

ORIGINAL ARTICLE

Symbiotic Relationships and Innovation: Impacts on Export Performance of Ghanaian Entrepreneurs

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Abstract

Symbiotic relationships have emerged as an important strategy for enhancing firms' access to external resources, fostering innovation, and improving international competitiveness. However, limited empirical evidence exists on how these relationships influence export performance in resource-constrained emerging economies. Drawing on the resource dependency theory, this paper explores the concept of symbiotic relationships (SR) and their practical implications for the export performance (EP) of Ghanaian entrepreneurs in the non-traditional export sector, with a focus on the mediating role of product innovation (PI). The study explores how established symbiotic collaboration impacts export performance and the integral role of product innovation in this dynamic. The study employed a structural equation model (SEM) to analyze data from 301 non-traditional sector exporters in Ghana. The study found that the symbiotic relationship has a significant positive effect on export performance. In addition, the findings reveal that symbiotic relationships significantly enhance product innovation. Further, the study found that product innovation mediates the relationship between symbiotic relationships and export performance. These insights underscore the importance of enhancing innovative practices within symbiotic partnerships to boost export success among Ghanaian entrepreneurs. This study contributes to the international entrepreneurship and export performance literature by extending Resource Dependency Theory through demonstrating how product innovation serves as the mechanism through which symbiotic relationships enhance export performance. It also provides context-specific evidence from Ghana's non-traditional export sector, where institutional and resource constraints make collaborative relationships particularly valuable for international competitiveness.

Keywords: *Symbiotic Relationship (SR), Product Innovation (PI), Export Performance (EP), Network, Exporting Activities (EA), Ghanaian Entrepreneurs (GE)*

Introduction

Export performance is becoming a key indicator of success for businesses, especially small and medium enterprises (SMEs) in the non-traditional export sectors in developing countries seeking to expand their presence in global markets. It concerns how well firms achieve their sales, growth, and profit goals in foreign markets (Ciszewska-Mlinaric, 2018). To measure this, researchers commonly examine indicators such as the proportion of total sales generated from exports, the number of export destinations, and export growth (Ramaswamy et al., 1996; Quaye et al., 2017). In line with this, export performance in this study was measured using general and specific export indicators developed by Thongsri and Chang (2019). Unfortunately, many non-traditional exporting sectors SMEs, especially those run by women, struggle to improve their export performance due to limited resources, funding, market knowledge, and institutional support (Takyi et al., 2022). Furthermore, limited access to financial resources, inadequate knowledge of international markets, and formal and informal institutional constraints continue to impede firms' internationalization efforts (Takyi et al., 2022 and increase their vulnerability in increasingly (Beck et al., 2006). Consequently, the internationalisation of markets and the proliferation of competition have compelled businesses to seek innovative strategies to enhance their competitiveness and expand internationally. One important strategic approach gaining attention is forming partnerships with other businesses to support each other. These types of collaborations are known as symbiotic relationships (Eijdenberg et al., 2019; Kijkasiwat et al., 2021). Even though more people are recognising the benefits of working together, there is still much to learn about how these partnerships can improve export performance, particularly for non-traditional export entrepreneurs in emerging economies. This is especially important in developing countries such as Ghana, where firms often rely on collaborative relationships to compensate for resource shortages, institutional weaknesses, and limited access to international markets. Solberg and Durrieu (2006) corroborated this assertion by demonstrating that strong networking relationships significantly influence firms' international strategies.

Symbiotic relationships encompass various forms of collaboration, including strategic alliances, joint ventures, and supplier-customer partnerships, aimed at mutual benefit and the leveraging of complementary resources and capabilities (Wheelen et al. 2018). However, for this study, the definition and measure of the symbiotic relationship by Golden and Dollinger (1993) were adopted. According to Golden and Dollinger (1993), symbiotic relationships involve cooperative alliances, interorganizational strategies, collective strategies, and competitive strategies among or between firms. Its measurement covers both conjugate (direct activities with non-competitor organizations) and organic (indirect activities in the community). Extant literature consistently suggests that symbiotic relationships enable firms to strengthen their competitive position by facilitating access to complementary resources, market knowledge, technology, and information, while reducing operational costs and uncertainties associated with international business activities (Andriof et al., 2017; Kijkasiwat et al., 2021). Within international business, these collaborative arrangements also enhance firms' ability to secure financial resources, develop strategic capabilities, and respond more effectively to changing market conditions (Dana, 2006). Collectively, previous studies demonstrate that symbiotic relationships promote resource sharing, knowledge exchange, technological collaboration, and capability development, all of which contribute to improved firm competitiveness and organisational performance (Andriof et al., 2017; Gäre & Melin, 2011; Paul, 2020; Kijkasiwat et al., 2021; Morais & Franco, 2018). Consequently, symbiotic relationships have increasingly been recognised as an important strategic mechanism through which firms enhance competitiveness, sustain growth, and improve performance in both domestic and international markets (Li et al., 2018; Partanen et al., 2018).

