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Mediating Role of Student Life Balance in Quality E-lifestyle and Academic Performance Relationship: A Resource Economics Approach

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ABSTRACT

This study examines how student life balance (SLB) mediates the relationship between Quality E-lifestyle (QEL) and academic performance (AP) among Generation Z students in Bangladesh, applying a resource economics framework. Using survey data from Bangladeshi university students, the study employs structural equation modeling (SEM), along with correlation, regression, and bootstrapping techniques, to explore the mediating role of SLB. Results reveal that QEL significantly enhances SLB, which in turn positively impacts academic performance. SLB is confirmed as a critical mediator in the QEL-AP relationship. Focused on Bangladeshi students with cross-sectional data, the study encourages longitudinal research for broader insights. The study highlights the importance of managing digital habits to optimize academic outcomes. Institutions should implement strategies to enhance SLB and digital well-being, supported by policy interventions for balancing academic and personal responsibilities. This research uniquely explores SLB's mediating role in the QEL-AP dynamic, contributing significantly to literature on digital lifestyle, academic performance, and resource economics among Generation Z.

Keywords: Student Life Balance, Quality E-lifestyle, Academic Performance, Mediating, Resource Economics.

Introduction

The rapid convergence of the internet and mobile communication technologies has had a profound impact on student life, particularly through the increasing reliance on Information and Communication Technology (ICT) (Kim et al., 2023). ICT-based products and services have significantly influenced the way students engage with their academic and personal lives (Abu Bakar, 2022). The shift towards a Quality E-lifestyle (QEL), where digital devices and the internet are integral to daily activities, has become a defining feature of modern education (Chen & Li, 2021). For students in Bangladesh, where ICT adoption is growing rapidly, managing the balance between digital engagement and academic success is a critical concern (Islam & Rahman, 2022). Among a sample of 1,773 Bangladeshi students, 38.2% use the internet for academic purposes, while 67.5% use it primarily during leisure time (Dhaka Tribune, 2024). These figures illustrate the complex role that the internet plays in both enhancing academic performance and contributing to potential distractions (Kim et al., 2023).

In this context, the concept of Student-Life Balance (SLB) becomes crucial. SLB acknowledges that students must fulfill multiple roles, not only as learners but also as

individuals with personal responsibilities that include family, relationships, hobbies, health, and self-care (Rajani, 2020). Achieving a balance between these competing demands is essential for maintaining a fulfilling and productive life, which in turn affects academic outcomes (Stewart & Davis, 2021). Students who effectively balance their academic commitments with personal responsibilities tend to remain motivated, engaged, and perform better academically (Park & Lee, 2023). However, mismanagement of time and resources—especially in the digital space—can lead to negative consequences, both academically and personally (Al-Kurdi et al., 2021).

From a resource economics perspective, students can be seen as resource managers who must allocate finite resources—such as time, energy, and attention—across different domains of life (Becker, 1965). In this framework, SLB represents the efficient allocation of these resources, where students must decide how much to invest in their academic tasks versus personal and social activities (Kelly & Johnson, 2022). The concept of opportunity cost is central here: when students allocate too much time to one area (e.g., excessive leisure or social media use), they incur a cost in terms of lost academic productivity (Ferreira et al., 2023). Conversely, over-investing in academics at the expense of personal well-being can result in burnout and stress, reducing overall academic performance in the long term (Zhao et al., 2022).

The Quality E-lifestyle (QEL) refers to a balanced and productive use of digital tools, platforms, and devices that enhance learning without overwhelming the student with distractions (Lee et al., 2020). If E-lifestyle is well-managed, it allows students to access educational resources, collaborate with peers, and improve their learning experience (Bennett & Maton, 2021). However, if students misuse digital tools—spending disproportionate amounts of time on non-academic activities such as social media or entertainment—this imbalance can lead to academic underachievement (Al-Kurdi et al., 2021).

The relationship between QEL and academic performance (AP) is not direct; it is mediated by the student's ability to balance their personal, academic, and digital lives (Chen & Li, 2021). This mediating role of SLB can be explained using the Social-Ecological Model, which recognizes that individual behaviors are influenced by multiple layers of factors, including personal, interpersonal, institutional, and societal contexts (Bronfenbrenner, 1979). In this model, SLB is an individual-level factor that impacts how students interact with their academic environment and manage the pressures of both personal and academic life (Stewart & Davis, 2021).

Students face considerable challenges in maintaining a balance between their E-lifestyle and academic performance. Many students report difficulties in regulating their time spent on digital devices, especially when personal entertainment and social media are easily accessible (Park & Lee, 2023). According to resource economics, this overuse of technology can be seen as a misallocation of resources, where students invest too much of their limited time in non-productive activities, leading to inefficiencies in academic output (Becker, 1965). For instance, excessive time spent on social media not only detracts from time that could be spent studying but also contributes to mental fatigue, making it harder for students to focus on academic tasks (Zhao et al., 2022).

On the other hand, when students are able to use ICT tools effectively for academic purposes—such as for research, collaboration, and accessing online learning resources—they enhance their academic performance (Bennett & Maton, 2021). The key challenge, therefore, lies in finding the right balance between digital engagement for personal use and academic

productivity (Islam & Rahman, 2022). Failure to do so can result in digital distractions, poor time management, and ultimately, lower academic performance (Ferreira et al., 2023).

To empirically test the relationship between Quality E-lifestyle (QEL), Student Life Balance (SLB), and Academic Performance (AP), this study will employ Structural Equation Modeling (SEM) (Kline, 2016). SEM is an advanced statistical technique that allows researchers to examine the direct and indirect relationships between multiple variables. It is particularly useful in this context because it can capture the complexity of the mediating role that SLB plays in the QEL-AP relationship (Kelly & Johnson, 2022). In this model:

- QEL serves as the independent variable, representing the quality of students' digital engagement (Chen & Li, 2021).
- AP is the dependent variable, capturing students' academic outcomes (Park & Lee, 2023).
- SLB functions as the mediating variable, influencing the strength and direction of the relationship between QEL and AP (Stewart & Davis, 2021).

This approach allows for the identification of both direct effects (e.g., the direct impact of QEL on AP) and indirect effects (e.g., the role of SLB in mediating this relationship) (Kline, 2016). By using SEM, we can quantify the degree to which student-life balance acts as a critical mediator, helping to clarify the mechanisms through which a balanced E-lifestyle leads to improved academic performance (Chen & Li, 2021).

