

GREEN FINANCE AND ESG ORIENTATION TO SUSTAINABLE BUSINESS PERFORMANCE THROUGH GREEN LOGISTICS: A CONCEPTUAL FRAMEWORK FOR THE COURIER INDUSTRY

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Abstract: *This conceptual paper presents a theoretical framework elucidating the manner in which green financing facilitates sustainable business outcomes within the parcel sector. The swift growth of e-commerce has markedly amplified the ecological impact of the package and logistics sector, leading to elevated carbon emissions, urban congestion, and packaging waste. As authorities enforce more rigorous environmental restrictions and stakeholders advocate for enhanced sustainable supply chain practices, parcel operators encounter mounting pressure to adapt their operations for sustainability. Nonetheless, the significant financial outlay necessary for projects like fleet electrification, circular packaging systems, and intelligent logistics infrastructure sometimes surpasses the limits of conventional funding methods. Utilising literature from green finance, Environmental Social Governance (ESG), green logistics, and sustainable business performance, the framework connects essential green financial instruments, such as green bonds, sustainability-linked loans, and blended finance, to vital sustainability initiatives in parcel operations. The manuscript suggests that green finance promotes environmental investments and expedites green logistics, hence improving sustainability performance and aiding the shift to net-zero logistics. This research enhances the dialogue on sustainable business performance by integrating green finance within the parcel industry and lays the groundwork for future empirical studies investigating the influence of financial instruments, ESG, and green logistics on sustainable business performance throughout logistics networks.*

Keywords: *Green Finance; Parcel Industry; ESG; Green Logistic; Sustainable Business Performance; Logistics*

Introduction

The swift expansion of the worldwide e-commerce industry has heightened the demand for parcel and logistics firms to adopt eco-friendly practices to reduce carbon emissions and comply with rigorous environmental standards (Orji et al., 2019; Zahoor et al., 2024). Nonetheless, implementing this sustainable transition is inherently capital-heavy, necessitating substantial initial investments in environmentally friendly infrastructure, alternative fuel vehicles, and advanced technical systems (Nguyen et al., 2023). The worldwide green logistics sector is anticipated to exceed \$1.85 trillion, mostly propelled by the pressing demand for decarbonising freight and urban distribution systems. The parcel delivery industry occupies a pivotal position amongst this pressure, contributing significantly to Scope 1 emissions (via line-haul and last-mile transportation) and Scope 3 emissions (due to downstream packaging waste and vendor networks, Cervicorn Consulting 2025).

Nonetheless, logistics firms have a significant financial investment obstacle in their efforts to achieve sustainability transformations. Transitioning to medium- and heavy-duty electric vehicle (EV) fleets, creating automated and energy-efficient distribution centers, and implementing reverse logistics systems for reuse packaging necessitate substantial initial financial investments. This difficulty is exacerbated by the swift growth of worldwide e-commerce, which persistently increases parcel delivery quantities. Simultaneously, freight transportation and last-mile delivery activities continue to be significant sources of carbon emissions in the logistics industry, intensifying the demand for companies to reduce their carbon footprint while managing substantial financial limitations. As to a worldwide analysis conducted by Khayyat et al. (2024), the logistics industry, particularly transport, contributes 16.2% to global greenhouse gas (GHG) emissions, with road transport alone accounting for 11.9%. As the volume of parcels increases because of e-commerce, the significant dependence on trucks, delivery vans, and aircraft intensifies this environmental impact. Storage facilities and distribution hubs necessitate substantial energy for illumination, temperature regulation, ventilation, and automated sorting mechanisms. A thorough investigation conducted by Depret (2024) about the decarbonisation of logistics highlights that the energy efficiency and carbon emissions of warehouses are vital yet frequently neglected factors. The utilisation of building insulation, heavy machinery, and continuous electricity requirements substantially increases a parcel company's fundamental environmental impact. Packaging influences emissions through two mechanisms: the carbon footprint associated with the production of materials (such as corrugated cardboard or plastic mailers) and the dimensional volume of the containers. Verros (2024) conducted research on Sustainable Packaging Logistics, revealing that optimised package dimensions significantly reduce emissions. Excessively large packing, often referred to as "shipping air," diminishes the payload capacity of delivery vehicles, necessitating additional journeys, increased fuel use, and thus elevating CO₂ emissions.