Despite the many obvious benefits of symbiotic relationships reported in the existing literature (Li et al., 2018), the impact of symbiosis on businesses' performance, especially export activities, is seldom discussed and remains inconclusive (Kijkasiwat et al., 2021). Though several studies discuss the significant contributions of symbiotic relationships to firm performance (Kijkasiwat et al., 2021) and innovation (Xie et al., 2019), most have focused on general organisational performance, strategic

alliances, or collaborative networks rather than examining how symbiotic relationships influence export performance. Moreover, existing studies have been conducted predominantly in developed economies, providing limited evidence on how symbiotic relationships operate in resource-constrained emerging markets where firms face institutional, financial, and technological challenges. In addition, the interplay between symbiotic relationships and product innovation, and its influence on export performance, remains theoretically inconclusive and empirically underdeveloped. This presents a critical gap in the literature, particularly given the unique constraints faced by non-traditional export entrepreneurs in emerging markets such as Ghana (Ackah et al., 2020; Langevang et al., 2015). In instances where the effects of a symbiotic relationship were considered, they were limited mainly to strategic alliances between small and large firms in developed economies (Mitsuhashi & Greve, 2009). Consequently, little is known about whether product innovation serves as the mechanism through which symbiotic relationships enhance export performance among non-traditional exporters operating under severe resource constraints. Addressing this gap is important because firms in Ghana's non-traditional export sector frequently depend on collaborative relationships to overcome limitations in financing, market information, technology, and institutional support. Accordingly, there is room for further studies on firms' symbiotic relationships, considering all symbiotic factors and how they synergize with export entrepreneurs' innovation to enhance export performance in terms of speed, scale, and scope.

Additionally, by adapting Golden and Dollinger's (1993) measure of symbiotic relationships, this study conceptualized symbiotic relationships as aggregates of key symbiosis factors. Rather than measuring export performance as a unidimensional measurement, which is a widely used method (Ciszewska-Mlinaric, 2018; Li, 2018; Muralidharan & Pathak, 2017; Ramaswamy et al., 1996), this study adopts a multidimensional measure of export performance to provide a more comprehensive assessment of firms' international performance, thereby addressing limitations associated with single-dimensional measurement approaches (Ramaswamy et al., 1996, p. 168). Employing the lens of international entrepreneurship and Resource Dependency Theory (RDT), this study seeks to address the identified gaps. Specifically, the study extends existing literature by examining the direct effect of symbiotic relationships on export performance, investigating the mediating role of product innovation, and providing empirical evidence from Ghana's non-traditional export sector, where the effectiveness of collaborative strategies remains largely underexplored. This paper, then, is a call for further research into firm symbiotic relationships (Kijkasiwat et al., 2021) in the international market (Dana, 2006). To address this research gap, this study examined how symbiotic relationships influence export performance, with product innovation as the mediating mechanism, focusing on non-traditional export entrepreneurs in Ghana. Specifically, it looked at (1) the direct effect of symbiotic relationships on export performance, (2) the direct effect of symbiotic relationships on product innovation, and (3) the mediating role of product innovation in the relationship between symbiotic relationships and export performance.

The study makes three important contributions to the international entrepreneurship and export performance literature. First, it extends the emerging literature on symbiotic relationships by examining their direct influence on export performance within Ghana's non-traditional export sector, a context characterized by resource constraints, institutional weaknesses, and increasing international competition. While previous studies have demonstrated that collaborative relationships enhance firm performance, competitiveness, and innovation (Dana, 2006; Kijkasiwat et al., 2021), limited attention has been given to how symbiotic relationships specifically influence export performance in emerging economies. Second, the study extends Resource Dependency Theory (RDT) by demonstrating that the benefits derived from symbiotic relationships are translated into superior export performance through product innovation, thereby providing empirical evidence on the mechanism linking external resource acquisition to international market success. Third, by adopting Golden and Dollinger's (1993) multidimensional conceptualization of symbiotic relationships and employing a multidimensional measure of export performance, the study provides a more comprehensive assessment of how collaborative relationships influence international business performance.