The convergence of ICT and mobile technologies has fundamentally altered student life, offering both opportunities and challenges (Kim et al., 2023). While a Quality E-lifestyle can enhance academic performance, its effectiveness depends largely on the student's ability to maintain a balanced life (Lee et al., 2020). From a resource economics perspective, achieving Student-Life Balance (SLB) is essential for optimizing academic outcomes and personal well-being (Becker, 1965). By exploring these causal relationships through a SEM approach, this study aims to provide a deeper understanding of how students can optimize their academic performance through effective management of their E-lifestyle (Kline, 2016).

Literature Review

Quality E-Lifestyle of Students

"E-lifestyle" refers to the adoption of digital technology in organizing and enhancing one's lifestyle, including time management, activities, hobbies, and decision-making processes. In today's highly interconnected world, e-lifestyle encompasses how individuals utilize digital platforms, goods, and services to improve daily living (Ali et al., 2016). "Quality E-lifestyle" refers to the positive aspects of digital engagement, where technology usage enhances overall well-being and academic success. According to Eurofound (2017), quality of life involves factors such as personal happiness, lifestyle satisfaction, and a balance between work and personal activities. In the context of students, a high-quality e-lifestyle should support their academic goals while also allowing for personal fulfillment and social engagement (Campisi et al., 2015).

From a resource economics lens, the quality of e-lifestyle can be seen as the efficient use of digital resources to maximize the student's overall utility—academic success, personal

happiness, and well-being. Studies suggest that internet use, when aligned with academic purposes, can significantly improve students' quality of life by enhancing their physical and psychological well-being, boosting self-esteem, and fostering social relationships (Çikrıkci, 2016). This mirrors the concept of economies of scale in economics, where the optimal use of a resource (in this case, the internet) yields increasing returns, improving not only academic performance but also quality of life. However, research also highlights the negative aspects of an over-reliance on digital tools. For instance, gadget addiction can have detrimental effects on students' quality of life (Hayward et al., 2013; Toda et al., 2016). This aligns with the economic notion of diminishing returns, where excessive use of a resource (e.g., digital technology) leads to negative outcomes such as mental fatigue, reduced social interaction, and lower academic performance.

Student Life Balance

Student-life balance refers to the equilibrium students must achieve between their academic responsibilities and other aspects of their personal lives, such as family, social relationships, hobbies, health, and self-care (Shahzad & Bilal, 2023). This concept highlights the importance of distributing time and effort across these various domains to maintain overall well-being. In essence, students must allocate their limited resources—time, attention, and energy—across competing priorities to ensure both academic success and personal satisfaction (Ali et al., 2016).

From a resource economics perspective, student-life balance mirrors the principles of optimal resource allocation. Students have finite resources, particularly time, which they must manage efficiently. The allocation of time to both academic and non-academic activities can be compared to the economic trade-offs individuals make when allocating money or other resources. Achieving student-life balance involves deciding how much time to invest in studying, socializing, engaging in hobbies, or maintaining physical and mental health (Busalim et al., 2019). When this balance is achieved, students maximize their overall utility, leading to enhanced well-being and academic success.

Higher education institutions have recognized the importance of student-life balance and have started offering counseling services, workshops, and training programs aimed at helping students manage their time and energy more effectively (Ahmad, 2015; Ali et al., 2016). These programs can be seen as institutional investments in human capital, where universities provide students with the tools to manage their resources more effectively, ultimately improving their academic outcomes and overall satisfaction with their educational experience.

Academic Performance

Academic performance refers to a student's ability to complete academic tasks and achieve success in various academic subjects, often measured through objective criteria such as grade point average (GPA), final course grades, or other standardized assessments (Busalim et al., 2019). It encompasses a wide array of skills, including the ability to manage time effectively, understand and apply course materials, and engage in critical thinking. In this context, academic performance is a key indicator of a student's success in meeting educational objectives (Díaz-Morales & Escribano, 2015).

From a resource economics viewpoint, academic performance can be understood as the outcome of how students allocate their time, effort, and cognitive resources. Students who

allocate their resources efficiently by prioritizing study time, seeking academic support, and managing distractions are more likely to achieve higher academic performance (Campisi et al., 2015). This is consistent with the economic principle of maximizing returns on investment, where students who invest more time and effort into their studies typically see better academic results.

However, academic performance is not solely determined by the amount of time spent studying. According to Díaz-Morales and Escribano (2015), academic achievement is influenced by a combination of psychological, social, and economic factors. This implies that academic success is the result of a complex interplay between internal and external resources. A student's mental health, family support, and access to educational resources are key components that contribute to their academic outcomes. (Busalim et al., 2019). In economic terms, this reflects the idea of complementary inputs, where multiple factors must work together to produce optimal academic performance.

Furthermore, academic performance can also be linked to the broader concept of human capital development. By achieving high academic performance, students enhance their knowledge, skills, and capabilities, which increases their future earning potential and employability (Ahmad, 2015). This can be viewed as an investment in their future economic prospects. In the long term, students who perform well academically are more likely to secure higher-paying jobs and contribute to the economy through innovation, productivity, and expertise (Shahzad & Bilal, 2023).

However, poor academic performance may have significant economic implications. Students who struggle academically may face higher costs in terms of extended time spent in education, lost opportunities for employment, or lower future earnings (Çikrıkci, 2016). This can be compared to economic inefficiency, where the resources (time, money, and effort) spent on education do not yield the expected return in terms of academic success and career advancement.

Moreover, from a resource economics perspective, students must allocate their time, energy, and attention efficiently across competing academic and personal demands. By balancing these resources effectively, students can maximize their academic success and personal fulfillment, leading to a more satisfying and productive university experience. This balance not only enhances individual outcomes but also contributes to broader societal benefits, as students who perform well academically are more likely to make valuable contributions to the economy and society in the future (Ahmad, 2015). Institutions can further support this balance by providing resources and services that help students manage their time and energy more effectively, ultimately improving both academic performance and overall well-being.

The Effect of Quality E-Lifestyle (QEL) on Academic Performance

The global shift towards digitalization, accelerated by the COVID-19 pandemic, has transformed how individuals interact with technology, including its role in education. With widespread adoption of mobile devices and online platforms for daily tasks, universities worldwide have transitioned from traditional in-person learning to fully virtual environments (Aguilar & Huanca, 2023). This shift emphasizes not only academic collaboration but also the emotional well-being of students (Aguilar & Perez, 2021).