Authorities are amplifying regulatory demands on the logistics sector by transitioning sustainability efforts from optional participation to obligatory adherence. Essa (2023) emphasised that regulatory mechanisms including emission limits, carbon pricing, ecological taxes, incentives for clean vehicles, and urban zero-emission areas are progressively being adopted to expedite the shift to sustainable logistics. These measures demonstrate the resolve of governments to mandate logistics firms to implement eco-friendly practices and diminish their carbon emissions.

Notwithstanding the increasing implementation of eco-friendly efforts, Malaysia's logistics industry persists in encountering unsustainable performance challenges. Empirical data

indicates that existing green funding remains fundamentally inadequate to foster genuine green growth within the private sector. Logistics companies encounter significant initial Capital Expenditure (CapEx), including the transition to electric fleets or the implementation of solar-powered intelligent warehousing. Simultaneously, financial strategies are hindered by implementation obstacles, resulting in a fiscal shortfall that impedes economic efficacy, according to Ezuma and Matthew (2022). Green logistics is acknowledged as a crucial operational strategy for enhancing sustainability results via measures including route optimisation, environmentally conscious transportation, sustainable packaging, and supply chain effectiveness (Khan, 2019; Nicoletti & Appolloni, 2024). Nonetheless, in spite of the increasing adoption of environmentally friendly techniques, numerous package delivery companies still face challenges in translating these initiatives into measurable performance results. This implies that the success of sustainability initiatives may rely not solely on operational execution but also on the provision of financial resources and organisational dedication. In reality, the execution of sustainable logistics frequently necessitates considerable expenditure on eco-friendly technologies, infrastructure, and process reengineering. Nevertheless, parcel delivery firms sometimes encounter fiscal constraints stemming from slim profit margins, prolonged return-on-investment (ROI) timelines, and the unpredictability linked to the implementation of new sustainable practices (Romano & Yang, 2022; Nguyen, 2026). These limitations could hinder companies' capacity to cultivate green logistical proficiency and, as a result, diminish advancements in sustainable performance. Green financing (GF), as an essential policy instrument for promoting sustainable development, significantly influences the allocation of capital toward low-carbon and eco-friendly sectors. This offers crucial assistance for the green transformation (GT) of the logistics sector (LI). Nonetheless, there is scant research regarding the regional GT of the LI concerning GF and LI integration (Dai, 2025).

Moreover, Environmental, Social, and Governance (ESG) has garnered heightened focus as a tactical method for realising sustainable goals. Nevertheless, there is a paucity of empirical data concerning the impact of ESG practices on operational capabilities and their role in fostering sustainable performance in supply chain environments. de Souza Barbosa et al. (2023) emphasised the necessity for additional investigations into the correlation between ESG and performance results, while tackling new sustainability issues in supply chains. Consequently, the aim of this article is to elucidate the inadequate comprehension of how financial and strategic sustainability frameworks enhance sustainable performance within the parcel delivery sector. This research specifically investigates the impact of green financing and ESG on sustainable company performance, mediated by green logistics capabilities.

Research Objectives

The main objective of this study is to propose a green logistic as a mediator between green finance, ESG and sustainable performance. To achieve the research objective, this study will investigate the following sub-objective:

- i. To investigate the correlation between green finance and sustainable performance.
- ii. To investigate the correlation between green finance and sustainable logistics.
To investigate the correlation between ESG and sustainable performance.
- iii. To investigate the correlation between ESG and sustainable logistics.
- iv. To investigate the correlation between green logistics and sustainable performance.
- v. To investigate the intermediary role of green logistics in the correlation between green financing, ESG, and sustainable performance.

Literature Review

Green Finance

Green finance plays a pivotal role in accelerating the low-carbon transition of the logistics sector by facilitating investments in environmentally sustainable technologies and practices. Previous studies have highlighted that green finance promotes green technological innovation, improves environmental efficiency, and contributes to reducing carbon emissions in logistics operations (Zhu et al., 2023; Dai et al., 2025). Furthermore, green finance supports the sustainable transformation of logistics activities by encouraging businesses to adopt environmentally responsible practices, thereby contributing to long-term environmental and economic sustainability (Yuan et al., 2025).

