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E-books and Attention Management: Exploring Digital Distractions in Academic Reading among Private University Students in Bangladesh

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Key Words:

Academic Reading; Attention Management; Digital Distractions; E-books; University Students

Abstract

With the rapid shift from print to digital formats in higher education, e-books have become widely accessible, affordable, and convenient, yet they also introduce unique cognitive and technological challenges. This study investigates how Bangladeshi university students manage digital distractions while reading e-books for academic purposes and how these challenges impact their focus, comprehension, and academic performance. Using a qualitative descriptive design, data were collected through semi-structured interviews with 30 purposively selected undergraduate students from diverse disciplines at a private university in Bangladesh. Thematic analysis revealed four major types of distractions: device-based interruptions, context-based disruptions, multitasking-induced distractions, and a lack of emotional or physical engagement with digital texts. The study also examines the effects of these reading distractions on students' reading performance and identifies the strategies students use to manage their attention in technology-driven environments. To cope with these difficulties, students used a range of self-regulation strategies, including disconnecting from the internet, using alternative reading devices, modifying their surroundings, and engaging with annotation tools. The findings indicate that while e-books expand access to academic materials, their effectiveness is constrained by digital distraction. The study argues that improving academic digital reading requires institutional and pedagogical support that fosters attention management, rather than merely increasing access to e-resources.

1. Introduction

One of the oldest forms of communication that advances human civilization is reading (Islam *et al*., 2019). However, academic reading is described as a process where readers sort and synthesize information obtained from various academic materials (e.g. papers, classic works in their discipline) to build a systematic, professional knowledge base or scientific knowledge framework (Chang *et al*.,

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2023). It is a social practice that not only contributes to the cognitive development of the students but also enables them to develop academic literacies, understand scholarly texts, engage in discourse, and build professional and disciplinary knowledge (Afdal *et al*., 2023). Bharuthram (2012) demonstrated that all academic levels at universities require students to be able to critically read pertinent literature and interpret, organize, and assess their knowledge. Thus, academic reading requires sustained attention, deep concentration, and cognitive effort over a period of time. However, nowadays, university students are studying in a learning environment where digital technologies are deeply embedded (Amirtharaj *et al*., 2023; Islam *et al*., 2019). Additionally, e-books have been an essential component of modern society since their introduction in the 1970s (Turgunbayev *et al*., 2025).

According to most e-book studies, e-books are digital texts that can possibly be seen on computer displays (Dharmarajlu, 2025). However, education has evolved since the invention of technology because of a range of teaching strategies, the availability of academic resources online, and students who have transitioned from traditional learning methods to alternative modes using technology, such as soft copies of the educational resources through various digital devices like smartphones, laptops, e-book reader like Kindle released by Amazon etc. (Turgunbayev *et al*., 2025; Amirtharaj *et al*., 2023).

Even, in the case of Bangladesh, a large number of students from Dhaka city use e-books for academic purposes because they are sufficiently familiar with digital technology (Sadaf, 2022). Academic reading, which once primarily involved printed textbooks, course packs, and photocopies, is now frequently mediated through screens: personal computers, laptops, tablets, smartphones, and so forth to the students of Bangladesh just like other students across the world. A considerable number of students at public and private universities in Bangladesh use smartphones and desktop computers for reading e-books (Rahman, 2016).This transformation has not only changed what students read, but also how they read, focus, and engage with academic texts.

The digital devices give students easy access to e-books; simultaneously, these devices also host non-academic applications and platforms. Instead of focusing solely on the academic text, students' academic reading is often interrupted by notifications, pop-up messages, or the temptation to quickly check another app or website, so they frequently experience challenges with their attention (Liu *et al*., 2022). They may use personal smartphones for reading e-books, which intensifies the possibility of multitasking and switching between academic and non-academic content. This situation makes attention management a central challenge in digital academic reading. Moreover, eye discomfort and reading exhaustion; a less sensory style with fewer memory cues; a lack of a linear reading approach and diminished understanding; a loss of context and wider author perspectives; publishers' restrictions on institutional internet access to popular textbooks, etc. distinct downsides have been explored by different researchers in different studies (Pears & Casselden, 2019; Tilli *et al*., 2024).

Taking prior studies into consideration, it has been observed that most of them focused on comparing e-books and printed books, like which one is preferable, the advantages and disadvantages of them, and so on (Delgado & Salmerón, 2021; Dharmarajlu, 2025; Peras *et al.*, 2023;). Research on how private university students in Bangladesh, a least developed nation, maintain their attention when engaging in digitally mediated academic reading, however, is quite scarce. Addressing this gap, this paper seeks to understand the specific patterns of distraction and attention management, which can help learners, teachers, and institutions to develop better support systems, and practical strategies to overcome these challenges, and make e-book based academic reading more effective in the digital age. Hence, this paper aims at identifying the digital distractions students face in academic e-book reading, exploring the consequences of getting distracted while reading e-books, and investigating the coping strategies they adapt to manage attention.

Research Questions:

The study sought to answer the following research questions:

1. What types of distractions do the tertiary level students face while using e-books for academic purposes?
2. How do these distractors affect students' overall reading performance?
3. How do the students mitigate these issues to manage attention?

