Unlocking Loyalty: The Crucial Role of the Host Country Technological Business Environment for Transnational Corporations

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Abstract:
Foreign companies, including transnational corporations (TNCs), have demonstrated disloyalty toward their hosts in Sub-Saharan Africa (SSA) by, among other things, scaling back strategic expansion plans, closing productions, moving operations and shifting income-generating activities to different countries. Therefore, this study explores the impact of the host country's technological business environment (TBE) on TNC loyalty towards the host country, Tanzania. Data was collected from 131 executives of TNCs in Tanzania using a cross-sectional survey questionnaire. The measurement model was evaluated using confirmatory factor analysis. The hypotheses were empirically tested using hierarchical regression analysis. Findings reveal that a robust TBE significantly enhances TNC loyalty, with specific elements like local production processes, innovativeness, information system infrastructure, IT competency, IT support services, and technological equipment usage having a positive impact. However, TNC loyalty is not affected by R&D or systemic integration. These results not only deepen the theoretical understanding of TNC loyalty but also fill an existing gap by linking it to TBE. The study suggests that policymakers should focus on strengthening key components of the TBE to nurture and maintain TNC loyalty. In Tanzania, this involves ensuring high-quality, knowledge-intensive production systems, well-developed information system infrastructure, elevated computer literacy and competency levels, robust IT support services, advanced technological equipment usage, and a culture of innovativeness.

Key words: Technological business environment, technological factors, transnational corporations loyalty, Host country, Tanzania

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Introduction

Technology has been an utterly important component for economic development around the world, and it is even more important in countries where transnational corporations (TNCs) operate in order to maximize financial gains (Kavila & Kilika, 2023). This is because foreign firms, including TNCs, together with foreign direct investments (FDI), come with benefits that overflow over various sectors (Saittakari et al., 2023; Narula & Pineli, 2018). Specifically, the host nation benefits from direct employment, technology transfer, foreign exchange, improved infrastructure, surged government revenues, and boosted gross domestic product (GDP), to mention but a few (Magai, 2021; Narula & Pineli, 2018).

Particularly low-income nations have been characterized as those benefiting much more from the horizontal and vertical overflows of benefits from foreign investments, including TNCs (Xiao & Tian, 2023). Thus, in a low-income country like Tanzania, the continuation of TNC activities in the host country, which is equivalent to TNC loyalty, is essential for economic development. Therefore, to attract, build, and maintain TNC loyalty, these nations must provide a conducive commercial atmosphere, especially in technological business environments (TBE).

Meanwhile, Mwadime (2020) described TNCs as foreign-owned corporations that conduct businesses outside of their home country and have subsidiaries in different countries as well. These businesses have been supplied with capital and other substantial resources such as products, manufacturing techniques, technological know-how, and professional management (Mwadime, 2020). This demonstrates that TNCs have incentives that offer chances to move these resources to other nations where there are supportive TBE conditions (Belal et al., 2022). Such TBE conditions may include the technological intensity, technological competition intensity, and technological maturity that nurture more innovations, productivity, increased sales, revenues, and profitability (Belal et al., 2022). Likewise, according to Jozef et al. (2019), TNC loyalty is conceptualized as the willingness of a TNC to continue operating in the host country through repeated investments, reinvested earnings, and making helpful recommendations in favor of the host country. In fact, TNCs feel they should continue with operations and diversification plans despite changes in the host country's business environments that might cause them to shift income-generating activities to another country (Jozef et al., 2019; Medioli et al., 2023).

However, Tanzania and other Sub-Saharan African nations have recently experienced the departure of some foreign companies and a rise in TNC disloyalty (Houreld et al., 2016; Kagochi & Durmaz, 2018; Ngowi, 2018). For instance, between 2013 and 20122, TNCs' reinvestment of earnings in Tanzania significantly decreased on average by around 146.92% [Tanzania Investment Centre (TIC), 2018, 2023]. Along with scaling back growth and expansion plans, some TNCs also closed business operations, while others transferred their income to other nations (Houreld et al., 2016; Klinger et al., 2023; Ngowi, 2018; Toloui, 2022). These behaviors point to low levels of TNC loyalty in Tanzania. Additionally, despite the firm's capability to fund investments through retained earnings and tap in foreign savings, foreign firms in the manufacturing sector are not expanding

investments because of poor business environments, including TBE and high electrical outage losses (Klinger et al., 2023).

Scholars have linked the disloyal behaviors of TNCs in Tanzania with low productivity and profitability, which may have been influenced by the TBE (Klinger et al., 2023; Rwamuhuru & Tegambwage, 2021; Toloui, 2022). The host nation level of innovations and creativity, technology systems and infrastructure, technologically cultural orientations, and technological innovation commercialization have been recognized as major factors affecting TNC performance (Klinger et al., 2023; Rwamuhuru & Tegambwage, 2021). Belal et al. (2022) and Okechukwu and Okoronkwo (2018) established that, to a large extent, the host country's TBE has an impact on the performance of TNCs. This means the TBE creates technological capacity advantages through host nation technological equipment usage, information technologies, telecommunications, research and development, innovativeness, and information systems integration, which affect the TNC systems, operations capability, production costs, products, and services, which influence TNC profitability (Bag et al., 2021).

In addition, other researchers have linked the poor performance of TNCs in Tanzania with inadequate technology systems and infrastructure, low computer literacy and competency levels, a lack of consistent technological innovation commercialization policies, and an inability to value the new technology (Liliane, 2022; Rwamuhuru & Tegambwage, 2021). These weaknesses hinder users, including TNCs knowledge and host government institutions and regulatory bodies' systemic integrations, rational decision-making, and TNCs performance (Belal et al., 2022; Liliane, 2022). However, these studies have not shown how poor performance leads to TNC disloyalty.

Moreover, according to Ismail (2023), TBE in Tanzania is characterized by a lack of ideas, funding, and cultural orientations that value technology to fuel and promote better TBE conditions for facilitating local innovations and creativity, information technology, human capital, data analytics, and collaborative relationships that could boost TNC operations and productivity (Diyamett et al., 2011; Maseko, 2022; Tinali, 2022). These shortcomings are because of the high cost of advanced TBE systems, equipment, and infrastructure (Okechukwu & Okoronkwo, 2018; Tinali, 2022). Furthermore, the Tanzanian TBE is characterized by an underdeveloped technological education and training system, power outages, inadequate technological experts, and the absence of proper technical know-how and skills (Maseko, 2022; Tinali, 2022). The aforementioned problems can obstruct various TNC operations in the country and result in TNC underperformance, which may trigger TNCs and their investors to reduce expansion strategic plans, close operations, and shift income, among other things (Klinger et al., 2023; Medioli et al., 2023).

Frankly speaking, according to Gehl et al. (2015) and Salam et al. (2018), complex, lackluster, inconsistent, and frequent changes in government policies regarding TBE policy in Tanzania adversely affect TNCs ability to keep pace with innovativeness, expansion, technological investment, and competition. This leads to failure in strategic corporate performance outcomes and productivity (Sarumbo, 2022). Meanwhile, the TBE's turbulent conditions may affect foreign firms and

impact the host country's economic growth (Rajala & Kankaanpää, 2023). This underlines the importance of having a relatively intensive and progressive level of TBE as an essential ingredient to grasp the benefits of TNCs in a reciprocity mechanism. Also, the host country TBE conditions in which TNCs operate are apprehended in the aspects of technological intensity, technological competition intensity, and technological maturity. These technological conditions give TNCs differentiation and improve TNC performance. Accordingly, Tanzania is considered to have poor technological intensity (Diyamett et al., 2011). This raises questions about whether low or high TBE intensity stimulates or discourages TNC loyalty. However, less is known about TBE and TNC loyalty.