From a resource economics perspective, a Quality E-Lifestyle (QEL) involves the efficient

allocation of time, attention, and digital tools to optimize academic performance. Students must balance their use of digital resources, much like economic agents managing scarce resources to maximize utility. Excessive time spent on non-productive digital activities, such as social networking, can lead to diminishing academic returns. Upadhayay and Guragain (2017) found that overuse of social networks negatively impacts academic performance and focus. This mirrors the economic concept of diminishing returns, where the value of time spent on social media decreases, detracting from study time.

Similarly, Imani et al. (2018) showed a strong link between online dependency and educational burnout, where excessive digital engagement for entertainment depletes cognitive resources, reducing academic capacity. On the other hand, students who efficiently manage their digital tools, using platforms like Google Scholar and Moodle for academic collaboration, experience enhanced academic performance (Harrath & Alobaidy, 2016). This efficient allocation of resources is akin to optimizing capital in economics, leading to higher academic returns.

The principle of comparative advantage also applies, as students gain an edge by using digital tools to boost academic productivity. Platforms like LinkedIn Learning and Coursera offer specialized knowledge, allowing students to allocate their time more effectively and improve performance. Furthermore, the concept of externalities explains how overuse of non-academic digital tools can negatively affect group collaboration, while responsible use fosters positive externalities, enhancing peer learning (Jha et al., 2016).

The trade-off between academic and non-academic digital use mirrors economic trade-offs between consumption and investment. Students must balance entertainment consumption with academic tasks to maximize their academic performance. A study on Qatari students found that excessive social network use led to lower GPAs (Al-Yafi, El-Masri, & Tsai, 2018), highlighting the importance of managing time as a finite resource.

Hence, a well-balanced Quality E-Lifestyle, viewed through the lens of resource economics, significantly influences academic performance. Efficient digital resource management leads to better academic outcomes, while excessive non-academic use results in diminishing returns and cognitive depletion.

Hypothesis:
H1: Quality E-Lifestyle (QEL) significantly influences Academic Performance.

The Effect of Quality E-Lifestyle (QEL) on Student Life Balance

In today's digital landscape, the concept of Quality E-Lifestyle (QEL) is crucial for understanding student life balance. The integration of technology in academic and personal spheres requires students to manage competing demands effectively (Smith, 2020). This balancing act involves allocating limited resources—time, attention, and cognitive energy—essential for achieving life balance in their digital environments.

The rise of e-communication has blurred the lines between academic and personal life, complicating students' ability to maintain equilibrium (Jones, 2019). This reflects a resource allocation problem, where students must distribute their time and energy across various activities. According to Ljungkvist and Moore (2023), young professionals struggle with balancing personal and professional priorities due to inexperience, a challenge that also affects students.

Students face a trade-off between leisure and work, akin to how individuals allocate resources between consumption and saving. While digital communication tools keep students connected to academic responsibilities, they often do so at the expense of personal well-being (Taylor & Green, 2021). The increased focus on academic tasks can diminish the utility of leisure time, potentially leading to burnout.

Digital platforms like WhatsApp and Zoom facilitate academic and social interactions, serving as a capital investment in social relationships (Barker, 2018). However, there are opportunity costs; time spent on social interactions could alternatively be dedicated to studying. Deniz and Geyik (2015) found that students often use the internet more for leisure than for academic purposes, suggesting suboptimal allocation of their online time.

Despite the challenges, a quality e-lifestyle can streamline activities, helping students manage their schedules more efficiently. Den-Nagy (2014) noted that information and communication technology (ICT) helps students overcome time management issues, aligning with the resource economics concept of efficiency.

The shift to online learning during the COVID-19 pandemic highlighted the need for effective time management as a resource (Miller, 2020). While virtual classrooms save time by eliminating commutes, they also pose new challenges by making students feel pressured to remain constantly available for academic tasks, encroaching on personal time.

Excessive reliance on digital platforms can negatively impact life balance. Deniz and Geyik (2015) noted that internet addiction hinders students' ability to manage their responsibilities, reflecting a misallocation of resources. Students who spend too much time online for non-academic purposes experience diminishing returns, as their productivity in other areas declines.

The trade-off between digital consumption and life balance can be framed as an economic decision-making process, where students must consciously choose how to allocate their time (Roberts, 2022). Just as consumers weigh spending versus saving, students must balance digital engagement with activities that foster long-term well-being.

This trade-off is particularly relevant in higher education, where intense academic pressures exist (Nguyen, 2021). The opportunity cost of engaging in non-academic activities can be significant, detracting from study time, exercise, and face-to-face interactions. Achieving a quality e-lifestyle means finding a balance between digital engagement and real-world responsibilities, much like balancing immediate consumption with future investments in economics.

Hence, a quality e-lifestyle profoundly impacts student life balance from a resource economics perspective. Efficiently allocating time, attention, and cognitive energy between academic and personal pursuits is vital for maintaining life balance in a digital world. However, overreliance on non-productive digital activities can lead to a misallocation of resources, diminishing academic performance and personal well-being. To achieve life balance, students must navigate the trade-offs between digital consumption and real-world responsibilities.

Hypothesis:
H2: Quality E-Lifestyle (QEL) significantly influences Student Life Balance.

The Effect of Student Life Balance on Academic Performance

Achieving a balance between academic pursuits and personal life is essential for student success. Students who effectively manage their time and integrate academic responsibilities with social activities tend to perform better than those who experience stress or imbalance (Bhat & Sheikh, 2023). This balance fosters not only academic performance but also personal development and well-being. From a resource economics perspective, student life balance represents the optimal allocation of limited resources—primarily time and cognitive energy—across competing demands (Gomez et al., 2018).

Students face the challenge of allocating time and attention between academic tasks and personal activities. Like economic agents, they must decide how to divide their time among studying, socializing, extracurriculars, and rest. Opportunity cost is crucial here; time spent on one activity detracts from another. For instance, focusing too much on academics can limit social interactions, while excessive personal engagement can reduce study time (Cardwell & Lewis, 2017).

Successful students recognize the importance of maintaining this balance to maximize the utility of their time, enabling them to pursue interests, foster growth, and enhance their educational experience. Studies indicate that students who manage their academic and personal lives effectively achieve higher academic performance (Bhat & Sheikh, 2023).

Conversely, an imbalance can lead to diminishing returns in academic performance. High academic workloads, mental health challenges, and inadequate social interactions can result in burnout and decreased productivity (Chan & Fong, 2020), particularly among students in health-related disciplines (Paro et al., 2010; Tempski et al., 2012; Al-Mutori et al., 2020). This imbalance represents a misallocation of resources, where overinvestment in academic work compromises personal health and social engagement, ultimately lowering overall performance.