Moreover, although limited access to finance remains a significant obstacle to the export activities of non-traditional entrepreneurs (Ackah et al., 2020), financial constraints alone do not fully explain their relatively low export performance. Existing evidence indicates that entrepreneurs operating in Ghana's non-traditional export sector often underperform despite participating in export markets (Ackah et al., 2020; Langevang et al., 2015). This study therefore broadens existing explanations by examining how symbiotic relationships and product innovation jointly contribute to export success in an environment characterized by weak innovation systems and institutional constraints (Ortigueira-Sánchez et al., 2022). The findings provide practical insights for entrepreneurs and policymakers by demonstrating that collaborative partnerships can serve as strategic mechanisms for strengthening innovation capabilities and improving export competitiveness.

In summary, this study investigates the complex relationships among symbiotic relationships, product innovation, and export performance through the lens of Resource Dependency Theory (RDT). It addresses an important gap in the international entrepreneurship literature by examining how collaborative relationships generate export advantages through innovation within Ghana's non-traditional export sector. The following sections develop the theoretical foundations of the study, formulate the research hypotheses, and empirically test the proposed relationships.

Literature Review

Resource Dependency Theory (RDT)

Resource Dependency Theory (RDT) explains how organizations manage external dependencies to acquire critical resources, reduce uncertainty, and enhance organisational performance (Hillman et al. 2009). Originally proposed by Pfeffer and Salancik (1978), the theory posits that firms cannot generate all the resources required for survival and growth internally; consequently, they establish relationships with external organizations to obtain valuable resources, capabilities, and information. Accordingly, firms develop cooperative relationships with stakeholders, business partners, government agencies, and other institutions to secure scarce resources and strengthen their competitive position. Previous studies have shown that firms relying on extensive external networks are better positioned to improve performance and respond to environmental uncertainty (Dickson et al., 2006; Galvão et al., 2019).

Within the context of international entrepreneurship, RDT provides an appropriate theoretical lens for understanding how symbiotic relationships enable firms to overcome resource constraints associated with exporting. Symbiotic relationships facilitate access to complementary resources, including knowledge, technology, financial capital, market information, and distribution networks, which are often unavailable within individual firms (Amoako, 2020). These externally acquired resources enhance firms' capacity to develop innovative products, improve competitiveness, and respond effectively to changing international market demands. Consequently, RDT provides a theoretical explanation for why firms engaged in mutually beneficial relationships are more likely to achieve superior export performance through enhanced innovation capabilities.

The theory is particularly relevant to Ghana's non-traditional export sector, where entrepreneurs frequently operate under conditions of limited financial resources, weak institutional support, and inadequate technological infrastructure. Under such circumstances, collaborative relationships become important mechanisms through which firms obtain the resources necessary to innovate and compete successfully in international markets. Thus, RDT suggests that symbiotic relationships contribute directly to export performance while also indirectly influencing export performance by strengthening product innovation.

Therefore, this study adopts Resource Dependency Theory as its overarching theoretical framework to explain the relationships among symbiotic relationships, product innovation, and export performance. Specifically, RDT provides the theoretical justification for examining (1) the direct effect of symbiotic

relationships on export performance, (2) the influence of symbiotic relationships on product innovation, and (3) the mediating role of product innovation in the relationship between symbiotic relationships and export performance. The theory has been widely applied in studies examining internationalization, export performance, and firms' strategic responses to external resource constraints (Nam et al., 2018; Rodrigues & Dieleman, 2018; Safari & Saleh, 2020).

Effects of Symbiotic Relationships (SR) on Export Performance (EP)

Symbiotic relationships, characterized by mutual benefit between two or more entities, are recognised as important drivers of economic growth and sustainability. The symbiotic relationship is central in the ecosystem of symbiotic organisms (Wani et al., 2015). The species may have evolved to the point that they depend on each other for survival. If organisms are essential to the ecosystem, then symbiosis is crucial to maintaining its function. Similarly, entrepreneurs seeking success in international markets should adopt a symbiotic approach by developing mutually beneficial relationships with actors within their business ecosystem (Chertow, 2007). As Golden and Dollinger (1993) describe, symbiotic relationships involve cooperative alliances, inter-organisational strategies, collective strategies, and competitive strategies among or between firms. Their measurement includes both conjugate activities (direct engagement with non-competitor organizations) and organic activities (indirect involvement within the community), which together capture the breadth of firms' collaborative interactions. This definition and measurement were adapted for this study. From this perspective, symbiotic relationships represent an ongoing strategic process through which firms acquire complementary resources, capabilities, and market knowledge to enhance organisational performance. According to co-evolutionary theorists, firms can strengthen their competitiveness in international markets by forming alliances with local and international partners (McGaughey et al., 2016; Morais & Franco, 2018), thereby improving both market competitiveness (Monticelli et al., 2017) and product quality (Tse et al., 2021).