Green finance acts as an essential catalyst for the low-carbon transition within the logistics sector (Pham and Guo 2025). The influence of green finance on low-carbon advancement is influenced by industrial composition and environmental policies, requiring gradual and localised implementation approaches to tackle the intricacies of the logistics sector (Guo et al., 2025). Contemporary studies progressively indicate that eco-friendly finances improve organisational sustainability outcomes. Zhao (2024) shown that green financing significantly enhances the Environmental, Social, and Governance (ESG) performance of Chinese firms. The study highlighted that the effectiveness of green finance varies by region and is augmented by contextual factors such as market dynamics, societal attention on environmental concerns, and technological progress. These findings suggest that green financing provides financial support while also encouraging firms to adopt improved environmental practices and raise governance benchmarks.(Zhao, 2024). In the domain of sustainable finance, the essential elements that require emphasis for its efficacy are green bonds, green loans, and green investments. Green bonds have surfaced as an increasingly important novel debt financing instrument to augment traditional public funding methods. Green bonds operate like conventional bonds, but their proceeds are allocated for projects expected to provide ecological benefits, according to specified standards (World Bank, 2016). The previously mentioned literature review suggests that green finance alleviates barriers to environmental investment. Numerous studies have shown that green financial instruments, such as green loans and green bonds, are crucial for advancing the research and deployment of green technologies (Gilchrist et al., 2021). As a result, the subsequent hypotheses are proposed:

H1- Green finance positively influences sustainable performance

H2 – Green finance positively influences green logistic practice

Environmental, Social and Governance (ESG)

Proactive Environmental, Social, and Governance (ESG) strategies are increasingly recognised as important drivers of long-term sustainable business performance. Firms that integrate sustainability considerations into their strategic decision-making tend to demonstrate stronger organisational performance and long-term value creation (Eccles et al., 2014). Furthermore, empirical evidence suggests that effective ESG practices are positively associated with corporate financial performance (Friede et al., 2015), while studies conducted in Malaysia have also demonstrated a positive relationship between ESG disclosure and firm performance (Wan Mohammad & Wasiuzzaman, 2021). For example, in multinational corporations (MNCs), the incorporation of extensive ESG strategies markedly improves sustainable organisational performance by cultivating an Internal Market-Oriented Culture (IMOC), which encourages

employees to synchronise their daily activities and conduct with global sustainability goals (Chen et al., 2025).

The focus on ESG has become a critical instrument in increasing the effectiveness of sustainable supply chain strategies. Karaman et al. (2024) also found that organisations that embrace sustainable supply chain strategies have lower carbon emissions and that this relationship is strengthened when suppliers are trained on ESG issues. Training on supplier ESG boosts environmental awareness, fosters ethical business practices, and helps embed sustainability across the supply chain. Therefore, the use of ESG principles promotes supply chain sustainability, environmental performance, and facilitates carbon reduction results (Karaman et al., 2024). Practices relating to Environmental, Social and Governance (ESG) have become significant in advancing sustainable logistics by promoting operational transparency, adherence to ethical standards and building long-term resilience in supply chain operations. The convergence of artificial intelligence (AI) and data analytics helps firms to more effectively manage supplier compliance with social and environmental standards, reducing the dangers of unethical practices and improving responsible supply chain governance (Leogrande, 2024). Furthermore, governance which is a key component of ESG, increases accountability, compliance to rules and regulations, and risk management through the use of intelligent technologies that improve transparency and supply chain monitoring (Leogrande, 2024). Dai and Tang (2022) further suggest that the COVID-19 pandemic disruptions exposed weaknesses in global supply chains and the need for enterprises to use ESG concepts to better supply chain resilience and sustainability.

Therefore, the adoption of ESG principles is more and more recognised as a strategic way to improve the sustainable logistics by promoting sustainability, social responsibility, and flexible supply chain effectiveness (Dai & Tang, 2022). Thus, the following possibilities are proposed:

H3- ESG positively influences sustainable performance

H4 – ESG positively influences green logistic practice

Green Logistic

The logistics industry plays a vital role in economic growth; however, its rapid expansion has contributed to excessive resource consumption, carbon emissions, and environmental degradation (Piecyk & Björklund, 2015). These challenges have intensified the need for green logistics practices, including low-carbon transportation, energy-efficient operations, and sustainable resource management (Karagülle, 2012; Dai et al., 2025). Previous studies have demonstrated that green logistics practices positively influence sustainable business performance by improving operational efficiency, reducing environmental impacts, and supporting long-term sustainability (Roy & Mohanty, 2024; Nguyen et al., 2025).