Research by Cardwell and Lewis (2017) highlights that students who prioritize academics to the exclusion of personal life often experience significant stress. This stress arises when academic demands exceed their available mental and emotional resources. This scenario illustrates a negative externality of overinvestment in academics, as the costs of excessive focus negatively impact mental health and social well-being (Schneider & Preckel, 2017).

Effective time management is critical for achieving life balance, allowing students to allocate resources efficiently across academic and personal activities. The Social Ecological Model supports this idea, suggesting that individual factors like time management and motivation influence academic performance (Gomez et al., 2018). Well-organized students can meet academic demands while maintaining their personal lives, avoiding burnout and cognitive decline, which enhances academic outcomes.

Time management helps students achieve productive efficiency, maximizing benefits from their investments in academic and personal activities. Scheduling regular study sessions, incorporating breaks, and allocating time for social activities can enhance focus and cognitive energy, leading to better academic performance—similar to optimizing resource use in economic models (Gomez et al., 2018).

Additionally, social and emotional factors significantly contribute to balancing academic and personal life. Sugara et al. (2020) emphasize that social connections, including friendships and community involvement, enhance well-being and academic performance. These relationships provide emotional support and guidance, positively impacting academic performance.

Social capital serves as a valuable resource for achieving academic performance. Students with strong networks often receive peer support, collaborate effectively, and access resources that enhance their educational experience. Positive social interactions reduce stress and anxiety, allowing greater focus on academics, underscoring the need for balance between academic responsibilities and personal relationships (Sugara et al., 2020).

External pressures, like societal expectations and peer influence, also affect life balance. Rayhorn (2018) found that students often strive for academic excellence to gain acceptance from high-achieving peers, which can lead to unhealthy competition and stress. This pressure may disrupt the balance between academic and personal life, diminishing well-being and performance.

From an economic perspective, the psychological cost of peer pressure may outweigh the benefits of academic performance, particularly when personal health and social connections are sacrificed. Schneider and Preckel (2017) identified various student-specific factors influencing academic performance, highlighting the importance of managing both internal and external resources for optimal outcomes.

Academic performance has long-term implications for students' professional and personal lives. The Organization for Economic Cooperation and Development (OECD) (2016) indicates that academically successful students tend to earn higher incomes and enjoy better health. From a resource economics viewpoint, academic achievement represents an investment in human capital, yielding significant long-term returns. Maintaining a balance between academics and personal life helps maximize this investment, ensuring sustained success and well-being (OECD, 2016).

Therefore, student life balance significantly impacts academic performance. When students effectively allocate their time and resources between academic and personal activities, they are more likely to achieve success. However, disruptions to this balance—due to heavy workloads, social pressures, or poor time management—can lead to stress, burnout, and reduced performance. Achieving student life balance involves optimizing the allocation of time, cognitive energy, and social capital to maximize academic outcomes (Gomez et al., 2018; Sugara et al., 2020).

Hypothesis:
H3: Student life balance significantly impacts academic performance.

The Mediating Role of Student Life Balance in the Relationship Between Quality E-Lifestyle and Academic Performance

The relationship between Quality E-Lifestyle (QEL) and academic performance is complex, involving various factors that influence how students engage with digital environments, manage personal lives, and achieve academic performance. Research indicates that student life balance plays a mediating role in this relationship, either facilitating or hindering the positive effects of QEL on academic performance (Dima, Busu, & Vargas, 2022; Kim et al., 2019).

From a resource economics perspective, this dynamic reflects how students allocate limited resources—time, energy, and attention—across academic and personal responsibilities to maximize academic performance (Zhang et al., 2020).

Students, viewed as rational agents, face the challenge of balancing academic demands with personal obligations, especially in digital learning environments. Excessive time spent on non-academic online activities incurs opportunity costs, reducing time for studies (Alghamdi et al., 2020). Conversely, leveraging digital tools for academic purposes can enhance performance. For QEL to positively impact academic performance, students must balance their academic responsibilities with personal life, which depends on their resource allocation skills (Lu & Cutumisu, 2022).

Student life balance is crucial for managing the demands of online learning and personal obligations (Sugara et al., 2020). Research shows that individual commitment, regulatory environments, and system parameters influence academic performance, but these factors are interconnected. A student's ability to balance life obligations plays a key role in determining how these influences affect academic outcomes (Zhang et al., 2020).

Economically, life balance reflects an individual's capacity to allocate resources efficiently (Schneider & Preckel, 2017). Achieving this balance allows students to focus on learning without being overwhelmed by personal obligations. Conversely, struggles to maintain balance—due to excessive internet use or personal demands—can diminish the positive effects of QEL on academic performance (Alghamdi et al., 2020).

Recent studies indicate that students who balance personal and academic lives perform better academically in online environments (Lu & Cutumisu, 2022). In contrast, those who fail to achieve this balance often experience higher stress levels, burnout, and poorer performance (Alghamdi et al., 2020). This illustrates how life balance mediates the relationship between QEL and academic performance, as effective time management enhances students' ability to utilize digital tools and online platforms (Seok, 2007).

Economic research supports the importance of system parameters, individual commitment, and personal demands in student performance, with life balance serving as a mediator (Zhang et al., 2020; Kim et al., 2019). System parameters—such as e-learning quality and resource availability—can improve performance but only if students balance academic demands with personal life. Without this balance, even well-designed systems may fail to yield better academic results (Gomez et al., 2018).

Individual commitment, or the effort students dedicate to their studies, is directly influenced by their ability to manage responsibilities (Schneider & Preckel, 2017). Students overwhelmed by personal obligations or distracted by the internet may struggle to engage fully in their studies, leading to lower performance. Conversely, maintaining a healthy balance enhances motivation and engagement, fostering academic performance (Zhang et al., 2020).

Personal demands from work, family, and social relationships can also affect academic performance (Alghamdi et al., 2020). When these demands are high, students may struggle to allocate enough time to their studies. However, achieving balance can prevent personal demands from interfering with academics, potentially providing support and purpose.

The mediating role of student life balance is complicated by internet addiction, happiness, and loneliness (Ansari et al., 2016). Internet addiction negatively impacts well-being and academic performance, particularly when students spend excessive time online for non-academic purposes. From a resource economics perspective, this reflects a misallocation of resources, where time spent online detracts from academic work and personal well-being (Schneider & Preckel, 2017).

In contrast, students who use digital tools responsibly—focusing on academic activities while maintaining balance—are more likely to experience positive outcomes (Dima, Busu, & Vargas, 2022). Seok (2007) suggests that e-learning can enhance achievement through collaborative learning and access to information, but students must balance digital use with offline life, including social interactions and health.