2. Literature Review

2.1 Comparison and Contrast between E-books and Printed Books

Both e-books and printed books share the main purpose of helping students learn by delivering content in a structured way. For simple tasks, like recalling facts or literal information, the format usually doesn't make much difference—readers can remember the same words and ideas whether they are reading on a screen or on paper (Ackerman & Lauterman, 2012; Jeong, 2012). In these situations, both formats are equally effective for basic learning.

The differences between the two become clearer when the reading task is more complex. Cognitive effort is one of the biggest differences. Delgado and Salmerón, (2021) found that students reading on screens under time pressure had more attentional lapses and had to work harder to stay focused. Similarly, Ackerman and Lauterman (2012) observed that students reading digitally struggled more to judge how well they understood the text and to manage their study strategies. So, even when comprehension scores seem similar, screen reading often comes at a higher mental cost. Another important difference is physical and spatial cues**.** Printed books provide a stable layout, letting readers remember where information appeared on a page, which helps with memory and understanding (Mangen, Walgermo, & Brønnick, 2019). E-books, especially those with scrolling text or variable pagination, lack these cues, making it harder to map and retrieve information. Myrberg (2017) also noted that readers often feel more connected to printed books, giving them a stronger sense of ownership and focus. In case of

interactivity, current e-books allow highlighting, taking notes, bookmarking, using hyperlinks, and including multimedia content, which can increase engagement and support learning (Lim *et al*., 2021). However, interactive features don't always help; if not designed well, they can distract readers or make the material harder to process. Besides, attention and distractions are also noticeable factors that draw a borderline between these two types of reading. Devices used for reading e-books—like tablets or laptops—are often used for other purposes, and notifications or apps can interrupt focus (Delgado & Salmerón, 2021; Myrberg, 2017). Jensen (2024) highlighted that while many students prefer the feel of paper, others appreciate the convenience and search ability of screens, which can also affect or facilitate learning.

2.2 Benefits and Drawbacks of E-books

The advantages of utilizing e-books in higher education have been demonstrated by numerous studies (Amirtharaj *et al.*, 2023; Casselden, & Pears, 2019; Dharmarajlu, 2025; Yau *et al*., 2023). According to Yau *et al.* (2023), higher education is anticipated to be greatly impacted by e-books. Studying using an electronic textbook might encourage introspection as students think about the optimal times, places, and methods for learning (Dobler, 2015; Turgunbayev *et al*., 2025;). Additionally, Alsalhi *et al.* (2020) listed a number of advantages of e-books, such as the low update cost, multimedia style, search function, no shipping costs, the ability for users to carry a library of different books, and the fact that they are less expensive than printed books, they are lightweight, easy to hold, and can be read on a PC, Mac, iPhone, iPad, or Android device. E-books can also be downloaded, someone can have a lot of books on their tablet computer at their disposal, they can frequently download a free sample of a book, it is more flexible than printed books, and it is easier to update than printed books that need to be reprinted. Moreover, different studies demonstrated that e-books are valued for their affordability, portability, and round-the-clock accessibility, all of which meet students' demands for adaptable and reasonably priced educational materials (Amirtharaj *et al*., 2023; Casselden, & Pears, 2019; Dharmarajlu, 2025; Yau *et al*., 2023).

A study on post-secondary students from various Hong Kong universities carried out by Yau *et al.* (2023) reported that students found e-books very portable because they simply required carrying a digital library in their pockets instead of hefty objects. The study also showed that many universities have embraced e-books because of their accessibility, which allows users to access them whenever and wherever they choose as long as there is internet connectivity. Likewise, according to a survey by Amirtharaj *et al.* (2023) among male and female students enrolled in all nine colleges of Sultan Qaboos University, Oman, students prefer e-books since they are portable and enable them to be read for longer periods of time. Besides, studies found that students commend e-books for being easily accessible (Casselden & Pears, 2019). According to an online survey conducted by the researchers (2020) at Durham University and Northumbria University, students believed that e-books were available for numerous users and could be accessed without physically visiting the library. The study also investigated that, several respondents identified the e-

book's instant accessibility as a major advantage, since it saved them time when looking for, accessing, and making use of the book. According to a study by Dharmarajlu (2025) on Farasan University College, Jazan University, Saudi Arabia, e-books are simpler to transport, store, and share with fellow learners. Therefore, e-books are also very reasonable in price as well (Alsalhi *et al.,* 2020; Amirtharaj *et al.,* 2023; Turgunbayev *et al.,* 2025; Yau *et al.,* 2023;). In addition, Casselden & Pears (2019) demonstrated that e-books allow users to copy and paste passages straight from the text, provide links to other digital resources that help students find what they're looking for, and are keyword searchable. Dobler (2015) observed that e-books can help students study in ways that were previously unattainable in print texts, for as by enlarging the font size in different ways. On the other hand, according to Day *et al*. (2025), e-books present a chance to boost student engagement and offer tailored feedback to support learning outcomes. According to Turgunbayev *et al.* (2025), electronic books' interactive features help students develop the following cognitive skills in addition to the many advantages of printed books for memory development: finding and verifying information, multitasking, which allows them to process multiple pieces of information at once, and solving difficult problems. Focus and memory are essential when reading e-books.