In fact, TBE uncertainties and turbulence affect foreign operations and performance (Okechukwu & Okoronkwo, 2018) and the host country's competitive advantage (Narula & Pineli, 2018), which is crucial for TNCs continued operations in a host country. But Belal et al. (2022) and Ismail (2023) argued that in a host country with a technology-oriented cultural orientation, TNCs are more likely to perform better. Also, Davireng et al. (2022) documented that better performance keeps TNCs innovative, expanding, technologically advanced, and competitive in the host country. Further, Salam et al. (2018) and Sarumbo (2022) assert that a good TBE situation significantly improves TNC performance. In fact, these authors emphasized that TBE enhances creativity, boosts innovations, and facilitates economies of scale, which can ignite attitudinal and behavioral loyalty (Liliane, 2022). Despite the fact that better TBE conditions can stimulate TNC loyalty in Tanzania, the link between TBE and TNC loyalty has not yet been empirically examined.

Previous studies have investigated the effect of the TBE on the TNC performance. For example, Okechukwu and Okoronkwo (2018), indicated that the TBE has a significant effect on the medium-sized TNC market share. According to Rajala and Kankaanpaa (2023), digital-based TBE has a positive association with Performance. Further, Davireng et al. (2022) reported a significant influence of TBE on firm performance. Likewise, Hennelly et al. (2019) found a direct impact of the level of information technology in the host country on firm performance. Notwithstanding, most previous researchers have found a positive and significant impact of TBE on TNCs performance (Hennelly et al., 2019). Moreover, other studies focused on exploring the impact of the business environment on TNCs performance, and findings show that the business environment has a significant effect on TNC performance (Khornen, 2005; Mwadime, 2020). However, these studies were too broad in scope as they focused on investigating all business environment factors (political, economic, social, cultural, and technological) together in one study (Okechukwu & Okoronkwo, 2018). This study specifically focuses on the impact of TBE on TNC loyalty.

In fact, due to the lack of studies that examined TBE and TNC loyalty and considering the reciprocity benefits of TNC loyalty, this is a crucial objective of both TNC and the host country. This study aims to fill the gap by investigating the impact of the host country's TBE on TNC loyalty to the host country. It is one of the first investigations to explore TNC loyalty towards the host country from the TBE perspective. This study strengthens the

theoretical concept of loyalty by proposing and testing a model of TNC loyalty to the host country, particularly in the TBE context. From a practical perspective, the study will benefit host countries, particularly policymakers in low-income countries, by providing them with an understanding of the differential contributions of the individual dimensions of the TBE on TNC loyalty, enabling them to develop policies that maximize on key TBE dimensions to build and maintain TNCs for economic prosperity. Moreover, the findings on TNC industry sector type and experience, suggest to practitioners (TNCs and their investors) the importance of the industry sector type to invest in and the duration of TNC years of operations in order to realize sufficient gain.

The rest of the paper is organized as follows: first, the introduction; second, the theoretical and literature review; third, the methodology; fourth, the results and discussion of findings; and lastly, the conclusion, recommendations, research limitations, and future study direction.

Literature Review

Theoretical Review

The eclectic paradigm of Dunning (1977, 2001) is employed to elucidate TNCs and related facts about the host country's location conditions, including the level of TBE (Dunning, 1977; Owusu et al., 2023; Saittakari et al., 2023). An eclectic theory explains the motive for TNCs to engage in oversea businesses and suggests the host country business environments, including TBE, which comprise dimensions such as technological equipment usage, information systems, production systems, transportation and communication systems, information systems, information technology, and systemic integrations, to mention but a few, facilitate successful operations (Dunning, 2001).

The eclectic theory further states the advantages of the host country's technological conditions and the host nations technologically oriented cultural orientations that facilitate TNC performance (Hufbauer, 1970; Owusu et al., 2023). Also, the theory demonstrates the impact of technology-related government decisions, actions, and policies on foreign firm performance (Magai, 2021; Liliane, 2022; Saittakari et al., 2023). In this context, TNCs operate in countries where they feel that TBE facilitate operations and enable them to achieve their strategic objectives (Hufbauer, 1970; Klinger et al., 2023; Medioli et al., 2023), and hence business continuity and sustainability, which equates to loyalty, in a host country. Moreover, an eclectic theory enlightens on the effect of the firm's internal specific advantageous factors, such as size, industry type, and TNC experience, on TNC performance in the host country. Therefore, TNC experience, size, and industry type are controlled to capture the impact of TBE on TNC loyalty, and ensure consistency, accuracy and thoroughness of results (Davireng et al., 2022). The eclectic theory informs this study by providing independent variables that include the host country's information systems, production systems, innovativeness, IS infrastructure, IT competency, IT user support services, and systemic integrations. However, the electric theory does not clearly explain how the location condition like TBE can be linked to TNC loyalty. Therefore, social exchange theory (SET) is employed to explain the connection between TBE dimensions and TNC loyalty towards the host country.

The SET illustrates how exchange principles are sustained when participants

follow the "rules of exchange" (Blau, 1964). According to Cropanzano and Mitchell (2005), these rules combine reciprocity and repayment principles. Relationships develop into mutually beneficial commitments over time (Cropanzano & Mitchell, 2005). As a result, partners establish and uphold relationships because they anticipate delighting in communal trade, which entails a series of transactions that lead to commitments through reciprocal duties (Blau, 1964). This implies that any benefits gained result in debts that may only be settled by restitution. Due to the reciprocity principle, parties will continue to be partners as long as they are given sufficient technological and economic incentives. For the purpose of this study, TNCs will be devoted to a host country whose TBE is advantageous to their ability to conduct business due to reciprocal commitments. SET highlights the potential connection between TNC loyalty and the host country's TBE, which this study seeks to confirm.

Technological business environment (TBE)

According to Okechukwu and Okoronkwo (2018), TBE refers to external or outside the organization technological factors that influence the TNC's ability to use and apply knowledge of humanity, tools, and techniques to produce products and services. Host country TBE plays a crucial role in shaping the TNC strategies and operations (Salam et al., 2018). In this view, favorable host country TBE effects decisions and strengthens the innovation, competitiveness, and adaptability of the foreign firms, including TNCs, which is likely to results into a greater probability of much higher performance of TNCs (Chung et al., 2022). With this regard, better TBE can result to new products or services development, achieving technological innovation in production and organizational innovation in business (Chung et al., 2022). Thus, understanding and harnessing the host country's technological landscape is pivotal for TNCs to flourish in a globalized economy.

In this respect, TBE factors that are expected to affect TNC loyalty include the host country's technological change rate, technological equipment usage, production systems, innovativeness, information technology (IT), information systems (IS), research and development (R&D) level, and systemic integration (Diyamett et al., 2011; Hussein et al., 2007; Khornen, 2005). According to Diyamett et al. (2011) and Salam et al. (2018), these factors affect TNC performance in Tanzania. Moreover, studies show that the TBE embraces the nature and level of national technological changes, productivity, innovativeness, and inventions, information technological advancement, R&D, and information systems integrations within the host country, which affect the strategic decisions, choices, and overall operations of foreign firms, TNCs included (Belal et al., 2022; Okechukwu & Okoronkwo, 2018).

As said earlier, the Tanzanian TBE is characterized as dynamic, characterized by inadequate technological innovations, the absence or insufficient training of young innovators at all educational levels, technical limitations in handling local people's innovations, a lack of national technologically oriented cultural orientations, and poor technology-environment management (Ismail, 2023; Liliane, 2022; Toloui, 2022). These studies have also revealed that Tanzania has an incoherent technology-related regulatory framework, extremely stringent regulations or the absence of regulations in key areas,

limitations on information, communication, and technology (ICT) usage and investments, unpredictable technological innovation commercialization support, the inability of policymakers to forecast and target technological growth trends in industrial development, which hinder innovation endeavors, and individuals who work for TNCs with low innovative capability that affect TNC performance (Gehl et al., 2015: Salam et al., 2018). These shortcomings are likely to result into lack of creativity, discouraging innovations, leading to poor competitiveness and low productivity, as well resulting into TNC performance failure in terms of sales, revenue, profitability, effectiveness, efficiency, market share and economies of scales (Klinger et al., 2023). Under such circumstances, TNCs lose economic incentives for business continuity (Medioli et al., 2023). This might have contributed to the loyalty challenges among TNCs in the country.