The COVID-19 pandemic underscored the importance of student life balance in the QEL-academic performance relationship. Increased reliance on online tools during the pandemic affected students' ability to balance academic and personal lives. While some students thrived by effectively managing their time, others faced higher stress and diminished performance due to blurred boundaries between academic and personal life (Lu & Cutumisu, 2022).

Henceforth, student life balance plays a crucial mediating role in the relationship between Quality E-Lifestyle and academic performance. From a resource economics perspective, this balance represents an optimal allocation of time, attention, and energy across academic and personal activities. When students achieve balance, they are more likely to experience the positive effects of QEL on their academic outcomes. Disruptions to this balance—due to excessive internet use, personal demands, or system inefficiencies—can hinder academic performance.

Hypothesis:
H4: Student life balance mediates the relationship between Quality E-Lifestyle and academic performance.

Research Methodology:

This research is to explore the effect of quality e-lifestyle (QEL) on the academic performance (AP) of students, with a specific focus on the mediating role of student life balance (SLB). Drawing from the resource economics framework, the study investigates how students allocate their time, energy, and digital resources towards their academic and personal lives. The survey was conducted among university students in Dhaka, Bangladesh, who actively engage in e-lifestyle . This research specifically targets Generation Z students, whose academic and lifestyle patterns are shaped by their interaction with digital tools. A total of 384 valid responses were collected from a randomly selected sample of students, with male participants representing 57% and female participants 43%.

Instrumentation: The survey instrument comprised three constructs: Quality E-lifestyle (QEL), Student Life Balance (SLB), and Academic Performance (AP). Quality E-lifestyle (QEL) adapted from prior research on e-lifestyle (Hoque et al., 2018). Six items adapted from the work of Cameron & Quinn (2006) were used to assess Student Life Balance (SLB), focusing on time management, stress coping mechanisms, and overall well-being (Cameron & Quinn, 2006). Academic Performance (AP), the construct for academic performance was adapted from Křeménková, & Novotný (2020) to assess academic performance. Six items were

included to measure overall academic performance. A five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to capture all constructs (Likert, 1932).

Data Analysis: Data were analyzed using Structural Equation Modeling (SEM) through IBM SEM-AMOS software, which allows for the exploration of both direct and indirect relationships between constructs (Hair et al., 2019). SEM, a second-generation multivariate analysis technique (Hoque et al., 2018), was employed to assess both the measurement and structural models (Byrne, 2016). The measurement model test for unidimensionality, reliability, validity, and fitness, as guided by the standards set by Hoque et al. (2017b) for achieving the minimum value under confirmatory factor analysis (CFA) procedure (Awang, 2015).

Results:

To ensure the robustness of the constructs, the measurement model was first tested for validity, reliability, and unidimensionality (Bagozzi & Yi, 2012). According to Hoque et al. (2017), unidimensionality is achieved when the factor loadings for all items are positive and exceed 0.6. Convergent validity was verified through the Average Variance Extracted (AVE), where values above 0.5 indicate acceptable convergent validity (Awang, 2015). Construct reliability was assessed using Composite Reliability (CR) with a threshold of 0.6, and internal reliability was established when Cronbach Alpha values exceeded 0.7 (Hoque et al., 2018). Table 1 presents the results of factor loadings, CR & AVE, for each construct. The measurement model fit was assessed through various indices such as RMSEA, GFI, and CFI, all of which indicated a satisfactory model fit (Hu & Bentler, 1999).