Extant literature consistently suggests that symbiotic relationships contribute to export performance by facilitating resource acquisition, knowledge sharing, technological collaboration, market access, and risk reduction. In international business, networking with entrepreneurs, government officials, political contacts, and business partners enhances firms' market knowledge and innovation capabilities, both of which support export performance (Tse et al., 2021). Similarly, relationships with suppliers, distributors, and intermediaries provide exporters with access to new markets, strengthen market positioning, facilitate knowledge transfer, and reduce the uncertainties associated with international trade. Collectively, these studies suggest that firms embedded in strong collaborative networks are better positioned to compete in foreign markets because they can leverage complementary resources that would otherwise be unavailable through internal capabilities alone.

Empirical evidence further supports this argument. Kryeziu et al. (2022) found that collaborative alliances enable family firms to improve product quality, diversify product offerings, reduce operational risks, and strengthen international operations. Similarly, Dana (2006) reported that collaborative relationships improve firm efficiency, competitiveness, and market expansion, while Dana et al. (2008) and Etemad and Wright (2001) demonstrated that partnerships reduce barriers associated with internationalization. Other studies show that symbiotic relationships facilitate risk diversification (Kijkasiwat et al., 2021), business expansion (Boso et al., 2019), access to strategic resources (Igwe & Kanyembo, 2019), technological advancement and stronger competitive positioning (Safari & Saleh, 2020). Taken together, these findings indicate that symbiotic relationships enhance export performance by enabling firms to access external resources, build strategic capabilities, and respond more effectively to international market opportunities.

Despite this growing body of evidence, important gaps remain. Most existing studies examine strategic alliances, business networks, or supply chain partnerships in relation to general firm performance rather than export performance (Nguyen & Kim, 2021). Moreover, empirical evidence on symbiotic relationships remains concentrated in developed economies, with limited attention given to non-

traditional exporters operating in resource-constrained environments such as Ghana (Adegbite et al., 2013). Consequently, the mechanisms through which symbiotic relationships contribute to sustained export performance under institutional and resource constraints remain insufficiently understood. Addressing this gap is particularly important because exporters in Ghana's non-traditional sector depend heavily on collaborative relationships to overcome financing constraints, information asymmetries, and limited access to international markets. Therefore, this study proposes that stronger symbiotic relationships will enhance firms' export performance.

Accordingly, the following hypothesis is proposed:

H1: *Symbiotic relationships exert a significant positive effect on export performance.*

Effects of Symbiotic Relationships (SR) on Product Innovation (PI)

Product innovation (PI) is widely recognised as a key driver of firms' competitiveness, market success, and long-term sustainability. For firms operating in international markets, continuous product innovation enables them to respond to changing customer preferences, satisfy international quality standards, and differentiate themselves from competitors. Consequently, firms increasingly rely on external collaborations to access complementary knowledge, technologies, and capabilities that support innovation. Networking plays a significant role in fostering innovative entrepreneurial ideas (Dyer et al., 2008), while alliances with multinational companies facilitate product development and value creation (Pillai et al., 2024). Symbiotic relationships, characterized by mutually beneficial collaboration, enable firms to share risks, exchange knowledge, and strengthen their capabilities to develop innovative products (Vidal & Mitchell, 2013).

Extant literature consistently suggests that symbiotic relationships stimulate product innovation by expanding firms' access to external knowledge, market intelligence, technological expertise, and distribution networks. Tse et al. (2021) demonstrated that relationships with business partners, institutions, and personal networks established through trade fairs and workshops improve firms' access to distribution channels and market information, thereby enhancing product quality and innovation. Similarly, stronger collaborative relationships have been associated with greater innovation outcomes (Etemad, 2019) and improved export performance among SMEs (Etemad, 2023). Exporters also utilize these relationships to obtain valuable market intelligence, strengthen innovation capabilities, and accelerate international expansion (Mikhailitchenko & Varshney, 2016).

The innovation benefits of symbiotic relationships are further reinforced through firms' access to financial, technological, and organisational resources. Informal networking relationships with local businesses improve firms' access to financial resources and strengthen domestic capabilities (Oyedele & Firat, 2019), both of which are essential for innovation. From the perspective of Resource Dependency Theory, inadequate external support increases resource constraints and uncertainty, thereby limiting firms' innovation capacity. Conversely, firms with strong collaborative relationships are better positioned to develop sustainable competitive advantages through continuous innovation (Monticelli et al., 2017). Studies such as Xie et al. (2019) similarly demonstrate that inter-firm collaboration strengthens firms' innovation capabilities, while Dymitrowski et al. (2019) further show that these innovation capabilities contribute to improved export performance.