Despite the widespread recognition of their benefits, e-books also present several drawbacks. A few drawbacks of e-books were enumerated by Alsalhi (2020). They are uncomfortable to read, have printing fees, the potential for piracy, many people would rather carry traditional printed books than e-books, e-books only work when someone has a computer or other device to use, the reader device's battery life is limited and needs to be constantly charged, technical issues with the reader device, which typically result in no access to the e-book, e-book devices are expensive, particularly for students, programs need to be compatible with a reader device, e-books have no stated lifespan, and physical issues like eye fatigue from prolonged reading. Moreover, in their review paper, Tilli *et al.* (2024) discovered a number of issues with e-books, including straining the eyes and teachers' and students' ignorance of how to use them in the classroom. Alsadoon (2020) also found that one key distraction when reading e-books is eye weariness. The expense, fatigue, and diversions were identified as barriers to e-book use by students at the Saudi Electronic University in a mixed-method study conducted by Alsadoon (2020). According to the study, pupils are distracted by digital gadgets in a number of ways. Additionally, students expressed dissatisfaction with the use of e-books for bookmarking and highlighting. Furthermore, Dobler (2015) demonstrated that learning to stay in the reading moment can be effective in any reading scenario is a part of self-regulation, but it's particularly crucial when a reader switches between text, media, and web links, as e-books give a lot of opportunities to browse different links. The study also found that twenty-five percent of the college students of the study reported that the e-textbook had a detrimental effect on their mental stimulation, making them read more slowly, scroll more, jump about the text, and become easily distracted.

Inaccessibility is one of the additional disadvantages (Yau *et al.*, 2023). Because of their formats and geographical limitations, certain e-books are difficult to access globally. Due to security concerns, some of the e-books are only accessible in specific nations. Casselden & Pears (2019) shared the same opinion. The drawbacks the researchers presented include eyestrain and reading fatigue; a less tactile style with fewer memory triggers; a lack of a linear reading strategy and decreased comprehension; a loss of context and broader author perspectives; and publishers' limitations on institutional internet access to popular textbooks. In addition, respondents in the Casselden & Pears (2019) study claimed that e-books were distracting to read since they required an internet connection, which allowed access to other online diversions. Because it was so simple to get e-books in the first place, it was also quite simple to stop reading them.

2.3 The Adoption of E-books for Academic Purposes at the Tertiary Level

A number of recent studies have provided a nuanced understanding of how and why e-books are integrated into academic environments, as well as the challenges and opportunities that accompany their popularization (Ambo & Mustapa, 2025; Okocha, 2020; Salloum & Shaalan, 2019). The Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT) are foundational in explaining e-book adoption among university students. TAM, a prototype developed by Davis (1985), posits that two primary factors—perceived usefulness (PU) and perceived ease of use (PEOU) to determine users' attitudes toward a technology, which in turn shape their behavioral intentions and actual usage. The Unified Theory of Acceptance and Use of Technology (UTAUT), another technology acceptance model developed by Venkatesh *et al.* (2003) integrates additional constructs: performance expectancy (similar to PU), effort expectancy (similar to PEOU), social influence, and facilitating conditions to illustrate user intention to use a particular technology and subsequent user behavior. These models emphasize that factors such as computer self-efficacy, innovativeness, satisfaction, and subjective norms significantly influence students' perceptions of e-books' ease of use and usefulness (Ambo & Mustapa, 2025; Okocha, 2020; Salloum & Shaalan, 2019). For instance, students who are confident in their digital skills and perceive e-books as valuable and easy to use are more likely to adopt them for academic purposes. Performance expectancy (the belief that e-books will enhance academic performance), effort expectancy (the perceived ease of using e-books), and facilitating conditions (such as reliable internet and institutional support) are also critical determinants (Ambo & Mustapa, 2025; Okocha, 2020; Omar *et al.*, 2022).

Additionally, institutional support, particularly from university libraries and faculty, is pivotal in driving e-book adoption. Studies show that while awareness of e-books is generally high, actual usage often depends on proactive promotion and guidance from lecturers and librarians (Alsalhi *et al.*, 2020; Blummer & Kenton, 2020; Okocha, 2020;). Faculty recommendations and integration of e-books into coursework can significantly increase student engagement. However, a gap often

exists between awareness and regular use, with many students citing unfamiliarity with e-book features or a preference for print materials as barriers (Amirtharaj *et al.*, 2023; Blummer& Kenton, 2020). Social influences, including peer encouragement and academic norms, further shape students' willingness to engage with e-books (Ambo & Mustapa, 2025; Okocha, 2020).The adoption of e-books has been further popularized by keeping certain motivational factors like perceived usefulness, value, ease of use etc. into consideration (Nahotko & Deja, 2024; Omar *et al.*, 2022; Salloum & Shaalan, 2019). E-books have gained its popularity for several benefits which have been described earlier. The COVID-19 pandemic accelerated the shift toward digital resources, as remote learning environments heightened the demand for accessible academic materials (Omar *et al.*, 2022; Tlili *et al.*, 2024).