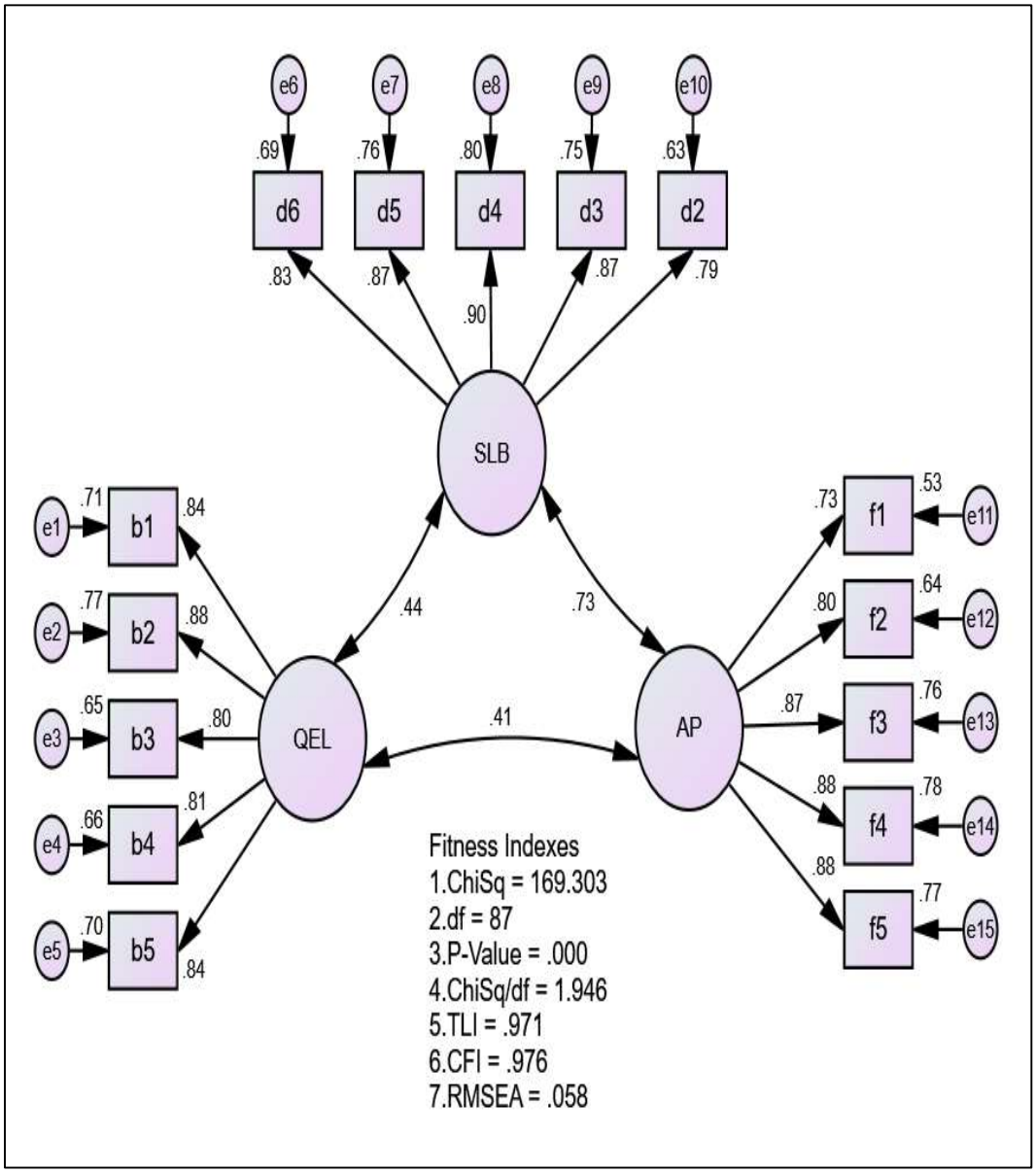

Figure 3: CFA Results for Measurement Model

Table 1: CFA Results for Measurement Model

Constructs & Dimensions	Dimensions & Items	Factor Loading	Composite Reliability (CR) (> 0.6)	Average Variance Extracted (AVE) (> 0.5)
Quality E lifestyle (QEL)	**B1**	.84	.864	.680
	B2	.88		
	B3	.80		
	B4	.81		
	B5	.84		
Student Life Balance	**D1**	.83		

(SLB)	**D2**	.87	.904	.759
	D3	.90		
	D4	.87		
	D5	.79		
Academic Performance (AP)	**F1**	.73	.936	.709
	F2	.80		
	F3	.87		
	F4	.88		
	F5	.88		

The values of factor loading for every item of three constructs with CR and AVE shown in Table 1 which specified all latent constructs (i.e., QEL, SLB & AP) have carry-out convergent validity, unidimensionality, and construct reliability by meeting the minimum value of AVE 0.5 for convergent validity, factor loading for all items for constructs are positive with minimum value 0.6 for unidimensionality, and CR 0.6 and AVE 0.5 for construct reliability (Awang et al.,2017; Awang et al., 2017; Awang, 2015; Awang, 2014). Moreover, according to Hoque & Awang (2019), Abdullah et al. (2019), Siddiqui & Hoque (2018), Awang et al. (2017), and Awang (2015), one way of achieving discriminant validity is the correlation between independent variables must be less than 0.85 (Hair et al., 2019). Second criterion of discriminant validity is when the diagonal values (i.e.$\sqrt[2]{AVE}$ for the respective construct) in the table will be higher than any values in their rows and columns respectively then discriminant validity will be achieved (Fornell & Larcker, 1981). Discriminant validity was achieved using Hoque (2019) and Fornell and Larcker's (1981) method, where the square root of AVE for each construct was higher than the inter-construct correlations (Fornell & Larcker, 1981). Table 2 summarizes the discriminant validity index, indicating that the model's constructs are distinct from one another (Hoque 2019, Awang et al., 2017b).

Table 2: Discriminant Validity Index Summary

Construct	**Quality E-lifestyle (QEL)**	**Student Life Balance (SLB)**	**Academic Performance (AP)**
Quality E-lifestyle (QEL)	**0.824**		
Student Life Balance (SLB)	0.443	**0.871**	
Academic Performance (AP)	0.412	**0.731**	**0.842**

As shown in Figure 3, Quality E-lifestyle (QEL) has a significant positive direct effect on Academic Performance (AP) of Bangladeshi Generation Z student (β=0.089, P=.001) and hypothesis H_1 is supported.

Table 3: Squared Multiple Correlations (R^2)

Variable	**Estimate (R^2)**
Academic Performance (AP)	**0.542**

The above Table 3 indicates that the predictor of Gen Z's Academic Performance (AP) explains 54.2% of its variance. In other arguments, the error variance of Gen Z's Academic Performance (AP) is about 45.8% of the variance of gen z's Academic Performance (AP).

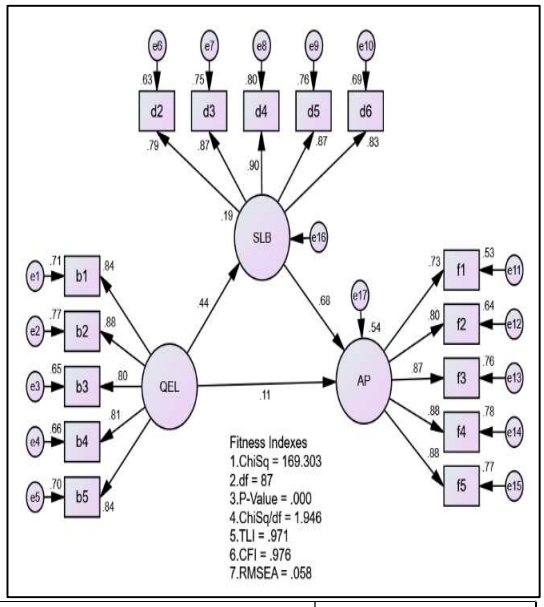

Table 4: Standardized Regression Weights of digital device addiction on lifestyle

Variable	Path	Variable	Estimate
Academic Performance (AP)	<---	Quality E-lifestyle (QEL)	**0.112**
Student Life Balance (SLB)	<---	Quality E-lifestyle (QEL)	**0.435**
Academic Performance (AP)	<---	Student Life Balance (SLB)	**0.679**

Table 4 base on Figure 4 showed that the influence of Quality E-lifestyle (QEL) on Academic Performance (AP) of Bangladeshi Gen Z was 11.2% and Quality E-lifestyle (QEL) on Student Life Balance (SLB) of Bangladeshi Gen Z was 43.5% while Quality E-lifestyle (QEL) on Student Life Balance (SLB) of Bangladeshi Gen Z was 67.9%.

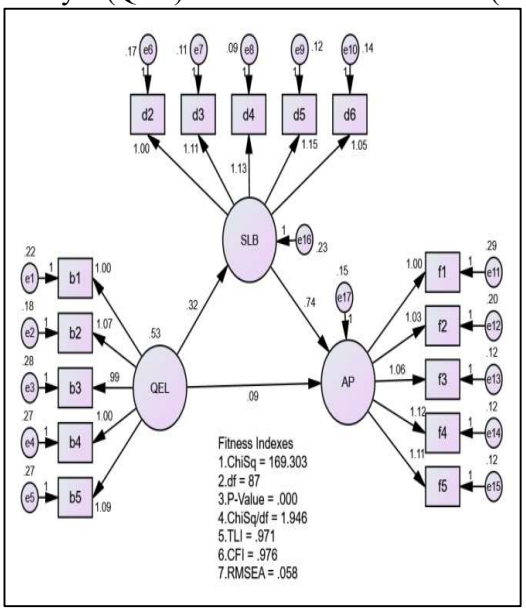

Figure 4: Unstandardized Regression Path Coefficient

Figure 5: Standardized Regression Path Coefficient

The unstandardized regression weight (i.e. shown in Figure 4) indicated that the estimate of the beta coefficient that measures the effects of the Quality E-lifestyle (QEL) construct on the Bangladeshi Generation Z‟s Academic Performance (AP) construct.