Collectively, these studies suggest that symbiotic relationships provide firms with the resources, knowledge, and collaborative capabilities necessary to enhance product innovation. Rather than relying solely on internally generated resources, firms embedded in mutually beneficial relationships are able to combine complementary expertise and capabilities to develop new or improved products that strengthen their competitiveness in international markets.

Resource Dependency Theory (RDT) provides the theoretical explanation for this relationship by arguing that firms depend on external organizations to obtain valuable resources that are unavailable internally

(Pfeffer & Salancik, 1978). Within this framework, symbiotic relationships represent an important mechanism through which firms acquire knowledge, technology, financial resources, and market information that stimulate innovation. Product innovation therefore becomes a strategic outcome of firms' ability to effectively leverage externally acquired resources through collaborative relationships.

Despite the growing evidence linking collaborative relationships with innovation, important gaps remain in the literature. Most previous studies examine strategic alliances, networking, or collaboration broadly, without specifically investigating symbiotic relationships characterized by mutual interdependence and reciprocal value creation (Gnyawali & Song, 2022). Furthermore, existing studies rarely examine how these relationships influence product innovation among firms operating in resource-constrained emerging economies such as Ghana, where innovation frequently depends on informal networks and collaborative resource sharing. Consequently, empirical evidence on the relationship between symbiotic relationships and product innovation remains limited within the international entrepreneurship literature. Accordingly, this study proposes the following hypothesis:

H2: *Symbiotic relationships exert a significant positive effect on product innovation.*

Mediating Role of Product Innovation (PI) on the Linkage between Symbiotic Relationships (SR) and Export Performance (EP)

Product innovation (PI) plays a vital role in enhancing firms' competitiveness, sustaining business growth, and improving national economic development. For exporting firms, innovation enables the development of products that meet changing customer preferences, comply with international quality standards, and respond effectively to competitive market conditions. Consequently, product innovation has become an important strategic capability through which firms convert externally acquired resources into superior export performance (Ortigueira-Sánchez et al., 2022). Innovative firms are better equipped to adapt to market changes and exploit new business opportunities, thereby strengthening the positive influence of symbiotic relationships on export success (Singh et al., 2022). Without product innovation, firms may not fully capitalize on the resources and knowledge obtained through collaborative relationships, resulting in weaker export performance. According to the Eurostat (2018, p. 20) product innovation involves the development of "new or improved products or processes that differ significantly from previous offerings," enabling firms to satisfy customer needs and meet international market requirements (Safari & Saleh, 2020). Furthermore, Oyedele and Firat (2019) demonstrated that collaboration with local stakeholders improves firms' access to financial resources and strengthens domestic capabilities, both of which are essential for innovation (Songling et al., 2018) and improved export performance (Aliedan, 2021).

Extant literature suggests that product innovation serves as the mechanism through which collaborative relationships generate superior organisational outcomes. Silva et al. (2017) argued that product innovation mediates the relationship between collaborative partnerships and export performance by enhancing firms' efficiency, competitiveness, and responsiveness to international market demands. Similarly, firms that successfully integrate innovation into their branding and market strategies develop stronger market orientation, improve customer understanding, and increase product visibility in foreign markets (Rua & Santos, 2022). These innovation capabilities enable firms to transform the resources acquired through symbiotic relationships into competitive products that enhance export performance. Moreover, firms with strong market positioning and competitive capabilities developed through effective collaborative relationships are better able to share risks, combine complementary expertise, and continuously develop innovative products that strengthen their international competitiveness (Rua & Santos, 2022).

Collectively, these studies indicate that while symbiotic relationships provide firms with access to valuable external resources, product innovation is the strategic capability that enables those resources to be transformed into improved export outcomes. In other words, collaborative relationships alone may not be sufficient to enhance export performance unless firms effectively utilize the acquired knowledge, technologies, and market intelligence to develop innovative products.

Despite increasing interest in the relationships among symbiotic relationships, innovation, and export performance, empirical evidence explaining the mechanism linking these constructs remains limited (Adegbite et al., 2013). Existing studies have generally examined the direct relationship between collaborative partnerships and export performance or between innovation and export performance independently, with relatively little attention given to the mediating role of product innovation (Nguyen & Kim, 2021). This limitation is particularly important in emerging economies such as Ghana, where firms rely heavily on collaborative resource acquisition to compensate for institutional weaknesses, limited financing, and constrained innovation systems. Consequently, understanding whether product innovation serves as the mechanism through which symbiotic relationships enhance export performance represents an important theoretical and empirical contribution to the international entrepreneurship literature.