However, in addressing the aforementioned TBE challenges, various regimes have been taking inconsistent measures such as improvement of technology regulations and policy through the National Blueprint for Regulatory Reforms (NBRR) in Tanzania in 2018, putting in place innovations commercialization policy, adopting and improving electronic information systems in various government regulatory bodies including automation of all services in order to streamline services to foreign firms, including TNCs (TIC, 2018), and improvement of telecommunications infrastructure (such as adoption and access of mobile telephone, broadband, internet, 4G and 5G), and digital technologies adoption (Klinger etal., 2023; Salam et al., 2018; TIC, 2018, 2023). However, it seems that TBE has not sufficiently improved since TNCs still experience inefficiency and unsatisfactory performance in terms of competitiveness, productivity, profitability, and market share, among others (Sarumbo, 2022; Tinali, 2022).

Based on the literature presented above, which argues that the TBE significantly influences TNC performance, and considering the SET, it can be generally hypothesized that the host country's TBE dimensions have a positive and significant impact on TNC loyalty to the host country through reciprocity obligations.

Hypothesis development

Meanwhile, in accordance with the reviewed studies, an eclectic paradigm (Dunning, 1977), and SET theory (Blau, 1964), the current study expect that overall host country TBE has a significant impact on TNC loyalty towards the host country. Likewise, Hussein et al. (2007), Salawu et al. (2023) and Ozioko (2021) established that individual elements of the TBE influence TNC performance. Thus, each dimension of the TBE including host country technological equipment usage, information systemic integration, technological competency, information systems (IS) infrastructure, IT user support services, production systems, innovativeness, and R&D level, may have differential impact on TNC loyalty towards the host country (Hussein et al., 2007; Khornen, 2005). Accordingly, in Tanzania, each of these eight TBE factors are expected to have individual differential impact on TNC loyalty. Therefore, the following section provides rationale for the hypotheses of the present study.

Host country TBE and TNC loyalty

In agreement with reviewed studies above (Davireng et al., 2022; Hennelly et al., 2019;

Okechukwu & Okoronkwo, 2018; Rajala & Kankaanpaa, 2023), overall host country TBE have significant effect on TNC performance. Also, drawing from an eclectic paradigm, the host country business environment including TBE determine successful operations in countries where they operate (Dunning, 2001; Kimiagari et al., 2023). Besides, basing on SET theory (Blau, 1964), the host country effort to provide conducive TBE should be perceived by TNCs that the host country has having their best interests at heart, by offering them a conducive TBE climate. That is, TNCs are expected to behave favorably by being loyal to the host country, though reciprocity principle. Therefore, it is generally expected that TBE has a significant impact on TNC loyalty towards the host country, as hypothesize that:

H1: The host country technological business environment has a strong positive and significant impact on TNC loyalty to the host country

Host country production systems and TNC loyalty

The host country's processes and capacity to transform input into output can be characterized as the nation's production systems (Netland & Aspelund, 2013). Hill (2006) provided evidence that a host country's production systems include methods for creating goods and services from a wide range of resources. Jozef et al. (2019) and Hennelly et al. (2019) assert that quality comes first when discussing TNC performance. Therefore, a host nation with manufacturing systems that are well-aligned and distinguished for their high process and product quality cuts costs and facilitates productivity and profitability (Netland & Aspelund, 2013). Based on SET effort of ensuring quality production systems in the host country benefits both parties and thus TNCs and their investors should behaving favorably to the host country by being loyal in a reciprocal manner (Blau, 1964). This is because, conducive production systems climate set by the host country enables TNCs to fulfill their roles in the market with sufficient quantity, quality, price, and timing. Similarly, Hill (2006) indicated that the host country's production systems result in maximum use of resources, facilitate exchange of best practices, and improve human and industrial flexibility, which foster TNC effectiveness and efficiency. Since host country production systems influence TNC productivity and profitability, and drawing on SET, TNCs operating in countries with simple, modifiable and knowledge-intensive production systems are expected to demonstrate positive reciprocal responses by being loyal. Hence, it is proposed that:

H2 (a): The host country production systems have a positive and significant impact on TNC loyalty.

Host country innovativeness and TNC loyalty

According to Salam et al. (2018), the host country innovativeness is the capability of a host nation to introduce inventions or innovations that result in products. It is characterized by ability to create and introduce new products, services, or improvements to already-existing products or services in the market (Gehl et al., 2015). Also, innovativeness of the nation tends to inspire TNCs to add originality to the already-existing product line or process, thus, increasing market share, revenues, and customer satisfaction (Tanev & Frederiksen, 2014). Additionally, innovativeness acts as a function of the different actors in the interactive business environment in the host country which

surround the customer such as rival companies, other clients, rival technologies, regional distributors, and local customer and technical support providers (Gehl et al., 2015). This interaction affects TNCs' financial performance and might eventually affect how loyal they are to the host nation (Belal et al., 2022). Considering SET, a conducive innovativeness environment brings about economies of scale among different actors, including TNCs, resulting into long-term competitive advantage (Salawu et al., 2023). Hence, SET suggest that the host country's endeavor to create conducive innovativeness environment at the TNCs and their investors' best interest at heart favor TNC productivity, customer satisfaction, and profitability. The host country may be repaid by behaving favorably by being loyal through TNC continuous investments, reinvestment of revenues and positive recommendation in favor of the host country that equals to TNC loyalty to the host country via the reciprocity principle (Tanev & Frederiksen, 2014). Accordingly, this study hypothesizes that:

H2 (b): The host country innovativeness has positive and significant impact on TNC loyalty.

Host country research and Development level and TNC loyalty

The research and development (R&D) level refers to the process through which the host nation develops new knowledge that it may then employ to produce new technologies, goods, or systems for its own use or to sell (Li & Jian, 2023). Its activities are designed to develop new knowledge and enhanced services, boost corporate efficiency, cut costs, and attract both domestic and foreign investments (Xiao & Tian, 2023). Li & Jian (2023) assert that the host country's high level of R&D produces more incentives for innovation and knowledge spillovers, which lower TNC R&D expenditures and increase productivity and profitability. Besides, in agreement with SET, TNCs continue operations in countries were they reap technological and economic incentives (Tegambwage & Kasoga, 2022b, 2022c). This implies that, high level of a host country R&D encourages more innovations, output and profits which can stimulate TNC loyalty to the host nation through reciprocal obligations. Accordingly, this study hypothesizes that:

H2 (c): The host country R&D level has a positive and significant impact on TNC loyalty.