2.4 Attention Management in Academic E-book Usage by University Students

While e-books offer portability, accessibility, and interactive features, a growing body of research highlights how these same features can fragment attention and disrupt sustained cognitive engagement among university students (Liu *et al.*, 2022; Myrberg, 2017; Xie, 2019).

Mizrachi *et al.* (2018), in their study, which involved 10,293 students from all over the world, provided a global perspective on academic reading behaviors, revealing that many university students perceive digital reading formats as less conducive to deep concentration compared to print. Students frequently reported experiencing eye strain, difficulty maintaining focus, and a tendency to multitask when reading from screens. These findings underscore the central attention-related challenges inherent in using e-books for academic purposes. Similarly, the usability issues such as poor navigation, limited spatial overview, and cognitive fatigue have been identified as key deterrents to prolonged engagement with e-books, all of which directly impact students' ability to regulate attention during complex academic reading tasks (Myrberg, 2017). Qualitative insights further illuminate how attention management operates in real learning contexts. In one of his studies, Pierard (2020) observed that students often struggled to remain focused when using e-books in semester-long courses due to embedded hyperlinks, parallel device use, and cognitive overload caused by non-linear reading patterns. Likewise, Alhammad and Ku (2019) highlighted that graduate students perceived e-books as convenient yet mentally demanding, requiring greater self-discipline and conscious regulation of focus to avoid distraction during academic reading.

Empirical eye-tracking studies provide objective evidence of how e-books influence attention. Wang *et al.* (2019) demonstrated that interactive e-book elements significantly redirected students' visual attention, often interrupting linear reading and reducing comprehension. Studies further confirmed that the presence of digital distractors, such as pop-up notifications and visual stimuli, fragmented visual focus, forcing students to continuously switch attention, thereby reducing reading efficiency (Chevet *et al.*, 2022; Ronconi *et al.*, 2025). Similar results have been found in a study participated by college students where attention fluctuated significantly when reading on mobile platforms, with environmental and interface

designs playing crucial roles in attention retention (Xu *et al.*, 2025). The physiological dimension of attention has also been explored through visual performance comparisons. Feis *et al.* (2021) reported distinct eye-movement patterns when students read digitally versus in print, where on-screen reading was associated with shorter fixation durations and increased regressions—both indicators of disrupted attentional processing. These patterns suggest that e-book environments require more active effort from students to maintain sustained attention.

From a pedagogical perspective, Alsalhi *et al.* (2020) noted that while academic e-books can improve learning accessibility, their effectiveness heavily depends on students' ability to manage cognitive resources and minimize distraction. Recent studies highlighted that digital reading environments intensify attentional disruption compared to print. Moreover, a systematic review of educational studies confirms that media multitasking and passive device use are consistently associated with reduced academic performance and fragmented attention patterns (Zhou & Deng, 2023). Hargreaves *et al.* (2022) echoed this view, showing that students develop personalized attention strategies, such as disabling notifications or using annotation tools, to cope with the distractions inherent in digital reading. Collectively, these studies illustrated that attention management is a critical mediator between e-book usage and effective academic reading among university students. The literature suggests that while e-books facilitate flexible access to academic content, they simultaneously demand higher levels of self-regulation and strategic attention control. Consequently, attention management emerges not merely as an individual skill but as a central component influencing learning outcomes in digital academic environments.

3. Methodology

3.1 Research Design

This study adopted a qualitative descriptive (QD) research design. Qualitative descriptive research is particularly suited for studies aiming to provide clear, straightforward accounts of participants' experiences without imposing strong theoretical interpretations (Sandelowski, 2000). As the study aims to examine the types of distractions students face while reading e-books, students' perceptions of them, and how they attempt to manage attention, QD offers an appropriate balance of depth and flexibility. Therefore, a qualitative research design was deemed suitable as it enables a thorough comprehension of the subject matter by collecting data directly from participants in their own setting (Creswell & Poth, 2018).

3.2 Sampling Site

To conduct the study, IUBAT – International University of Business Agriculture and Technology, a mid-sized private university in Bangladesh, was selected as the sampling site. The university was established in 1991. Currently, 14 academic

programs under 7 different colleges are operational in this university. The number of total students is close to 8000, whereas the number of teachers is more than 370. The university has been considered as a suitable sampling site as it provides a chance to observe students from a variety of academic backgrounds by accommodating students studying engineering, social science, humanities, business, etc.

3.3 Sample Population

This study involved a small, purposefully selected group of participants. Qualitative scholars consistently emphasize that the strength of qualitative inquiry lies in depth rather than numerical breadth; therefore, large samples are neither necessary nor advantageous (Creswell & Poth, 2018; Merriam & Tisdell, 2016). Guided by this principle, the present study included 30 undergraduate students from various departments at IUBAT.

To ensure representation across disciplinary backgrounds, the sample was evenly divided between STEM and non-STEM fields. Among the 15 STEM participants, representing science and technology programs, eight were male, and seven were female. The remaining 15 participants were drawn from non-STEM disciplines, including social sciences, humanities, and business studies, where seven were male, and eight were female. All participants were in their final year of study, ensuring that they possessed substantial academic experience and sustained exposure to digital reading and academic workloads.