Drawing on Resource Dependency Theory, this study argues that symbiotic relationships provide firms with access to external resources and capabilities, while product innovation enables firms to transform those resources into products that enhance international competitiveness and export performance. Therefore, the following hypothesis is proposed:

H3: *Product Innovation (PI) mediates the relationship between Symbiotic Relationships (SR) and Export Performance (EP).*

Research Method

Study Setting

The research objectives were addressed by testing the study hypotheses using data collected from Ghanaian firms engaged in non-traditional export (NTE) activities, including manufacturing (processing and semi-processing), agriculture, and handicrafts (GEPA, 2017; Adomako et al., 2017). Specifically, the study focused on entrepreneurs engaged in export businesses who are registered with the Ghana Export Promotion Authority (GEPA). The Ghanaian non-traditional export sector provides an appropriate empirical context for examining the relationships among symbiotic relationships, product innovation, and export performance because firms in this sector operate under significant resource and institutional constraints while competing in international markets.

First, the sector is dominated by small and medium-sized enterprises (SMEs), where collaborative partnerships, networking, and innovation are critical for sustaining competitiveness and facilitating internationalization (GEPA, 2020). Second, exporters frequently rely on symbiotic relationships with buyers, suppliers, research institutions, logistics providers, and government agencies to overcome structural challenges such as inadequate infrastructure, limited access to finance, and market information asymmetries (Asare et al., 2021). Third, Ghana's National Export Development Strategy (NEDS) identifies innovation, strategic partnerships, and export diversification as central pillars for increasing non-traditional export earnings to US\$25 billion by 2029, further highlighting the relevance of this sector for examining collaborative strategies and export performance (Ministry of Trade and Industry, 2020).

Furthermore, although previous studies have emphasised the importance of innovation and inter-organisational collaboration for export success in emerging markets, empirical evidence from Sub-Saharan Africa remains relatively limited, particularly regarding the mechanisms through which product innovation enhances the export benefits derived from symbiotic relationships (Boateng et al., 2023). Given the increasing competitive pressures facing Ghanaian exporters, understanding how collaborative relationships foster innovation and improve export performance is both theoretically and practically important (Amankwah-Amoah et al., 2019). Accordingly, the Ghanaian NTE sector offers an appropriate setting for examining the proposed relationships and contributes context-specific evidence to the international entrepreneurship and export performance literature.

Sample and Data Collection

The study's sampling frame was based on previous research by Adomako et al. (2017), Quaye et al. (2017), and Ciszewska-Mlinaric (2018). The target population comprised entrepreneurs engaged in non-traditional export (NTE) businesses who were registered with the Ghana Export Promotion Authority (GEPA), Ghana's principal regulatory and promotional agency for exporters, with a membership of over 1,048 firms. The sample included firms that had been exporting non-traditional products for at least three years (Ciszewska-Mlinaric, 2018; Quaye et al., 2017), ensuring that respondents possessed sufficient export experience and had established collaborative relationships relevant to the study. An initial search of the GEPA database identified 874 exporters meeting these criteria. To ensure that respondents possessed adequate knowledge of their firms' export strategies and collaborative activities, only owner-managers or Chief Executive Officers (CEOs) were included in the study (Ciszewska-Mlinaric, 2018).

Data were collected through a structured questionnaire administered to the selected firms. CEOs or entrepreneurs were initially contacted via email and invited to participate in the study. Follow-up telephone calls were subsequently conducted to confirm respondents' eligibility and verify that the firms intended to continue their export activities over the following three years (Leonidou et al., 2011; Ciszewska-Mlinaric, 2018). Of the 874 eligible firms, 400 agreed to participate. An online questionnaire was subsequently distributed via email, resulting in 301 usable responses, representing a response rate of 75.25%. To further assess respondents' competence, five self-assessment items were incorporated into the questionnaire using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The competency assessment produced a mean score of 7.50 (SD = 0.61), indicating that respondents possessed a high level of knowledge regarding their firms' export activities and collaborative relationships. Accordingly, the final analysis was based on the 301 valid responses.