Nevertheless, the relationship between green logistics and sustainable business performance may be further explained through Environmental, Social, and Governance (ESG) orientation. ESG orientation reflects an organisation's strategic commitment to environmental responsibility, social accountability, and effective governance. Eccles et al. (2014) highlighted that organisations integrating sustainability principles into their strategies tend to achieve stronger long-term performance. Similarly, Karaman et al. (2020) demonstrated an association between green logistics performance and corporate sustainability reporting practices. Building on these findings, ESG orientation is proposed to mediate the relationship between green

logistics and sustainable business performance by translating environmentally responsible operational practices into broader organisational sustainability commitments and long-term performance outcomes.

A wide range of study has shown that green financial instruments such as green loans and green bonds are vital in aiding the research and implementation of green technologies (Gilchrist et al., 2021). Green finance plays an important role in accelerating the ecological transformation of the logistics industry in Dai (2025) by providing financial resources to support investments in sustainable logistics infrastructure and practices. The author pointed out that green financial instruments, including green credit, green bonds, green insurance, green investments and carbon finance, play a role in the adoption of green technology, green warehousing and new energy logistics vehicles, which in turn enhance the implementation of green logistics. This is consistent with a series of studies highlighting that the development of green credit, green bonds, and green funds can drive technical innovation and industry restructuring, therefore contributing to urban low-carbon transformation (Xia et al., 2023).

The aspect of ESG also influences the practices of green logistics. The report explains that the “Environmental” part of ESG challenges companies to rethink traditional practices by optimising transportation routes to limit emissions, reviewing supplier impacts, and leveraging sustainable technology in the logistics infrastructure (Leogrande, 2025). Thus, the following possibilities are proposed:

H5: Green logistic influence sustainable performance

H6: Green logistic mediates green finance to sustainable performance

H7: Green logistic mediates ESG to sustainable performance

Sustainability Business Performance

Sustainable Business Performance (SBP) refers to an organisation's ability to achieve long-term business success by balancing economic prosperity, environmental responsibility, and social well-being. It reflects the integration of sustainability principles into organisational strategies and operations to create long-term value for stakeholders while maintaining business competitiveness (Ahmad et al., 2023; Luque-Vílchez et al., 2023). Similarly, Gupta et al. (2021) conceptualised sustainable business performance as the integration of economic, environmental, and social objectives in business activities to generate sustainable value. More recently, Nogueira et al. (2025) emphasised that sustainable business performance should be evaluated through the Triple Bottom Line framework, incorporating economic, environmental, and social dimensions. Consistent with this perspective, Yadegaridehkordi et al. (2023) and Cheah et al. (2024) examined sustainable performance through financial, environmental, and social outcomes within Malaysian industries.

In the contemporary corporate landscape, companies are progressively anticipated to assume accountability for the ecological and societal consequences of their activities. Boaventura et al. (2012) assert that for enterprises to attain sustainable business performance, they must acknowledge and address the impacts of their decisions on society and the environment. Organisations committed to social responsibility prioritise resource preservation and the greater good of society by adopting sustainability measures (Ismail, 2009; Gupta et al., 2021).

The implementation of eco-friendly and sustainable practices has been acknowledged as a crucial factor in enhancing sustainable company performance. Entities that use environmentally sustainable practices can generate novel market prospects and enhance their competitive stance by increasing market share (Lin & Ho, 2008). Weng et al. (2015) provided empirical evidence indicating that environmentally sustainable practices favourably affect a company's financial success by boosting sales revenue, enhancing market share, and improving corporate reputation, hence drawing in more customers.

Moreover, environmentally sustainable practices have been linked to enduring organisational achievement. Habib et al. (2021) indicated that the adoption of sustainable practices in manufacturing enhances long-term organisational performance. Ameer and Khan (2022) asserted that the implementation of eco-friendly techniques bolsters sustainable business performance by concurrently yielding economic advantages, enhancing environmental results, and fortifying organisational sustainability.