Host country information system (IS) infrastructure and TNC loyalty

Host country IS infrastructure refers to the availability of IS resources and facilities such as computers, the internet, digital infrastructures, etc. in the host country during the provision of services that support TNC businesses (Hussein et al., 2007). It is the base of shared information service delivery within the host country, which is established around IT and specific skills and experience (Mlimbila & Mbamba, 2018). According to Yates et al. (2022), IS infrastructural facilities were found to have a significant influence on TNC performance. Also, Hussein et al. (2007) asserts that the host country IS infrastructure influences innovativeness in the country and supports government bodies in developing high-quality IT plans that smooth service delivery to its users, including TNCs. By doing so, unnecessary bureaucracy, delays, corruption, and costs are eliminated (Gehl et al., 2015). Additionally, Hussein et al. (2007) found a significant effect of IS infrastructure on firm satisfaction and performance. Mlimbila and Mbamba (2018) also

documented a significant effect of IS on business performance in Tanzania. In view of this, based on SET and empirical evidence above suggest that modern IS infrastructure cultivate loyal behaviors among TNCs (Salam et al., 2018), and likely to result into TNC loyalty by performing reciprocal duties. Moreover, the availability of sufficient and advanced IS infrastructure results to better host government service delivery to TNCs, which may stimulate TNC satisfaction and thus likely to result into a great possibility of high TNC loyalty level towards the host country through reciprocation principle. Accordingly, this study hypothesizes that:

H2 (d): The IS infrastructure has a positive and significant impact on TNC loyalty.

Host country information technology (IT) competency and TNC loyalty

The host country IT competency is described as the number of skills and knowledge possessed by people in the host country to perform service-related tasks (Pérez-López & Alegre, 2012). It includes how much local people know about computers and how well they can perform tasks using computers (Hussein et al., 2007). Pérez-López and Alegre (2012) discovered that IT competency has a significant effect on organizational performance through the management process. Previous studies (Rossi & Hirama, 2022) show that IT competency leads to quality, cost effectiveness, efficiency, productivity, and profitability. This suggests that a host country whose people have computer, information system, and information technology knowledge and skills can help the TNCs recruit and maintain competent managers to form a highly technical team that enables the organization to perform well. Furthermore, the IT-competent TNC employees are flexible and capable of solving problems and administering TNCs (Salam et al., 2018; URT & UNIDO, 2012). Similarly, if a host country has many technically qualified populations, they tend to have better IT infrastructure flexibility and are able to influence TNC competitive advantage in key TNC management areas (Salawu et al., 2022). For instance, having sufficient computer-knowledgeable and IT-competent people in Tanzania helps the TNCs not outsource or recruit experts from abroad; by doing so, they reduce costs and boost profitability (URT & UNIDO, 2012). Drawing from SET, sufficient and justified availability of IT competent individuals ensure TNC business growth and development, and thus, it can result into more strategic growth and expansions plans, reinvestments and good word of mouth in favor of a host country, which equates to TNC loyalty to the host country (Cropanzano & Mitchell, 2005; Tegambwage & Kasoga, 2022c). Therefore, based on SET, host country IT competency may guarantee TNC continuity through reciprocity principle, as this study hypothesizes that:

H2 (e): The host country IT competency has a positive and significant impact on TNC loyalty.

Host country IT user support services

The host country IT user support refers to the ability of the host country to provide technical support and assistance to users, including TNCs, regarding their information, digital, and electronic services (Berger & Hatton, 2013; Salam et al., 2018). Also, it may include having enough in-country IT technical experts who can provide IT user support services instead of TNCs outsourcing from abroad (Sausi et al., 2021). This service extends to sufficient ICT technical assistance services in the country regarding computer hardware,

software, computer equipment, networks, databases, the internet, machines, equipment, etc. (Klinger et al., 2023). Accordingly, the host government's technical support services are essential on their IS or IT systems that reinforce compliance regarding electronic or virtual fiscal devices, electronic or online registration, payments, business registration, and work permit processing, among others (URT & UNIDO, 2012). Berger and Hatton (2013) argued that the sufficiency of these services in the host country helps the TNCs reduce the costs of seeking technical support from other countries and increase operational efficiency. Also, regarding Berger and Hatton (2013) findings and SET in-country efficient and sufficient ICT user support services have a significant impact on firm performance, which is likely to stimulate TNC loyalty through reciprocal obligations. Furthermore, foreign firms, including TNCs, are likely to seek help in using the systems or devices in their daily operations. The host country IS and IT experts facilitate the business environments that enable TNC profitability objectives, and hence, meeting TNCs and their investors' expectations. Basing on SET, making TNCs and investors happy may lead to a higher level of loyal behaviors in the country where TNCs operate, and there is a supper possibility of catalyzing TNC loyalty towards the host country via reciprocity and repayment principle as long as the TNCs continue gaining technological and economic incentives, as the hypothesis is developed as follows:

H2 (f): The host country IT user support services have a positive and significant impact on TNC loyalty.

Host country information systemic integration and TNC loyalty

Host country information systemic integration can be explained as the integration of various host country technologies of different regulatory bodies in terms of data, functionality, and access for facilitating service delivery to its customers, including TNCs (Hussein et al., 2007). It is an aggregation of different systems of the host government institutions and regulatory bodies cooperating together so that the system is able to deliver the overarching functionality and ensure that the various systems function together to provide the required services (Seiler et al., 2023). According to Seiler et al. (2023), the host country IS integration creates a complex information system that may include building a customized architecture or application, integrating it with new or existing hardware, packaged and custom software, and communications (Seiler et al., 2023). Information systemic integration eliminates the need for data storage and management and provides a centralized system based on a scalable and secure architecture (Chen & Zhao, 2010). In regard to this, information systemic integration can helps host government and TNCs to avoid unnecessary transaction costs (Egbunike and Okerekoite 2018). Similarly, digitalization has nurtured a number of network, process and system integrations that enhance business (Shashi et al., 2020). As well, adoption of platform-based digital technologies and processes in Tanzania, for example, e-government, e-business, etc enable host government regulatory bodies and TNCs to access, acquire and share knowledge and real-time information. Thus, increased operational efficiency and improved TNC satisfaction which can result into a greater probability of strong affinity and loyalty via a

reciprocity principle (Cenamor et al., 2019; Cropanzano & Mitchell, 2005; Rajala & Hautala-Kankaanpää, 2023). Furthermore, Bhatt (2000) discovered that host country information systemic integration has significant effects on process quality and satisfaction of TNCs. Findings suggest that the integrated technology environment is a very important aspect in creating a favorable TNC operating environment in Tanzania (Klinger et al., 2023; Salam et al., 2018).

In fact, information system integration allows a smooth and cost-effective information flow across all business sectors. Moreover, along with other advantages, the better data collection and retrieval procedure enables the host country to gain operational and economic efficiency while boosting the smooth delivery of services to its clients, including TNCs (Rajala & Kankaanpaa, 2023). This implies that host government regulatory bodies' systemic integration facilitates data accuracy, enhances user services, increases collaboration with business partners, speeds up decision-making, optimizes IT resources, and significantly supports TNC productivity and profitability (Rajala & Kankaanpaa, 2023). Based on SET, the empirical evidence above suggests that effective host country information systemic integration is a crucial factor for TNC loyalty through reciprocal obligations. Thus, it is proposed accordingly that:

H2 (g): The host country information systemic integration has a positive and significant impact on TNCs loyalty.

Host country technological equipment usage and TNC loyalty

Technological equipment describes a variety of types of tools, machines, and aided devices that are used in different sectors, such as agriculture, manufacturing, mining, construction, transportation, and hospitality, to make work completion faster in an easy way (Salawu et al., 2022). According to Salam et al. (2018) and Salawu et al. (2022), advanced technological equipment usage in the host country reduces completion time, saves costs, and improves productivity. Similarly, Klinger et al. (2023) documented that better technology usage boosts productivity. Moreover, Salam et al. (2018) found that advanced technological equipment usage has a significant effect on firm performance. These findings suggest that equipment efficiency determines familiarity with the type of work, incentives, quantity and quality of products or output, etc. This imply that the host country technological equipment usage and the technical know-how enhance the foreign firms, TNCs included, operational performance in countries where TNCs operate (Klinger et al., 2023; Salawu et al., 2022; Salisu et al., 2019). In return, drawing from SET, the TNCs will behave in favor of a host country by being loyal through reciprocation process (Tegambwage & Kasoga, 2022b, 2022c). Consequently, advanced technological equipment usage in the host country seems to be a crucial factor in elevating the host country's productivity, employment, income, and economic prosperity (Salawu et al., 2022). This results in an increase in consumer purchasing power and consumption of TNC goods and services. Hence, making TNCs have a better performance in terms of more sales, revenues, and profitability (Liliane, 2023). Based on SET, TNCs and their investors perceive that host country has having their best interest at heart by providing favorable TBE in terms of technological equipment usage. Therefore, they are expected to behave favorably by being loyal to the country where they operate through

reciprocity principle. Consequently, this study assumes that:

H2 (b): The use of technological equipment has a positive and significant impact on TNC loyalty.