The final sample comprised micro (30%), small (30%), and medium-sized (40%) enterprises, reflecting the composition of Ghana's non-traditional export sector. All participating firms had operated for at least ten years, suggesting substantial business and export experience. Furthermore, firm size (FS), firm age (FA), ownership (FO), and industry (FI) were included as control variables because previous studies have shown that these characteristics may influence export performance. To assess potential non-response bias, early and late respondents were compared using Pearson's chi-square test in SPSS version 25, following the procedures recommended by Rogelberg and Stanton (2007) and Adomako et al. (2025). The analysis revealed no statistically significant differences between the two groups, indicating that non-response bias was unlikely to affect the study's findings (Alajety & Adomako, 2025).

Measures

Symbiotic Relationships (SR)

The researcher utilised adapted from Golden and Dollinger (1993) to assess symbiotic relationships (SR). This measure includes two dimensions: conjugate activities, which represent direct interactions with non-competitor organizations (three items), and organic activities, which capture indirect engagement within the community (three items). The combined six-item scale achieved high internal consistency ($\alpha = 0.897$). All measurement items were adapted to reflect the context of Ghana's non-traditional export sector. Participants rated each statement on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Product Innovation (PI)

Product innovation was measured using a four-item scale adapted from Thongsri and Chang (2019), which demonstrated high reliability ($\alpha = 0.896$). The scale assessed respondents' perceptions of their firms' product innovation activities within Ghana's non-traditional export sector. Participants rated their agreement on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Export Performance (EP)

Export performance was measured using sixteen items adapted from Imiru (2021), with an overall reliability coefficient of $\alpha = 0.894$. The scale comprised two dimensions: general export performance (six items; EP1–EP6) and specific export performance (ten items; EP7–EP16) (see Table 1). Participants evaluated each item using a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Control Variables

Consistent with previous export performance studies, four control variables, firm size, firm age, ownership, and industry, were included because these firm characteristics may influence export performance independently of the proposed relationships (Adomako et al., 2017).

Firm size was measured by the number of employees and categorized as micro (1), small (2), medium (3), and large (4), based on the assumption that larger firms generally possess greater resources to support export activities (Childs & Jin, 2015; Ciszewska-Mlinaric, 2018).

Firm age was measured using years of operation and categorized as less than 10 years (1), 10–15 years (2), 16–20 years (3), 21–25 years (4), and over 25 years (5). This coding reflects the expectation that older firms possess greater experience and are therefore more likely to achieve superior export performance (Childs & Jin, 2015; Ciszewska-Mlinaric, 2018).

Ownership was assessed by the number of owners, following previous studies suggesting that ownership structure influences strategic decision-making and firms' export performance (Quaye et al., 2017; Ciszewska-Mlinaric, 2018).

Industry was classified as manufacturing or non-manufacturing using a dummy variable (0 = manufacturing; 1 = non-manufacturing) (Wang, 2008; Adomako et al., 2017).

Results

Table 1

Measures, Factor Loadings, Cronbach's Alpha (Item Based), and Multicollinearity

<i>Variables (Items)</i>	<i>SR</i>	<i>PI</i>	<i>EP</i>	<i>VIF</i>	<i>A</i>
[A 3 factor Model: $\chi^2/df = 1.38$; NNFI = 0.90, CFI = 0.91, RMSEA = 0.05]					
<u><i>Symbiotic Relationships (SR)</i></u>					
SR1: My company conducts joint research with partners, suppliers, or customers	.706			2.311	.900
SR2: My company has a joint venture with partners, suppliers, or customers	.735			3.214	.899
SR3: My company is involved in joint advertising with partners, suppliers, or customers	.824			3.744	.896
SR4: My company is active in community organizations	.785			2.648	.894
SR5: My company is a member of a social, political, or religious organization(s)	.763			1.814	.895
SR6: My company is a member of the Chamber of Commerce	.755			2.639	.898
<u><i>Product Innovation (PI)</i></u>					
PI1: Customers have perceived that our products are unique and different		.710		2.289	.897
PI2: Compared to competitors' products and services, our new products and services often provide superior value for customers.			.777		.896
				1.405	
PI3: We promptly respond to customer demands and develop new products and services.			.781	2.289	.895
PI4: We continuously improve primary products and services and inject creativity into new products			.735	1.305	.896
<u><i>Export Performance (EP)</i></u>					
EP1: High overall export performance			.775	2.325	.896
EP2: High overall export performance compared to competitors			.796	2.841	.894
EP3: High export success			.754	1.205	.892
EP4: Ability and capacity in meeting expectations			.851	1.991	.891
EP5: High competitors' rating on the firm's export performance			.811	1.995	.891
EP6: Strong strategic export performance			.811	2.289	.896