Furthermore, the availability of financial resources is essential for facilitating sustainability efforts. Green financing furnishes companies with the essential funding to invest in eco-friendly technologies, sustainable practices, and corporate social responsibility initiatives. Green funds serve as an external catalyst that enhances organisational sustainability by alleviating financial limitations, augmenting managerial efficiency, and fostering green innovation, so leading to improved business performance (Wang et al., 2024).

Underpinning Theory-Natural Resource-Based View

Recent empirical studies have further reinforced the relevance of the Natural Resource-Based View (NRBV) in explaining how environmentally oriented resources and capabilities contribute to sustainable business performance. Odock et al. (2024) applied NRBV to the logistics sector and demonstrated that green logistics practices positively influence firm performance, highlighting the strategic value of environmentally responsible operations. Similarly, Tetteh et al. (2024) integrated NRBV and Stakeholder Theory, revealing that green logistics practices enhance carbon-neutral supply chain performance, with stakeholder pressures influencing these relationships. From a financial perspective, Jiang and Ma (2025) found that green finance policies contribute to corporate sustainable development, particularly when supported by environmental investments. Although their study did not explicitly test NRBV, its findings are consistent with the view that financial resources facilitate the development of environmental capabilities. Collectively, these findings suggest that green finance can support the acquisition of environmentally sustainable resources, while green logistics represents an operational capability through which firms may achieve superior sustainability outcomes. Furthermore, ESG orientation may strengthen the strategic integration of these environmental capabilities into organisational decision-making. Thus, NRBV provides a relevant theoretical foundation for examining the relationships among green finance, green logistics, ESG orientation, and sustainable business performance within the Malaysian courier industry. From the NRBV viewpoint, green finance constitutes a strategic organisational asset that empowers companies to allocate resources toward ecologically sustainable projects. Green finance facilitates the acquisition of funds necessary for fostering environmentally sustainable transformations, encompassing the integration of green technologies, investment in electric delivery vehicles, establishment of energy-efficient infrastructures, and enhancement of smart routing systems to mitigate ecological effects (Zheng, 2025). Such investments generate prospects for firms to cultivate eco-friendly practices while enhancing their enduring competitiveness.

Apart from financial assets, NRBV highlights the significance of organisational competencies in transforming resources into beneficial results. In this research, ESG orientation serves as an elevated organisational competency that signifies a company's strategic dedication to incorporating environmental, social, and governance factors into its commercial choices (Tan et al., 2022). By adopting an ESG framework, companies can convert eco-friendly investments into operational strategies including sustainable packaging, prudent resource use, transparent governance structures, and lifecycle carbon management (Suroto, 2022). The NRBV posits that a sustained competitive edge arises when valuable resources are adeptly integrated with strategic competencies. Thus, the incorporation of green finance as a strategic asset and ESG orientation as an organisational competency allows parcel delivery companies to improve pollution mitigation, foster product stewardship, and advance sustainable growth. This alignment enables companies to transcend mere regulatory adherence and cultivate sustainable business performance via enhanced economic results, environmental stewardship, and social value generation (Almada & Borges, 2018; Hart & Dowell, 2011). Consequently, NRBV offers a robust theoretical framework for elucidating the role of green financing and ESG orientation in enhancing sustainable business performance in the parcel sector.