Respondents were recruited using purposive sampling, a widely endorsed strategy in qualitative research for selecting individuals who can provide meaningful, information-rich insights into the phenomenon under investigation (Patton, 2015). The inclusion criteria required participants to (a) represent diverse academic backgrounds, (b) ensure balanced gender representation, and (c) have sufficient academic experience to reflect critically on the role of digital distractions in their reading practices. These criteria ensured that students were well-positioned to articulate their experiences with e-books, attention management, and the challenges associated with digital distractions during academic reading.

Table: Profile of the Respondents

Respondents	**Number of Students**	**Gender**	**Academic Background**	**Label**
Group 1 STEM	15	Male – 8	Science – 5 Technology - 3	G1M1, G1M2, G1M3, G1M4, G1M5, G1M6, G1M7, G1M8,

		Female – 7	Science – 3	G1F1, G1F2, G1F3, G1F4, G1F5, G1F6, G1F7
			Technology - 4	
Group 2 Non STEM	15	Male – 7	Humanities – 2	G2M1, G2M2, G2M3, G2M4, G2M5, G2M6, G2M7,
			Social Science – 2	
			Business – 3	
		Female – 8	Humanities – 4	G2F1, G2F2, G2F3, G2F4, G2F5, G2F6, G2F7, G2F8
			Social Science – 3	
			Business – 1	

Note. G = Group, M = Male, F = Female

3.4 Data Collection

For this study, data were collected through semi-structured interviews, a method widely recognized for its flexibility and ability to elicit in-depth, nuanced accounts of participants' experiences. Semi-structured interviews are particularly suitable for QD research because they balance structure with openness, allowing the researcher to guide the conversation while also enabling participants to introduce issues that are meaningful to them (Kallio *et al.*, 2016). This approach was especially appropriate for the present study, which aimed to explore how university students manage attention and cope with digital distractions when reading academic materials on e-books.

In this study, each interview lasted approximately 10–15 minutes and was conducted face-to-face on campus. All three authors were present in each of the interview sessions. With participants' permission, all interviews were audio-recorded using a digital recorder to ensure accuracy and completeness of the data. Field notes were taken during and immediately after each interview to document initial impressions, contextual information, and any nonverbal cues relevant to the interaction. The interview guide included open-ended questions addressing several key areas: students' academic reading habits; their use of e-books in university coursework; the nature and frequency of digital distractions encountered during reading; their strategies for managing attention; and their perceptions of how distractions influence comprehension and overall learning.

3.5 Data Analysis

This study employed thematic analysis to interpret the qualitative data generated through semi-structured interviews. Thematic analysis is one of the most widely

used analytic approaches in qualitative research because it provides a flexible yet systematic way to identify, organize, and interpret patterns of meaning within textual data (Braun & Clarke, 2021). It is ideal for studying experiences, perceptions, and behaviors, such as how university students manage digital distractions when reading academic content.

Following Braun and Clarke's (2006) six-phase framework, at first, all interviews were transcribed and read repeatedly to ensure familiarity with the data. During this phase, initial impressions related to attention management, reading behaviors, and digital distraction cues were noted. Next, initial codes were generated, focusing on meaningful segments of data that reflected students' experiences with device multitasking, screen-based interruptions, and strategies used to maintain focus. After coding, the codes were grouped and reviewed to identify broader themes. These potential themes were examined to ensure that they accurately represented the coded data and aligned well with the overall data set. Once refined, the themes were defined and named, capturing core ideas such as "major distractions," "consequences", "self-regulation strategies". Finally, the themes were organized and synthesized into a coherent narrative that explains how students experience and manage digital distractions while reading academic materials on e-books. This process ensured a rigorous and transparent analysis grounded in established qualitative procedures (Braun & Clarke, 2006; Nowell *et al.*, 2017).

4. Findings and Discussions

In line with the research objective, the data from semi-structured interviews with 30 students (15 STEM and 15 Non-STEM) at IUBAT reveal three major themes where each theme includes several specific, yet inter-related sub-themes. Using thematic analysis, these themes emerged consistently across participants.

4.1 Nature of Distractions in Academic E-Book Reading

Device-based Distractions

Most of the respondents acknowledged the distractions they face due to the device they use for e-reading. 25 out of 30 respondents also admitted about the inappropriacy of the devices used for e-reading purpose. According to Alsalhi *et al.* (2020), learners face various challenges when using e-books, particularly in the form of device-based distractions. As most participants access e-books through personal smartphones and laptops, these devices simultaneously function as reading tools and entry points to multiple non-academic activities. Consequently, the device itself become an inherent source of distraction, a finding consistent with previous research (Mizrachi, 2015).

The most frequently reported distraction involves notification alerts from social media platforms, emails, and other applications. Several participants explained that even when they begin reading with a clear intention to focus, notification sounds or pop-up messages quickly divert their attention. This often

leads to a recurring cycle of briefly checking a message and subsequently spending several minutes scrolling or chatting before returning to the e-book. This pattern is evident among both STEM and non-STEM students. Notably, one STEM participant (G1M3) reported, "It is not just social media; when I get a notification from my coding software, I start getting busy with it, even though at that time I am supposed to be completing my e-book reading", indicating that academically relevant digital activities can also disrupt deep engagement.