Table 5: Regression Weight for Path Estimate

Variable	Path	Variable	Estimate	S.E.	C.R.	P	Result
Academic Performance (AP)	<---	Quality E lifestyle (QEL)	**.089**	**0.042**	**2.110**	***	**Significant**
Student Life Balance (SLB)	<---	Quality E lifestyle (QEL)	**.333**	**.048**	**6.877**	***	**Significant**
Academic Performance (AP)	<---	Student Life Balance (SLB)	**.705**	**.072**	**9.790**	***	**Significant**

Note: *** P<0.01

The hypotheses of this study was posited as: H1, Quality E-lifestyle (QEL) has a positive and significant effect on the lifestyle of Bangladeshi Gen Z students; H2, Quality E-Lifestyle (QEL) has a positive and significant effect on Gen Z student life balance; and H3, Gen Z students' academic performance has a significant effect by Quality E-lifestyle (QEL) (Cao et al., 2019). The results, as presented in Table 5, revealed that the level of significance for the regression weight indicated the probability of obtaining a critical ratio (CR) as large as 2.110 in absolute value was 0.01 (Hair et al., 2019). This demonstrates that the effects of Quality E-lifestyle (QEL) on academic performance (AP) are highly significant, thus validating the hypothesis (Awang et al., 2017). The beta coefficient for the effect of QEL on the academic performance of Bangladeshi Gen Z was .089, indicating that for every unit increase in digital engagement or addiction, the lifestyle of Bangladeshi Gen Z students increased by .089. This finding supports H1 that QEL has a positive influence on academic performance (Cao et al., 2019). However, the relationship between QEL and academic performance is complex, as it is mediated by several factors, including student life balance (Hoque & Awang, 2019).

Beyond its direct effect on academic performance, QEL also plays a crucial role in influencing the overall balance that students are able to maintain between their academic and personal lives (Deng & Poole, 2019). The term "Quality E-Lifestyle" encompasses the extent to which students integrate digital technologies into their daily routines, including their academic and social interactions, leisure activities, and information-gathering habits (Siddiqui & Hoque, 2018). When used optimally, digital tools can provide students with a structured framework that helps them allocate time more efficiently, thereby enhancing their life balance (Cao et al., 2019).

As Table 5 demonstrated, the strong beta coefficient (.333) indicates not only the significant impact of QEL on academic performance but also suggests that QEL likely contributes to a student's ability to balance competing life demands (Hoque & Awang, 2019). The integration

of digital tools allows students to streamline their study habits, manage time more effectively, and reduce stress associated with academic tasks (Awang et al., 2017). For example, e-learning platforms, mobile applications, and collaborative tools can improve students' ability to schedule study sessions, manage assignments, and stay connected with peers (Deng & Poole, 2019). This heightened ability to manage time and tasks suggests that QEL positively influences student life balance (Siddiqui & Hoque, 2018).

Moreover, when digital tools are utilized in a way that supports rather than distracts from academic goals, students may experience improved well-being and a stronger ability to balance academic responsibilities with personal, social, and recreational activities (Cao et al., 2019). This balance is crucial for maintaining mental health and preventing burnout, which are essential for sustaining long-term academic performance (Hoque & Awang, 2019). Thus, the study supports H2: Quality E-Lifestyle (QEL) has a significant effect on student life balance (Awang et al., 2017).

The relationship between student life balance and academic performance is well-documented in the literature, particularly for Generation Z students who are constantly navigating the challenges of a highly digitalized environment (Deng & Poole, 2019). As highlighted in the original hypothesis, QEL positively affects academic performance; however, this impact is further mediated and moderated by the degree to which students can maintain balance in their lives (Hoque & Awang, 2019). This notion underpins H3, which states that s tudent life balance has a significant effect on academic performance among Gen Z students (Cao et al., 2019).

The findings of the study suggest that student life balance acts as a mediating variable that either amplifies or diminishes the impact of QEL on academic outcomes (Siddiqui & Hoque, 2018). When students are able to balance their digital engagements with offline activities—such as family time, physical exercise, and social interactions—their overall well-being improves (Deng & Poole, 2019). This balance enables them to focus better, manage academic stress, and maintain sustained cognitive performance, all of which contribute to better academic outcomes (Hoque & Awang, 2019).

On the contrary, when students fail to strike this balance, they may experience digital overload, where excessive screen time and social media usage negatively affect their sleep patterns, mental health, and ability to concentrate on academic tasks (Cao et al., 2019). Studies have shown that imbalance—caused by over-reliance on digital technologies for entertainment or social engagement—can lead to procrastination, anxiety, and burnout (Siddiqui & Hoque, 2018). These negative consequences directly impair academic performance (Deng & Poole, 2019).

Thus, student life balance can be considered a key determinant of academic success (Hoque & Awang, 2019). Gen Z students who maintain a healthy balance between their academic responsibilities and personal lives are more likely to thrive academically, whereas those who lack this balance tend to struggle with focus, energy, and time management (Cao et al., 2019). These findings support H3: Student life balance has a significant effect on academic performance among Gen Z students (Awang et al., 2017).

Mediation Test:

While QEL directly impacts lifestyle, this study also posits that student-life balance acts as a mediator in the relationship between quality e-lifestyle and academic performance (Hoque &

Awang, 2019). This mediation can be understood through resource economics by examining how students distribute their resources between academic demands and lifestyle preferences (Deng & Poole, 2019). A balanced student life ensures that adequate time and energy are allocated to academic tasks, personal well-being, and extracurricular activities (Siddiqui & Hoque, 2018). When students are addicted to digital devices, the imbalance created by over-investing in online activities can diminish academic performance (Awang et al., 2017). The ability to maintain a balance between different life domains becomes critical for maximizing academic outcomes (Hoque & Awang, 2019).