Methodology

The study area

All of TNC head offices are located in Tanzania's commercial cities of Dar es Salaam, Arusha, and Mwanza, including Morogoro Municipality. Therefore, the current study was conducted in these cities (TIC, 2023). The population of the present study consisted of all 161 TNCs registered at TIC under the law of the United Republic of Tanzania (TIC, 2023), that are currently carrying out business activities in Tanzania.

Research design, sample size, and data collection

This study adopted an explanatory cross-sectional design in order to examine and explain the link between the study variables (Cohen et al., 2018). This approach enabled the researcher to investigate the relationship between TBE and TNC loyalty, collection of large amount of data using preset questions at a single point in time (Forza, 2002). Also, this study was anchored to the positivist paradigm as it look to discover objective facts and causal relationship, and cross-sectional research (Cohen et al., 2018). This positivist's perspective was suitable for testing hypotheses and study the relationship between TBE and TNC loyalty, which can be measured at a specific point in time by focusing on study objectivity and evidences from empirical researches (Saunders et al., 2019).

In fact, the current study adopted a quantitative research approach because the study put more emphasis on the quantitative methods and the objectives of this study was examined quantitatively (Creswell, 2014). Largely, the deductive approach in the current study was applied as a main approach, as it needed to collect data and test the existing theories (Saunders et al., 2019). In this view, the eclectic theory and SET and empirical literature, were used to provide and link examined variables. Hypotheses were developed basing on eclectic theory and SET, and literature. The collected relevant information was used to test the proposed hypotheses regarding TBE and TNC loyalty to the host country. The statistics posted by TIC indicated that, 161 TNCs in Tanzania were registered with TIC in Arusha, Dar es Salaam, and Mwanza commercial cities, including Morogoro municipal council. Therefore, based on the study objective, this study identified 161 TNCs to be the target population (Cohen et al., 2018; TIC, 2023). The study area was chosen because the executives of TNCs are found at the head offices located in these regions. With this regard, all 161 TNCs in Tanzania were individually visited and given survey questionnaires during the data collection exercise conducted between December 2022 and January 2023. An investigator used the drop-and-pick technique as it involve personally submission and collection of survey questionnaires by the investigator (Matto, 2021). This strategy was suitable as it helped the researcher to provide the introduction regarding the purpose and objective of the study, ensured quick submission and collection of completed questionnaire from the office of chief executive officers. The strategy also helped in checking for incomplete questionnaire as the approach offers an opportunity to request the executive to respond to the unattended question(s). Practically, the strategy ensured a higher response rate. With this regard,

TNCs executives filled out the questionnaire and only top executive from each TNC provided the information. An 81.4% response rate was recorded from the 131 questionnaires. Almost about 54.62% of the collected questionnaires were filled by chief executive officers on the same day of submission and the investigator collected them immediately. While 45.38% of the collected questionnaires were personally collected by the investigator on the regular follow-ups from chief executive officers at the head offices of TNCs. However, 25 questionnaires were not collected from 25 TNCs despite many follow-ups due to uncooperative executives. The study emphasized free participation and anonymity throughout the process of data collection (Saunders et al., 2019).

Measurement of study variables

Existing items from empirical literature were used, and the variables were built with multiple items (Hair et al., 2019) in order to maximize the construct's validity and reliability. TBE elements were specifically derived from an eclectic theory and empirical literature. Thus, among the TBE factors, host country production system, host country innovativeness, and host country R&D level were adapted from Khornen (2005), while host country IS infrastructure, host country IT competency, host country IT user support, host country information systemic integration, and technological equipment usage were obtained from Hussein et al. (2007). The TNC loyalty items, however, were modified from Tegambwage and Kasoga (2022a, b) and Swoboda and Hirschmann (2016), respectively. Both the attitudinal and behavioral elements of loyalty were operationalized based on these researchers' findings.

A five-point Likert scale was used for all variables, with (1) very poor to (5) very good being employed to assess the situation of the TBE (Diyamett et al., 2011), while (1) strongly disagree to (5) strongly agree was applied for TNC loyalty (Tegambwage & Kasoga, 2022a, b). Five international business experts verified the questionnaire items after they had been contextualized for TNCs in order to ensure their validity and clarity (Kpolovie, 2016). The expert review's modifications and other suggestions were taken into account. Before the final version for data collection was approved, the modified questionnaire underwent a pilot test among five distinct TNC chief executive officers in Dar es Salaam. Due to their removal from the actual list of TNCs, the TNCs that took part in the pilot study did not participate in the main study.

Data analysis

Stata version 17 was used to conduct confirmatory factor analysis (CFA) using the hierarchical multiple regression (HMR) model (Hair et al., 2019). CFA was used in the first stage to evaluate the reliability of the measurement variables, and the HMR model was used in the second stage to test the study hypotheses. The HMR model was chosen because it allows for the examination of numerous variables at various stages of analysis and makes it simple to evaluate the causal relationship between predictors and dependent variables (Kpolovie, 2016). Specifically, three models were created and tested, particularly using the HRM model. Model (1) tests the impact of TBE on TNC loyalty in the presence of control variables. However, to increase the consistency, accuracy and thoroughness of the investigation, Model (2) examines the impacts of TBE dimensions on TNC

loyalty in the absence of the control variables, and Model (3) examines the impact of TBE dimensions on TNC loyalty in the presence of statistically control factors, namely, years of operations in Tanzania measured as TNC experience (E), number of employees measured as TNC size (S), and TNC industry-sector type (I) in order to eliminate the counterfeit relationship. These variables have impact on performance (Saridakis et al., 2019).

Results and discussion

Assessment of measurement variables

Exploratory factor analysis (EFA) was conducted for TBE dimensions and TNC loyalty using principal component analysis (PCA) (Kpolovie, 2016). The link of items to the extracted factors using a rotated component matrix sufficiently proved the association between variables and confirmed that eight itemized factors were used to measure the independent variable and five itemized factors were used to measure the dependent variable (Table 1). The suitability of the data for factor analysis was checked by using Kaiser-Meyer Olkin's (KMO), a measure of sampling adequacy, and Bartlett's test of sphericity (BTS) for each factor (Hair et al., 2019). The outcomes in Table 1 reveal KMO values for TBE and TNC loyalty, within the acceptable ranges (above 0.5) (Hair et al., 2019), suggesting the adequacy of the sample size for factor analysis. Moreover, the factor loadings for all items were significant and above 0.5, demonstrating a definite structure and attesting to the reliability of the measurements (Hair et al., 2019).