Another prominent issue concerns screen design and interface constraints. Respondents reported difficulties related to small font sizes, excessive screen brightness, and the challenges of reading extended texts on mobile devices. Some noted that scanned versions of printed books often contain blurred or poorly aligned text, which increase eye strain and reduce concentration. Non-STEM students, who frequently engage with lengthy theoretical or conceptual materials, emphasized that such legibility issues make it difficult to maintain focus over extended periods. Besides, the availability of multiple tabs and applications further contribute to distraction. On laptops, students often keep several browser tabs open alongside the e-book, while on smartphones, rapid app-switching encouraged frequent, often subconscious, interruptions. Collectively, these findings highlight how device affordances and interface design fragmented attention during e-book-based academic reading.

Context-based Distractions

Context based distractions arise from the physical, social and institutional environments in which students engage in e-book reading. Some participants put high importance on the situation like time, place, surrounding attendees etc. that they get into while reading e-book. Sometimes distractions originate from external sources (Chou, 2016). Several students noted that reading e-books in some random places like cafeteria, transport, drawing room etc. make them more visible and accessible to others, leading to interruptions from friends, classmates, or family members. For example, a respondent, G2M2 mentioned, "When I read my e-book on the phone in the cafeteria, my friends think I'm just scrolling Facebook, so they keep calling me to chat or join them, but actually I'm trying to study."

In the case of IUBAT students, the commuting context also features prominently. Most students reported using commuting time on buses or other public transport to read e-books. While this habit allows them to make use of otherwise idle time, the physical movement of the vehicle, crowding, and ambient noise often disrupt their ability to follow complex arguments or remember details. Students mentioned that they tend to skim rather than read deeply in such situations. In her interview G2F5 explained, "I try to read my e-book on the bus, but because it's crowded and noisy, I can't fully concentrate, so I just skim through the pages instead of understanding everything." Almost same experience was echoed by some other respondents that they don't remember much of what they read. However, there is no denial of the fact that they could still gather some idea, though incomplete in most of the cases, about the text.

Multitasking-induced Distractions

A particularly significant theme that emerged from the data is the way digital reading environments provoke multitasking behavior. The abundance of different reading materials available on the internet can limit students' development of independent thinking by encouraging them to consume information passively rather than actively engaging with it (Liu *et al.*, 2022), and this pattern was clearly reflected in participants' experiences. Interviews with both groups showed that students frequently engage in multiple activities while reading e-books, sometimes consciously, sometimes subconsciously. Students claimed that they often switch to another app or website with the intention of spending only a minute or two, but then lose track of time and remain away from the e-book longer than they plan. G1M5 put it in this way, "When I read, I keep my coding software, Google, and YouTube open because I feel it makes me more productive, but in reality, social media also enters in between and my reading speed becomes slower." So, digital reading environments not only allow multitasking but actively provoke it. The ease of switching between apps and tabs encourages students to juggle multiple activities alongside reading, which makes academic reading with e-books a more challenging task.

Attachment-related Distractions

Students' lack of emotional and physical attachment with e-books compared to printed books is another important type of distraction that emerged from the data. Many respondents from both STEM and Non-STEM backgrounds expressed that they feel a stronger bond with printed books than e-books. Some students described how the tactile experience of printed books like turning pages, underlining with a pen, using sticky notes, or coloring important lines helps them remember and engage more deeply with the content. In contrast, they felt that e-books did not offer the same sense of ownership or intimacy. G2F3 explained in her words, "With a printed book I feel like it is mine; I can write on it, mark it, and it stays with me. But with an e-book, it feels like I am just scrolling something on the screen". This lack of physical interaction made it harder for them to develop a sense of connectivity to the text.

Students also reported that e-books are read on the same devices used for entertainment and casual browsing which ultimately makes it psychologically difficult to switch into a fully academic mindset. In this context, G1M2 said, "When I take a printed book, my mind automatically prepares for study. But when I open an e-book on my phone, it feels like just another app, so I don't become that serious."

4.2 Effects of Distractions on Students' Overall Performance

Impacts on Physical Well-being

One of the most frequently addressed consequences of prolonged e-book reading by the respondents is physically adverse effects. The physical effects of reading e-books are also investigated by prior researchers (Alsadoon, 2020; Alsalhi, 2020;

Casselden & Pears, 2019). This issue was brought up by every respondent. They discussed the physical effects of reading e-books for extended periods of time, including headaches, back pain, eye strain, and exhaustion. G1F12 said:

> If I concentrate on the screen for a long period of time, my head and eyes begin to hurt. In fact, reading soft copies on computers and mobile devices causes back pain because I start reading PDFs anywhere, unlike reading paper books on a table.

G2M10 stated, "It's not always feasible to carry a laptop. I, therefore, frequently read PDFs on my cell phone. Red eyes, headaches, and occasionally numbness are common side effects of staring at a low-resolution screen."

This issue has been discussed several times in prior studies. According to Alsadoon (2020), one significant drawback of e-books is that readers may have headaches or eye strain as a result of their low screen resolutions. The results of the studies by Alsalhi (2020) and Casselden & Pears (2019) are similar.

