Strategies such as integrating relevant images and videos with concise text can enhance understanding and memory. Mayer's research underscores the potential of multimedia elements to improve cognitive outcomes in mobile news consumption when used effectively.

Harmon-Jones (2019) explored the impact of cognitive dissonance on information retention in mobile news consumption. The study used psychological assessments to measure the effects of exposure to conflicting information on recall accuracy. Participants exposed to contradictory news stories exhibited lower recall accuracy and higher levels of cognitive discomfort. Harmon-Jones' findings suggest that cognitive dissonance, the psychological discomfort experienced when holding conflicting beliefs, impairs memory retention. The study highlights the importance of consistent and coherent information to improve retention. To manage cognitive dissonance, Harmon-Jones recommends consuming news from reliable sources that provide balanced and accurate reporting. Additionally, individuals should critically evaluate conflicting information and seek clarification to resolve discrepancies. This approach helps reduce cognitive discomfort and enhance memory retention. Harmon-Jones' research provides valuable insights into the psychological impacts of mobile news consumption and offers strategies for improving cognitive outcomes by managing cognitive dissonance.

METHODOLOGY

This study adopted a desk methodology. A desk study research design is commonly known as secondary data collection. This is basically collecting data from existing resources preferably because of its low cost advantage as compared to a field research. Our current study looked into already published studies and reports as the data was easily accessed through online journals and libraries.

RESULTS

Conceptual Gaps: The existing studies collectively highlight various aspects of mobile news consumption and its impact on cognitive processes, but there are notable conceptual gaps. Peters (2020) and Chen (2019) primarily focus on the negative effects of frequent, short-duration consumption and context switching on memory retention. However, these studies do not explore the potential moderating effects of individual differences, such as age, cognitive capacity, and prior knowledge, on these outcomes. Additionally, while Mayer (2019) addresses multimedia content's impact on retention, the interplay between different multimedia elements (e.g., text, images, videos) and cognitive load requires further exploration. Thus, future research should aim to

develop a more nuanced understanding of how individual characteristics and complex multimedia interactions influence cognitive outcomes in mobile news consumption.

Contextual Gaps: Smith (2021) and Roberts (2022) offer insights into how consumption patterns and cognitive overload affect memory retention and recall. However, there is a lack of contextual analysis on how the socio-cultural environment influences these effects. For example, cultural attitudes towards news consumption, the prevalence of digital literacy, and the role of socio-economic status in shaping news consumption habits are areas that remain underexplored. Furthermore, Harmon-Jones (2019) touches on cognitive dissonance but does not delve into how different social contexts and media environments may exacerbate or mitigate these effects. Research that examines these contextual factors can provide a more comprehensive understanding of mobile news consumption's cognitive impacts across diverse socio-cultural settings.

Geographical Gaps: Geographically, the majority of the studies, such as those by Peters (2020), Chen (2019) and Smith (2021), are conducted in Western contexts, particularly in the United States. There is a significant gap in research focusing on non-Western countries, particularly in developing regions where mobile news consumption patterns might differ due to varying levels of technological access and media consumption habits. Additionally, Roberts (2022) and Brown (2020) do not address geographical differences in their analyses of cognitive overload and brief media interactions. Future research should include cross-cultural studies to understand how geographical variations influence the effects of mobile news consumption on information retention and recall. This would help in developing globally relevant recommendations for optimizing news consumption practices.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The effects of mobile news consumption on information retention and recall are multifaceted and significantly influenced by consumption patterns, context switching, cognitive load, and multimedia integration. High-frequency, short-duration interactions with mobile news content tend to impair memory retention due to constant context switching and cognitive overload. In contrast, long-duration, low-frequency consumption, where users engage deeply with the content, enhances information retention and recall by allowing more thorough cognitive processing and reducing cognitive fatigue. The type of content and how it is presented, such as the integration of multimedia elements, also play crucial roles in shaping cognitive outcomes. Sensational or poorly designed multimedia content can exacerbate cognitive fragmentation, while well-structured multimedia can aid memory retention. Additionally, socio-cultural and geographical factors influence how mobile news consumption impacts cognitive processes, indicating the need for more cross-cultural research to develop globally applicable guidelines. Overall, optimizing mobile news consumption habits by reducing interruptions, managing cognitive load, and engaging deeply with content can improve information retention and recall, promoting better cognitive health in the digital age.

Recommendations

The following are the recommendations based on theory, practice and policy:

Theory

Future research should integrate Cognitive Load Theory with media consumption studies to better understand how different types of news content and consumption patterns impact cognitive load.

By examining the interplay between cognitive load and media consumption, researchers can develop a more comprehensive framework for analyzing the cognitive effects of mobile news consumption. Additionally, studies should investigate how individual differences, such as age, prior knowledge, and cognitive capacity, moderate these effects. This deeper exploration can lead to the development of more personalized recommendations for optimizing news consumption habits, thereby contributing to a more nuanced understanding of the cognitive impacts of mobile news consumption. This theoretical advancement can guide future studies and provide a robust foundation for practical applications.

Practice

News app developers should design interfaces that encourage longer, uninterrupted reading sessions by minimizing notifications and distractions. Implementing features such as "reading mode" or scheduled news updates can help users engage more deeply with content, thereby improving information retention. Content creators should also carefully manage multimedia elements to avoid cognitive overload. By integrating relevant images and videos with concise text, they can enhance understanding and retention without overwhelming the user. These practical recommendations provide actionable insights for optimizing user experience and cognitive outcomes, helping users to retain and recall information more effectively.

Policy

Governments and educational institutions should implement digital literacy programs that teach effective mobile news consumption strategies. These programs should emphasize the importance of minimizing distractions, managing cognitive load, and engaging deeply with content to improve information retention and recall. Furthermore, policymakers should develop guidelines for balanced news consumption, promoting habits that enhance cognitive health. Public awareness campaigns can disseminate these guidelines, encouraging users to reduce the frequency of news checks and adopt practices that support deep engagement with content. These policy recommendations offer a proactive approach to enhancing cognitive health at a societal level, helping mitigate the negative cognitive effects of mobile news consumption.

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