In this model, student-life balance functions as a buffer that mitigates the negative impact of Quality E-lifestyle (QEL) on Academic Performance (AP) (Deng & Poole, 2019). For instance, students who can efficiently manage their time between academic work and personal activities are likely to experience fewer negative effects of device addiction on their academic performance (Cao et al., 2019). This balancing act mirrors the principles of efficient resource allocation in economics, where students must distribute their finite resources across various competing priorities to achieve optimal outcomes (Siddiqui & Hoque, 2018).

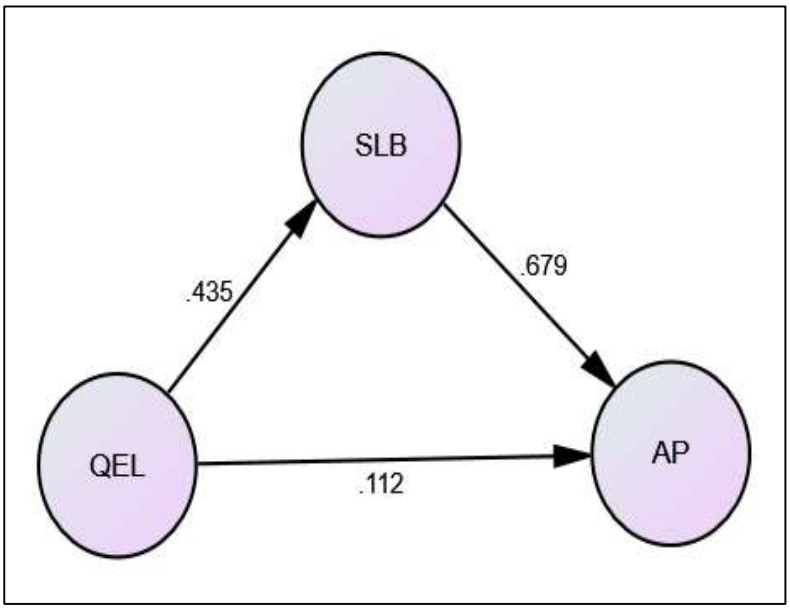

Figure 6: Bootstrapping Output for Mediation

Figure 6 demonstrates the mediation test where the indirect effect of QEL on AP through SLB ($0.435 \times 0.679 = 0.295$) is greater than the direct effect ($\beta = 0.112$), indicating partial mediation. Bootstrapping results, summarized in Table 3, confirmed the significance of both direct and indirect effects.

Table 3: Bootstrapping Results of Mediation

Effect	Estimate	Bootstrapping P-value	Mediation Type
Indirect Effect	0.295	0.001	Partial Mediation
Direct Effect	0.112	0.001	

Implications of the Study

This study contributes to the resource economics literature by highlighting how effective management of digital resources (QEL) impacts academic performance through the mediating role of SLB (Cao et al., 2019). The findings of this research have significant implications for educators, policymakers, and mental health professionals regarding the academic performance of Generation Z students in Bangladesh (Hoque & Awang, 2019). The study highlights the critical interplay between Quality E-Lifestyle (QEL), Student Life Balance (SLB), and Academic Performance (AP), revealing that since QEL is positively correlated with academic performance, educational institutions should focus on enhancing students' digital literacy (Deng & Poole, 2019). This can involve training programs that teach students how to effectively utilize digital tools for educational purposes while managing their online engagement to avoid distractions (Siddiqui & Hoque, 2018). Institutions should encourage the development of healthy digital habits (Awang et al., 2017). Workshops and seminars can help students understand the importance of balancing online and offline activities to prevent digital overload, which has been linked to negative academic outcomes (Cao et al., 2019). Incorporating modules on life balance strategies into academic curricula can help students better manage their time and energy (Hoque & Awang, 2019). Teaching students time management skills and stress coping mechanisms can lead to improved SLB, ultimately enhancing their academic performance (Deng & Poole, 2019). Universities should provide robust support systems that promote mental health and well-being (Siddiqui & Hoque, 2018). This can include counseling services and peer support programs aimed at helping students navigate the pressures of academic life while maintaining a healthy balance between their academic and personal lives (Awang et al., 2017). Continuous assessment of students' academic performance alongside their lifestyle choices should be conducted (Hoque & Awang, 2019). Universities can develop tools or platforms that allow students to self-monitor their QEL and SLB, facilitating early intervention when imbalances are detected (Cao et al., 2019). The insights gained from this study can serve as a foundation for further research into the effects of digital engagement on different demographics (Deng & Poole, 2019). Policymakers should consider the findings to develop initiatives aimed at promoting a balanced approach to technology use among students (Siddiqui & Hoque, 2018). Overall, this research underscores the importance of a holistic approach to education that considers not only academic strategies but also the lifestyle choices of students in a digital age (Awang et al., 2017).

Limitations and Future Scope

This study is limited by its focus on a single country and reliance on cross-sectional data, which restricts the ability to establish causal relationships (Hoque & Awang, 2019). To gain a deeper understanding of the long-term implications of Quality E-Lifestyle (QEL) and Student Life Balance (SLB) on academic performance (AP), future research should employ longitudinal designs (Cao et al., 2019). Such methodologies would facilitate the examination of the evolving interactions between QEL, SLB, and AP over. Additionally, investigating other mediating variables, such as psychological well-being and technological proficiency, could enhance the comprehension of how QEL impacts academic outcomes.

Conclusion

In conclusion, this research sheds light on the significant influence of Quality E-Lifestyle (QEL) on the academic performance (AP) of Generation Z students in Dhaka, Bangladesh, highlighting the mediating role of Student Life Balance (SLB). The study's findings indicate

that students who effectively manage their digital resources and maintain a balanced lifestyle are more likely to achieve higher academic outcomes. Furthermore, the findings reveal that SLB acts as a crucial mediator in this relationship, illustrating that students who balance their academic responsibilities with personal and recreational activities are better equipped to mitigate the potential negative effects of excessive digital engagement. This balance is essential for optimizing academic performance and promoting overall well-being among students in a highly digitalized environment. The implications of this study extend beyond the individual student, emphasizing the need for educational institutions and policymakers to prioritize digital literacy and healthy lifestyle practices. By implementing training programs, workshops, and supportive resources, stakeholders can help students harness the benefits of digital tools while fostering a balanced approach to their academic and personal lives. While this study provides valuable insights, it is important to acknowledge its limitations, including the focus on a single geographic context and the reliance on cross-sectional data. Future research should explore longitudinal designs and examine additional mediators to further understand the complex dynamics between QEL, SLB, and AP. Overall, this research contributes to the broader discourse on the intersection of digital engagement and academic success, advocating for a holistic approach that considers both the academic strategies and lifestyle choices of students in the digital age.

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