Impacts on Cognitive Processing

The growth of a person's cognitive system is greatly aided and reflected by reading (Kravchenko, 2021). Consequently, it is very attainable that students' reading styles will have an impact on their cognitive development, regardless of how it occurs (Liu *et al.*, 2022). In this current study, a significant majority of interviewed respondents (25 out of 30) expressed the opinion that reading academic material via e-books, compared to print books, leads to "poor cognition" or diminished learning outcomes. This view was expressed through a number of recurrent issues in the qualitative feedback, including a change toward a shallow reading style, diminished focus, and decreased information retention. The majority of students agreed that the environment, pop-up alerts, and hyperlinks make it hard for them to comprehend the subject matter. For STEM students, the situation is more challenging. During the interview, G1M8 said, "Frequent notifications and hyperlinks make me get carried away easily. Hence, I skim more than scan and often fail to understand the subject material."

As a result, this scattered or inconsistent reading frequently obscures students' reading goals. In addition, these constant barrage of information that characterizes the contemporary media era, punctuated by innumerable notifications, disturbs people's cognitive processes and shortens their attention length (Xie, 2019). Moreover, students who are accustomed to this streamlined approach to learning and reading may reject or be afraid of conventional reading techniques, and they may even experience cognitive impairments (Guo, Kim & Rubin, 2014). G2F1 stated something interesting:

> I sometimes browse the hyperlink and forget what my actual focus was. However, I think my attention span has been deteriorated due to the abundance of materials, information, hyperlinks and other distractions,

making it very challenging to find out the gist and creatively compose something.

It is alleged that reading a text on a screen can cause disorientation (Casselden & Pears, 2019). Moreover, in his study of undergraduate students, Jian (2022) found that readers of digital media had lower cognition when reading a popular science article. Frequently, students follow reading tracks that diverge from the original reading track, causing fragmented attention and forgetting the original because they are drawn to certain minor content or hyperlinks on a website (Liu *et al.*, 2022). When learners are exposed to constant streams of scattered information, they are less able to stay focused because processing knowledge uses up their attention spans. Furthermore, the availability of a variety of reading materials on the internet may hinder tertiary level students' capacity for creative thinking by encouraging them to passively choose information (Liu *et al.*, 2022).

Impacts on Time Management Skills

According to the respondents, a frequent adverse effect of reading e-books is distraction, consequently leading to improper time management. Distraction is one of the issues that readers encounter when reading e-books, according to earlier studies (Alsadoon, 2020; Alsalhi *et al.*, 2020). 28 out of 30 participants in the current study concurred that they are easily side-tracked when reading e-books, which results in poor time management. G1F7 mentioned, "Studying on a device with an internet connection makes it extremely difficult for me to manage time at a stretch, especially at the night before a test or when I have a deadline to meet." This is completely in line with the findings of Alsaldoon, (2020), who reported that one of his respondents felt uninterested and couldn't read for more than five minutes before diverting to other websites. Casselden & Pears, (2019) also presented that some respondents claimed that reading e-books is time consuming due to its accessibility to other online diversions. As it is so simple to get e-books in the first place, it is also quite simple to stop reading them.

4.3 Attention Management Strategies

Management of Internet Connectivity

Internet has been a concern for the students as it keeps them distracted from serious reading (Shen, 2025). Though it comes with some demerits, many respondents found it useful to keep their internet connection off. When asked about their strategies to cope with various distractions faced during e-reading, 20 out of 30 respondents shared that disconnecting internet during serious reading works for them. They think that academic reading requires rigorous effort with maximum concentration. In her interview, G1F5 stated, "Academic reading and pleasure reading are not the same thing. I usually keep my internet connection off when I go for academic e-reading. Those pop-up notifications are really disturbing." Besides, disconnecting from the internet or otherwise eliminating opportunities for distraction also helps protect readers' attentional capacity. Without the constant risk of notifications or pop-ups from internet alerts, social media etc., students are more

likely to maintain deep focus on the text, supporting better comprehension and retention (Martin *et al.*, 2025). In case of comprehensibility of the content, G1M4 shared his observation, "I disconnect internet when I read any important content because it helps me to concentrate and understand better."

Moreover, experimental findings on "on-screen inferiority" under time pressure indicate that screen-based reading already taxes attentional control, which becomes worse in the presence of distractions (Delgado & Salmerón, 2021; Shen, 2025). Thus, by disconnecting internet access or working in "offline e-book mode," students offset some of the cognitive load imposed by digital media reducing mind-wandering, improving sustained attention, and enabling deeper cognitive engagement with academic texts as found in the study.

Use of Optimized Reading Devices

According to this study, e-book platforms that allow bookmarking, highlighting and annotation foster deeper engagement because they encourage students to mark and revisit key content. Empirical work shows that the content and quantity of digital highlights and annotations predict how well students learn from multiple digital texts (List & Lin, 2023). In this study many respondents expressed concern about the reading medium as they think their attention span gets changed depending on the device they use. G2M7 observed, "Reading devices and e-book apps matter. I have the habit of marking, underlining, and writing through sentences when I read rigorously. Not all the devices or apps allow me to do that." Chen *et al.* (2021) demonstrated that tools such as highlighting, annotation, bookmarking, and note-taking support deeper engagement by encouraging active reading. These features function as cognitive scaffolds, helping students maintain focus, organize information, and revisit key points as part of a structured learning process.