Proposed Conceptual Model

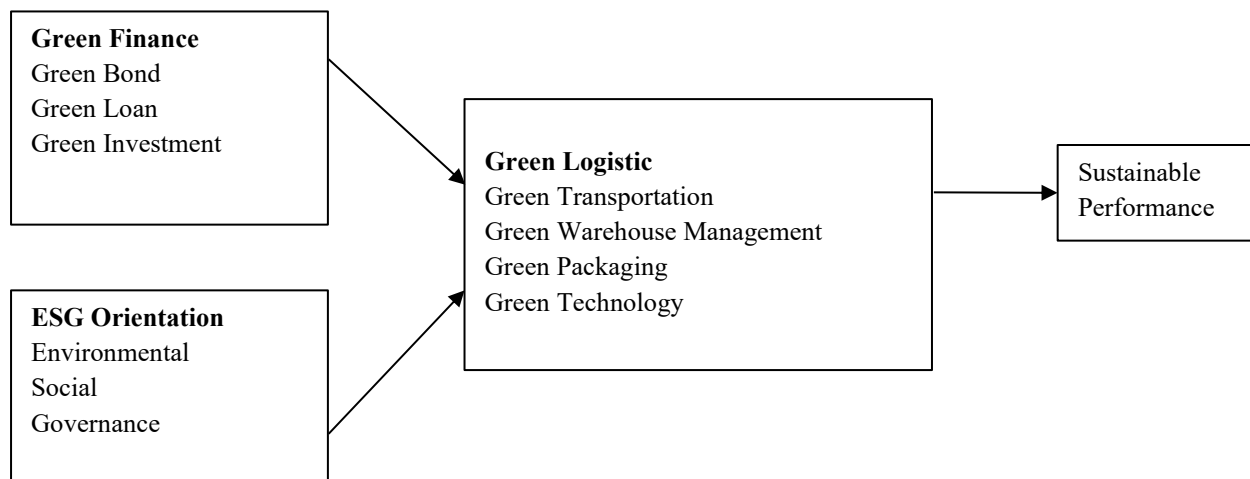


Figure 1: Proposed Conceptual Model

Propose Research Methodology

This study follows a quantitative methodology research process:

Research Design

Stage 1: Preliminary Study and Extensive Literature Review

- Using purposive sampling, interviews will be conducted with 5 to 10 managers of courier services to get preliminary information about implementation of green logistic in their organisation.

Stage 2: Instrument Development and Validation

- The instrument will be developed based on the information from the preliminary interview, extensive literature review and underpinning theory.
- A pre-test will be conducted through online surveys with industry and academic experts in related fields to assess the face and content validity.

- A pilot test will be conducted to refine the questionnaires and check the instrument's reliability and consistency.

Stage 3: Data Collection, Confirmatory Analysis and Hypotheses Testing.

- The primary survey will be conducted, and data will be analysed using IBM Statistical Package from Social Science (SPSS) software version 26.0
- The Pearson Correlation Analysis explores the significant statistical relationships between critical success factors, lean implementation and service quality performance.
- For analysing mediation effects between lean implementation and critical success factors and service quality performance, the PROCESS procedure by Andrew F. Hayes was used for the bootstrapping analysis for mediation in this study.

Sampling Design

The unit analysis for this study is comprised of the managers of a courier service company in Malaysia, who are representing their respective organisations. This investigation utilises samples from Malaysian courier service providers' supervisors. The census method will be employed to conduct this study, as there are only 122 enterprises operating in Malaysia. We employ a census method for the survey, in which all managers respond to the questionnaires on behalf of their organisations.

Conclusion

The study offered a conceptual framework on how green finance and ESG might be a strategic facilitator for sustainable business transformation in the parcel industry. The rapid growth of e-commerce and parcel delivery activities has exacerbated environmental problems, including carbon emissions, energy consumption, and packaging waste, which are increasingly forcing logistics companies to adopt more sustainable business models. There is more awareness of environmental responsibility and regulatory standards are higher but many parcel firms still face significant cost challenges to deploying green technologies and sustainable infrastructure. The study conceptualises green finance as a strategic resource that helps organisations develop environmentally orientated competencies and achieve long-term sustainability objectives based on the Natural Resource-Based View (NRBV). The guideline specifically states that financial instruments such as green bonds, sustainability-linked loans, blended finance and ESG-oriented investments can help simplify access to the cash necessary for sustainable operational change. These investments target projects that include fleet electrification, green warehousing, smart route optimisation, renewable energy adoption, and sustainable packaging practices. The suggested paradigm also proposes that green logistics is a mediating mechanism by which green finance translates into improved sustainability performance. This method could also provide organisations with environmental benefits such as emission reduction and resource efficiency and at the same time, improve economic resilience and corporate reputation. This study thus helps extend the sustainable finance literature to the context of the parcel business by incorporating financial capabilities with operational sustainability and positioning green finance not only as a lending vehicle but as a driver for strategic environmental change.

In practical terms, the framework guides commercial corporations on how to structure sustainability investments, helps policymakers establish targeted financial incentives and enables investors in analysing environmental performance and long-term value generation. Future studies are recommended to empirically test the postulated correlations, undertake cross-

country comparative investigations, and study the integration of emerging digital technologies and ESG-oriented operational skills in sustainable logistics ecosystems.

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