Model 1: Testing the impact of TBE on TNC loyalty with control variables

$$LOY_i = \beta_0 + \beta_1 TBE_i + \beta_2 E_i + \beta_3 I_i + \beta_4 S_i + \varepsilon_i$$

Model 2: Testing the impact of dimensions of TBE on TNC loyalty without control variables

$$LOY_i = \beta_0 + \beta_1 HCPS_i + \beta_2 HCI_i + \beta_3 HCRD_i + \beta_4 HCII_i + \beta_5 HCIC_i + \beta_6 HCIUS_i + \beta_7 HCISI_i + \beta_8 HCTEU_i + \varepsilon_i$$

Model 3: Testing the impact of dimensions of TBE on TNC loyalty with control variables

$$LOY_i = \beta_0 + \beta_1 HCPS_i + \beta_2 HCI_i + \beta_3 HCRD_i + \beta_4 HCII_i + \beta_5 HCIC_i + \beta_6 HCIUS_i + \beta_7 HCISI_i + \beta_8 HCTEU_i + \beta_9 E_i + \beta_{10} I_i + \beta_{11} S_i + \varepsilon_i$$

where, $i = 1, 2, 3, \ldots, n$ for n observations; and ε = the random error term

LOY = TNC loyalty; β_0 = constant coefficient; $\beta_{1\text{-}11}$ = Regression coefficients; TBE = Technological business environment; HCPS = Host country production systems; HCI = Host country innovativeness; HCRD = Host country R&D level; HCII = Host country IS infrastructure; HCIC = Host country IT competency; HCIUS = Host country IT user support services; HCISI = Host country information systemic integration; HCTEU = Host country technological equipment usage; E = TNC experience; S = TNC size; I = Industry

type

Additionally, a Bartlett's test significance below 0.5 and a KMO value above 0.5 suggest the existence of a considerable correlation in the data (Hurley et al., 1997). Consequently, the reliability was confirmed by Cronbach alpha (CA) and composite reliability (CR) coefficients above the advised limit of 0.70 (Hair et al., 2019): TBE (CA = 0.861, CR = 0.790) and TNC loyalty (CA = 0.739, CR = 0.836), as indicated in Table 1. The results show that the 8 itemized factors of TBE and the 5 items of TNC loyalty have high internal consistency. In addition, the results in Table 3 reveal that all individual TBE itemized factors have positive correlations with the TBE construct, above the standard limit of 0.30 (Hair et al., 2019), thus providing evidence that each TBE element contributes significantly to the TBE scale.

The degree of convergent validity was established by factor loadings, composite reliability and average variance extracted (AVE) (Fornell & Larcker, 1981) in Table 1. Specifically, the values of factor loading, CR, and AVE are greater than 0.50, 0.70, and 0.50, respectively, suggest convergent validity (Podsakoff et al., 2003). Further, the greater the square root of AVE than the correlations between the constructs (Table 3), the more evidence that there is discriminant validity (Fornell & Larker, 1981). Generally, the investigation of the CA and CR coefficients, correlations, and AVE of the TBE and TNC loyalty variables indicates that the overall measurement scale has sufficient reliability. Moreover, the Swilk test results in Table 2 demonstrate non-significant values ($p>0.05$), which suggest that there is a normal data distribution within the sample (Snijders & Bosker, 2012).

Descriptive statistics

Table 2 shows that host country Tanzania has a fair TBE in terms of production systems, innovativeness, IT competency, information systemic integration, user support services and technological equipment usage as illustrated by mean values ranging from 3.120 to 3.803. However, the TBE conditions were unsatisfactory in terms of research and development and IS infrastructure, with mean values of 2.809 and 2.969, respectively. Consequently, TNC loyalty to Tanzania was just fair, with an average mean value of 3.803. These findings are slightly different from the reports of Diyamett et al. (2011), Ngowi (2018), and Toloui (2022), who documented a very poor business environment, including TBE, in Tanzania. This could be explained by the recent changes in the top leadership of the Tanzanian government, which took place in the year 2021 and emphasize, encourage, and support technological innovations.

Multicollinearity test

In addition, Table 2 also presents the Multicollinearity test results. The multicollinearity among the loaded factors was examined by the variance inflation factor (VIF) for each of the measurements (Hair et al., 2019). Table 2 shows that VIF values are below 5, which is ideal (Hair *et al.*, 2019). Hence, the components are not intensively correlated with one another.

Table 1: Measurement model assessment

Standardized Measurement	Factor loading	t-value	CA	KMO	BTS	CR	AVE
Technological business environment (TBE)			**0.861**	**0.815**	**674.506*** **	**0.790**	**0.530**
HCPS: Host country production systems	0.705	5.27***		0.898			
HCI: Host country innovativeness	0.526	7.85***		0.884			
HCRD: Host country R&D level	0.602	10.09***		0.838			
HCII: Host country IS infrastructure	0.751	17.59***		0.884			
HCIC: Host country IT competency	0.904	42.13***		0.79			
HCIUS: Host country IT user support services	0.920	46.36***		0.797			
HCISI: Host country information systemic integration	0.723	15.87***		0.914			
HCTEU: Host country technological equipment usage	0.811	16.62***		0.908			
TNCs Loyalty			**0.739**	**0.676**	**174.054*** **	**0.836**	**0.621**
LOY1: New investments and reinvestments of earnings in the host country	0.879	7.84***		0.672			
LOY2: Considering the host country as first choice of investments, reinvestments, and expansion plans	0.877	6.16***		0.802			
LOY3: Positively recommending the host country to other TNCs and international investors	0.573	7.83***		0.728			
LOY4: Willingness to exert considerable effort to promote the host country's investment opportunities to potential international investors	0.842	15.61***		0.628			
LOY5: Strong desire to maintain current business operations in the host country	0.726	13.02***		0.641			

Overall: KMO = 0.767; CA=0.831; Bartlett's Test of Sphericity (BTS): Chi-Square = 906.927, *df* = 91; *** = p-value < 0.001

Table 2: Descriptive statistics of host country technological business environment

Factors / Statistics	Mean	SD	Swilk Test	Min	Max	VIF
LOY: TNC loyalty towards the host country	3.803	0.586	0.093	1.900	5.000	
TBE: Technological business environment	3.107	0.307	0.147	2.000	5.000	2.570
HCPS: Host country production systems	3.176	0.650	0.374	1.000	5.000	1.520
HCI: Host country innovativeness	3.237	0.753	0.717	1.000	5.000	1.560
HCRD: Host country R&D level	2.809	0.735	0.490	1.000	5.000	2.000
HCII: Host country IS infrastructure	2.969	0.794	0.989	1.000	5.000	2.580
HCIC: Host country IT competency level	3.160	0.753	0.989	1.000	5.000	4.610
HCIUS: Host country IT user support services	3.160	0.742	0.882	1.000	5.000	4.730
HCISI: Host country information systemic integration	3.321	0.694	0.517	2.000	5.000	2.320
HCTEU: Host country technological equipment usage	3.120	0.745	0.999	2.000	5.000	3.750

Correlation between constructs

Table 3 presents correlations between the research variables. These Tables show that the intensity of correlations between constructs and variables were not strong ($r<0.80$), indicating that this study was not affected by the common method bias (Podsakoff *et al.*, 2003). Additionally, results in Table 3 reveal that TNC loyalty has positive and significant ($p<0.05$) correlations with most of the measurement variables. This implies that the TNC loyalty to the host country is determined by the TBE. However, the correlation between TNC loyalty and TBE is stronger than its correlations with dimensions of TBE. This suggest that the TNC loyalty to the host country is strongly determined by the TBE in greater extent than individual dimensions of TBE. These results are coherent with the electric theory (Dunning, 2001; Kimiagari et al., 2023).

These results are coherent with the eclectic theory that TNC success in the host country is determined by location-based business environment conditions, including TBE (Saittakari et al., 2023).

Common method bias test

To determine if a single component accounts for the majority of the variance, Harman's single-factor test was used (Podsakoff & Organ, 1986). The principal axis factoring approach and Promax rotation were used to load all factors (Podsakoff et al., 2003). The number of factors that contribute to the variance of the variables was ascertained by looking at the unrotated factor's solution. The results demonstrated that no one factor predominated and that the explained variance was 27.56%, which is significantly less than the 50% threshold limit, demonstrating that there was no common method bias problem (Podsakoff et al., 2003).