Students also develop practical strategies to protect their focus, including selecting devices or modes that reduce online interruptions for example, reading in offline mode or turning off notifications because such strategies reduce opportunities for distraction in both classroom and study settings (Pérez-Juárez *et al.*, 2023). While sharing his opinion, one respondent, G1M6, explained a device preference that supports this idea, "I do not rely on mobile phones though many of our friends do so. I find reading on mobile phone very ineffective. I do not use laptop even. I prefer my Kindle to read e-books." Device choice matters as studies comparing printed texts, e-readers (e.g., Kindle), and other screens reveal that tactile and navigational affordances of particular devices influence readers' ability to orient themselves in the text and thereby affect comprehension and reading experience (Mangen, Walgermo, & Brønnick, 2019). Overall, attention and engagement are shaped with better user experience and greater sustainability by platform usability (Perotti *et al.*, 2024).

Application of Self-Regulation Skills

Self-regulation strategies are found to play a central role in helping university students manage attention when reading e-books for academic purposes. Research

consistently highlights that when students actively monitor, control, and adapt their reading behaviors, their ability to concentrate during digital reading improves significantly (Chen & Su, 2019). Most of the respondents believe that strategic planning such as setting reading goals, allocating dedicated reading time, and choosing appropriate digital tools allows readers to get better output. These strategies by the students are defined as 'metacognitive strategies' as proposed by Rebecca L. Oxford in 1990. According to Oxford, these strategies, adopted by the students themselves, work "to assemble learning easier, faster, more enjoyable, more self-directed, more effective, and more transferable to new situations" (Oxford, 1990, p. 8). Moreover, in their study, Chen & Su (2019) found that students who plan their reading sessions and specify objectives demonstrate stronger attentional control and better comprehension outcomes. While discussing on how students can adjust to digital distractions, 25 out of 30 respondents emphasized on self-awareness. Respondent G2F8 opined, "I try to handle my e-reading carefully, especially before the exam. I fix my reading hours and accordingly decide the volume of texts I need to go through."

Another critical dimension found in the study involves the use of behavioral strategies to minimize distractions. Two-thirds of the respondents think that a comfortable and disturbance free reading environment is highly required for effective reading and it depends on how the readers are managing their reading conditions. G1M1 shared his observation, "I usually sit for serious reading late at night, keeping my mobile phone away from me. I do not have a kindle which would be a better choice. So, I use my laptop." Besides, some respondents reported that motivational aspects of self-regulation also influence attention. Calamlam (2023) argues that when students perceive digital reading as personally meaningful and academically valuable, they are more willing to self-regulate their reading behaviors leading to sustained attention and reduced tendencies toward distraction-driven task-switching.

5. Conclusion

While e-books have become an integral part of contemporary academic life offering portability, accessibility, and alignment with the digitization of higher education, they also create distinctive challenges for sustained attention, comprehension, and time management. The findings show that digital reading is not a simple act of accessing text; rather, it is embedded in technological, contextual, cognitive, and emotional dynamics. Academic reading on e-books is frequently disrupted by device-based and context-based distractions, as smartphones and laptops function simultaneously as learning tools and sources of entertainment, and everyday environments often fail to support deep concentration. Moreover, e-book platforms tend to encourage multitasking, while students report weaker emotional and physical engagement with digital texts compared to printed books. It has also been noticed that these distractions during e-book reading lead to notable physical strain, weakened cognition, fragmented attention, and ineffective time management.

Together, these findings indicate that digital distraction is not a minor inconvenience, rather a substantial barrier to effective academic reading and learning. Yet the study also reveals that students are not passive victims of these conditions; they actively attempt to manage their attention. In this process, three broad attention management strategies were identified: disconnecting from the internet during serious reading, using e-book friendly devices or applications, and employing self-regulation strategies. Turning off mobile data or Wi-Fi was found to reduce interference from social media and messaging for some students. Besides, other students opted for less distracting devices such as e-readers or chose applications that support stable highlighting and annotation to ensure smooth technical support for their reading purpose. In addition, individual strategies like developing personal routines, such as reading at night, keeping phones physically away, setting specific reading goals, allocating fixed time slots, and arranging quiet, comfortable spaces etc. have been considered advantageous for e-reading. These strategies align with wider research emphasizing that conscious planning, environmental control, and thoughtful use of digital tools enhance attentional focus in screen-based reading.

This study offers valuable insights into how students experience distractions during academic e-book reading. Nevertheless, several limitations need to be acknowledged, which also open pathways for future research. The study was conducted with a relatively small sample size which restricts the transferability of the findings to broader institutional or national contexts. Besides, the study relied solely on students' self-reported experiences without observational or digital-trace data that could capture real-time reading behaviors. These limitations suggest multiple directions for further inquiry, including cross-university or large-scale comparative studies, mixed-method or longitudinal research incorporating screen-tracking or device-usage analytics. Future studies may also examine how e-book usage pattern varies among the public university and private university students, discipline-specific reading demands shape digital engagement, and whether gender or socio-economic perspectives has any role to students' choice of e-books.

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