Hypotheses testing results

Table 4a-c presents the findings of hypothesis testing. Results for Model 1 show that TBE ($\beta = 0.425$, $p<0.001$) have a strong positive and significant impact on TNC loyalty in Tanzania, supporting the H1. Additionally, findings for Model 3 indicate that TBE dimensions: host country production systems ($\beta = 0.202$, $p<0.001$), host country innovativeness ($\beta = 0.098$, $p<0.05$), host country IS infrastructure ($\beta = 0.128$, $p<0.05$), host country IT Competency ($\beta = 0.381$, $p<0.001$), host country IT user support services ($\beta = 0.102$, $p<0.001$), and technological equipment usage ($\beta = 0.101$, $p<0.001$), have a positive and significant impact on TNC loyalty, supporting H2 (a, b, d, e, f and h). Host country R&D level ($\beta = 0.054$, $p>0.1$), and host country information systemic integration ($\beta = 0.062$, $p>0.1$) have positive and insignificant effect on TNC loyalty; thus, H2 (c and g) are not supported.

In the meantime, the overall TBE (Model 1) explains 23.6% of the variance in the construct of TNC loyalty. This implies that there are other dimensions of business environments, such as political, economic, and socio-cultural factors, that explain TNC loyalty in Tanzania. The findings additionally reveal that the dimensions of the TBE exert different effects on TNC loyalty, with host country IT competency having the biggest impact, followed by host country production systems, host country IS infrastructure, host country IT user support services, host country technological equipment usage and host country innovativeness

Table 3: Pearson's correlations between TBE, TBE dimensions, and TNC loyalty

Measurement factors	TBE	HCPS	HCI	HCRD	HCII	HCIC	HCIUS	HCTEU	HCISI	LOY
Technological business environment (TBE)	**0.863**									
Host country production system (HCPS)	0.646***	**0.695**								
Host country innovativeness (HCI)	0.361**	0.420***	**0.705**							
Host country R&D level (HCRD)	0.470***	0.376**	0.329**	**0.726**						
Host country IS/IT infrastructure (HCII)	0.365***	0.370**	0.264**	0.458***	**0.812**					
Host country IT competency (HCIC)	0.333**	0.319**	0.383***	0.450***	0.640***	**0.791**				
Host country IT user support services (HCUS)	0.476***	0.366*	0.319***	0.394***	0.529***	0.678***	**0.904**			
Host country technological equipment usage (HCTEU)	0.369***	0.399**	0.340***	0.482***	0.522***	0.648***	0.567***	**0.92**		
Host country information systemic integration (HCISI)	0.415***	0.368**	0.318***	0.443***	0.362***	0.535***	0.638***	0.661***	**0.723**	
TNC loyalty (LOY)	0.689***	0.444***	0.498***	0.384**	0.306**	0.300***	0.317**	0.481**	0.342**	**0.788**

Notes: Diagonal elements are the square root of AVE between the constructs and their measures. The off-diagonal elements are correlations between the constructs. Correlation is significant at 2-tailed; **=p-value<0.05; ***=p-value<0.001

Table 4a: Direct effect on TNC loyalty

Measurement factors	Model 1		
	Coefficient	**Std. err.**	**t-value**
TBE: Technological business environment	0.425	0.083	5.120***
E: Years of operations (Experience)	0.072	0.032	2.250***
I: Industry sector type (TNC Industry)	0.019	0.018	1.055***
S: Number of employees (TNC size)	0.020	0.034	0.588
R^2	0.276		
Adjusted R^2	0.236		
F-Statistics	11.8***		

* = p<0.05; *** = p<0.001

Table 4b: Direct effect on TNC loyalty

Measurement factors	Model 2		
	Coefficient	**Std. err.**	**t-value**
TBE: Technological business environment			
HCPS: Host country production systems	0.167	0.071	2.352***
HCI: Host country innovativeness	0.089	0.040	2.171**
HCRD: Host country R&D level	0.059	0.052	1.135
HCII: Host country IS infrastructure	0.117	0.028	4.179**
HCIC: Host country IT Competency	0.380	0.039	3.949***
HCIUS: Host country IT user support services	0.101	0.014	27.929***
HCISI: Host country Information systemic integration	0.061	0.010	5.922
HCTEU: Host country technological equipment usage	0.103	0.011	9.364***
E: Years of operations (Experience)			
I: Industry sector type (TNC Industry)			
S: Number of employees (TNC size)			
R^2	0.182		
Adjusted R^2	0.120		
F-Statistics	6.9***		

* = p<0.05; *** = p<0.001

Table 4c: Direct effect on TNC loyalty

Measurement factors	Model 3		
	Coefficient	**Std. err.**	**t-value**
TBE: Technological business environment			
HCPS: Host country production systems	0.202	0.063	3.206***
HCI: Host country innovativeness	0.098	0.041	2.390**
HCRD: Host country R&D level	0.054	0.063	0.857
HCII: Host country IS infrastructure	0.128	0.030	4.267**
HCIC: Host country IT Competency	0.386	0.042	4.310***
HCIUS: Host country IT user support services	0.102	0.024	16.583***
HCISI: Host country Information systemic integration	0.062	0.014	4.429
HCTEU: Host country technological equipment usage	0.101	0.013	7.769***
E: Years of operations (Experience)	0.091	0.023	3.957***
I: Industry sector type (TNC Industry)	0.025	0.023	1.087***
S: Number of employees (TNC size)	0.019	0.038	0.500
R^2	0.210		
Adjusted R^2	0.190		
F-Statistics	8.9***		

** = $p<0.05$; *** = $p<0.001$

Robustness checks

The robustness check was run to confirm the study findings (Table 4a-c). Specifically, in Model 1 and 3, a regression analysis was run to find the predictive powers of TBE factors on TNC loyalty in the presence of the control variables (TNC experience in the host country, TNC industry type, and TNC size). Results indicate that TNC experience in Tanzania and TNC industry type, have a significant impact on TNC loyalty. TNC size has a positive and insignificant impact on TNC loyalty. Also, Model 3 results are similar to those of Model 2 in terms of significance levels, but with changes in the magnitudes of the coefficients. This is due to the effects of the control variables on TNC loyalty. Thus, this confirms the robustness of the main findings.

Discussion of findings

The objective of this study was to empirically examine the impact of the TBE on TNC loyalty to the host country. Findings in Table 4a indicate that TBE has a strong positive and significant impact on TNC loyalty to the host country, confirming hypothesis H1. Also, TBE dimensions such as host country production systems, innovativeness, IS infrastructure, IT competency, IT user support services, and technological equipment usage have positive and significant impact on TNC loyalty towards the host country, hence, supporting H2a-h. However, as indicated in Table 4a-c, TBE explains more variance in TNC loyalty (23.6%) than TBE elements (19%), suggesting that the impact of TBE on TNC loyalty is higher at the aggregate level rather

than the individual element level. The results suggest that better and higher-quality production systems, high IT competency, quality IS infrastructure, quality host nation IT user support services, and sophisticated and advanced technological equipment usage all together elevate TNC loyalty towards the host country. Moreover, the host country R&D level and information systemic integration have a positive and insignificant effect on TNC loyalty. Generally, results are consistent with the findings of Bag et al. (2021) and Okechukwu and Okoronkwo (2018), who found a significant effect of TBE on TNC competitiveness, productivity, and performance. The current study findings additionally imply that the host country TBE significantly affects TNC strategic decisions that influence their continued operations in the host country (Belal et al., 2022). Moreover, these results support the eclectic theory, which argues that, among other business environments, the host country TBE conditions determine TNC competitiveness, productivity, and profitability, which are crucial for successful TNCs in countries where they operate (Davireng et al., 2019).

Furthermore, the findings in Table 4a-c indicate that host country IT competency is the best predictor of TNC loyalty in Tanzania. Next are host country production systems, host country IS infrastructure, host country IT user support services, host country technological equipment usage, and host country innovativeness. The emergence of IT competency as the paramount predictor is because of its essential role in enabling unified transnational and global business integration (Perez-Lopez & Alegre, 2012). Also, it could be explained by the fact that in Tanzania business landscape, IT competency emerges as the kingpin that bring into line TNC strategies with local and neighboring countries' market dynamics, and solidify TNCs long-term loyalty (Hussein et al., 2007; Klinger et al., 2023). In addition, in Tanzania, effective coordination and data-driven decision-making are made possible by a proficient IT environment, which improves operational effectiveness, reduces costs, and allows for more agility. Furthermore, IT competency empowers TNCs the ability to successfully engage Tanzanian customers through customized experiences and efficient customer service, fostering higher satisfaction and loyalty (Salam et al., 2018).

In view of this, findings suggest that simple, modifiable, and knowledge-intensive production systems of the host country, a high host country innovativeness, high level of host country IT competency, quality IS infrastructure, quality IT user support services, and sophisticated and advanced technological usage are crucial for stimulating and sustaining TNC loyalty in Tanzania.

Similarly, the findings are consistent with Davireng et al. (2019) and Hennelly et al. (2019), who confirm the direct impact of TBE on the performance outcomes of foreign subsidiaries. Therefore, the better the host country's TBE, the more profitable TNCs will be, resulting in continued investment and reinvestments, which equate to TNC loyalty to the host country. Hence, the study underlines the importance of better host country TBE conditions as a necessary component to achieving TNC loyalty (Salam et al., 2018). A foreign firm's internal technology can be efficiently utilized in the host country only if local TBE conditions are supportive of such technology (Diyamett et al., 2011).

Additionally, Diyamett et al. (2011) assert that to a large extent, technology spillover

occurs if there exists a reasonable technological gap between the technological capabilities of local and foreign firms, including TNCs. This implies that the host country must have a substantial level of technology that facilitates TNC operations and enables technological transfer through a reciprocal mechanism. This is to say, creating conducive TBE enables host government regulatory bodies and other stakeholders to provide quality services that meet expectations of TNCs and their investors, and thus bringing about satisfaction which is likely to results into greater probability of strong affinity and loyalty towards the host country (Ismail, 2023). In other words, the loyal behaviors of TNCs can be frequently displayed in countries with higher and better TBE intensity and maturity elements than ones with a large technological gap (Belal et al., 2022). Therefore, in agreement with SET, through mutually beneficial collaborations, reciprocal mechanisms between TNCs and the host country, TBE can promote loyalty of TNCs towards the country where they operate. For example, trained local labor force from TNC investments in technology and infrastructure training programmes within the host country, may be advantageous to both parties (Ozioko, 2021). Between TNCs and host government institutions, collaborative research projects and innovation partnerships can result in new technologies and products, boosting competitiveness and fostering TNC loyalty towards the host country (Klinger et al., 2023). TNCs can also provide simple and accessible services by utilizing the technical infrastructure of the host nation for market expansion and consumer interaction, which will improve customer loyalty (Salam et al., 2018). Each time, the reciprocal relationship fosters loyalty since both the TNCs and the host country see the benefits and value in working together (Alasady et al., 2023). In each scenario, that cost-effective reciprocity fosters TNC loyalty towards the host country as both TNCs and the host country know the value and benefits derived from their cooperation (Tegambwage & Kasoga, 2022b, 2022c).

Conclusion

The study examined the impact of the TBE on TNC loyalty to the host country. The findings show that the TBE exerts a positive and significant impact on TNC loyalty through host country production systems, host country innovativeness, host country IS infrastructure, host country IT competency, and host country IT user support services. However, host country R&D, and host country information systemic integration have an insignificant impact on TNC loyalty. Among all predictors, host country IT competency is the greatest predictor of TNC loyalty, followed by host country production systems, host country IS infrastructure, host country IT user support services, technological equipment usage and innovativeness. This implies that a high level of IT competency in the country, simple, modifiable, and knowledge-intensive production systems, advanced IS infrastructure, quality country IT user support services, advanced technological equipment usage and innovativeness are crucial for determining and sustaining TNC loyalty for sustainable economic development in Tanzania.

The findings of this study have important implications for academics as well as practitioners. For academics, the study employs SET to strengthen the theoretical

concept of loyalty by proposing a model of TNC loyalty to the host country, particularly in the TBE context. No prior study has linked the host country's TBE and TNC loyalty. From a practical perspective, the study will benefit host countries, particularly policymakers in low-income countries, by providing them with an understanding of the differential contributions of the individual dimensions of TBE on TNC loyalty, enabling them to develop policies that focus on key technological business dimensions to attract, maintain, and sustain TNC loyalty and hence achieve economic growth. More specifically, policymakers should ensure consistent policy addressing host country IT competency, quality host country production systems, host country advanced IS infrastructure, and better host country IT user support services, usage of advanced and modern technological equipment, and high level of innovativeness in order to stimulate, build, and sustain TNC loyalty. In this regard, policymakers in the host country, particularly in low-income countries like Tanzania, among other things, can take targeted actions to facilitate host country IS infrastructure and IT competency (Ozioko, 2021). This includes TNCs collaboration with a host country in capitalizing wide-range IT education and training programs, incentivizing technology by means of grants and tax breaks, and prioritizing technological infrastructure developments, mostly in broadband and data centers. Policymakers can also create robust technologically oriented legal framework and related facts (such as innovation commercialization policy, intellectual property rights, among others), promote technology hubs and clusters, and encourage TNCs collaboration and trade agreements to boost technological capabilities of the host low-income countries like Tanzania. Furthermore, in order to nurture IT user support services and place the host country as a regional technology leader, encouraging green technologies can additionally attract foreign investments, including TNCs, ultimately driving economic innovations, growth and development.

Moreover, TNCs can link findings to strengthen collaboration with countries where they operate and elevating IS infrastructure, production systems, IT competency, and IT user support services, thereby promoting reciprocity benefits. This encompasses carrying out comprehensive assessments of IT needs in the host country, forming partnerships with key local stakeholders in order to enable technological spillover and foster TNC technology transfer, providing skills and knowledge transfer and training programs, investing in centers which are dealing in research and development, and sponsoring sustainable IT practices (Alasady et al., 2023; Hussein et al., 2007; Ozioko, 2021; Salam et al., 2018). In view of this, it is crucial to integrate cultural sensitivity, monitor progress, and manage risks while ensuring intellectual property rights and fostering a collaborative environment in the host country. Thus, based on SET, such strategic collaboration enhances TNCs to access competent employees, markets, and constructive public perception, while host countries benefit from technological innovations, advancement and economic growth and development through reciprocation mechanism.

In general, based on the findings from TBE and TNC loyalty, host country governments including the government of the URT, and TNCs managements and their investors, must understand that the more improved TBE, the better TNCs can perform in terms of productivity, sales,

revenues, profitability, economies of scale and market share. This mean that implementing these measures boost TNC operations in the host country and result in better TNC performance, which may trigger TNCs and their investors to implement growth and expansion strategic plans, continue operations in the host country, and make new and reinvestments of earning, among other things (Klinger et al., 2023; Medioli et al., 2023).

This study focused on the effect of the TBE on TNC loyalty. Therefore, future studies should investigate the impact of other factors in the business environment, such as economic, social-cultural, and political, on TNC loyalty. This research was also restricted to eight TBE dimensions; future studies should focus on other dimensions such as transportation systems, communication networks, and digitalization (Rajala & Kankaanpää, 2023). Moreover, the TBE intensity varies from one country to another (Belal et al., 2022); hence, future studies should validate the proposed model in other countries, particularly low-income ones.

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