Symbiotic Relationships and Innovation

EP7: Contribution of exporting to the growth of the firm	.805	1.305	.897
EP8: Contribution of exporting to the quality of the firm's management	.804	1.187	.892
EP9: Quality of distributor relationships compared to competitor	.765	2.200	.893
EP10: High customer satisfaction compared to competitors	.751	1.315	.898
EP11: Quality of customer relationships compared to competitors	.807	2.189	.890
EP12: High product/service quality compared to competitors	.782	2.325	.891
EP13: High reputation of the firm compared to competitors	.855	1.841	.897
EP14: Achievement of objectives regarding response to competitive pressures	.801	1.245	.894
EP15: Building strong awareness and image overseas	.895	1.801	.897
EP16: High expertise in new technology usage	.883	1.795	.896

Table 2

Results from Reliability Analysis

<i>Constructs</i>	<i>Cronbach's Alpha</i>	<i>rho_A</i>	<i>Composite Reliability</i>	<i>Average Variance Extracted (AVE)</i>
SR	0.897	0.899	0.927	0.643
PI	0.896	0.899	0.925	0.645
EP	0.894	0.897	0.905	0.613

Table 3

Discriminant Validity—Fornell and Larcker Criterion and HTMT

<i>Fornell and Larcker Criterion</i>				<i>HTMT</i>		
<i>Constructs</i>	<i>SR</i>	<i>PI</i>	<i>EP</i>	<i>SR</i>	<i>PI</i>	<i>EP</i>
SR	0.812					
PI	0.574	0.795		0.673		
EP	0.512	0.534	0.850	0.627	0.668	-

Table 4

Direct Relationship Results

<i>Paths</i>	<i>Beta Coefficient</i>	<i>T Statistics</i>	<i>P Values</i>
SR -> PI	0.505	11.498	0.000
SR -> EP	0.408	5.507	0.000
PI -> EP	0.315	6.780	0.000
Control: Firm Size -> EP	0.130	2.980	0.872
Control: Firm Age -> EP	0.050	1.000	0.561
Control: Ownership -> EP	0.061	1.100	0.333
Control: Industry -> EP	-0.02	-0.33	0.192

Table 5*Mediating Results (Specific Indirect Effects)*

<i>Indicators</i>	<i>Beta Coefficient</i>	<i>T Statistics</i>	<i>P Values</i>
SR -> PI -> EP	0.280	5.155	0.000

Variance, Reliability, and Validity Assessment

The study focused on three key constructs: symbiotic relationships, product innovation, and export performance. Given that all variables were collected using a single survey instrument, several procedural and statistical remedies were implemented to minimize the potential effects of common method bias (Adomako et al., 2017; Alajaty & Adomako, 2025). Procedurally, a pilot study was conducted to ensure the clarity of the questionnaire, respondents were assured of anonymity and confidentiality, and the questionnaire was carefully designed to reduce evaluation apprehension and response bias. These procedures are widely recommended for minimizing common method variance (Lindell & Whitney, 2001).

Statistically, the study assessed common method bias by incorporating a Common Latent Factor (CLF) into the measurement model following the recommendations of Adomako et al. (2017) and Alajaty and Adomako (2025). The results indicated that the measurement model maintained a satisfactory fit with and without the inclusion of the common latent factor, suggesting that common method variance did not materially influence the estimated relationships. Furthermore, the observed indicators loaded more strongly on their respective theoretical constructs than on the common latent factor, providing additional evidence that common method bias was unlikely to threaten the validity of the findings.

To further verify the robustness of the results, an unrelated marker variable was included following the procedure proposed by Lindell and Whitney (2001). The marker variable showed no significant association with the principal study constructs, while the adjusted partial correlations remained statistically significant. A sensitivity analysis further confirmed that the substantive findings remained stable across approximately 95% of the sample, providing additional evidence that common method bias was not a major concern in this study.

Additionally, confirmatory factor analysis (CFA) was conducted to evaluate the measurement model. Following the recommendations of Hu and Bentler (1999), model fit was assessed using multiple goodness-of-fit indices. As reported in Table 1, the three-factor measurement model demonstrated an acceptable fit to the data ($\chi^2/df = 1.38$; NNFI = 0.90; CFI = 0.91; RMSEA = 0.05), indicating that the proposed measurement model adequately represented the observed data.

Table 1 further presents the standardized factor loadings and variance inflation factors (VIFs) for all measurement items. The standardized factor loadings ranged from 0.706 to 0.824 for symbiotic relationships, 0.710 to 0.777 for product innovation, and 0.751 to 0.895 for export performance. All loadings exceeded the recommended threshold of 0.70 (Hair et al., 2022), demonstrating satisfactory indicator reliability. In addition, VIF values ranged from 1.187 to 3.744, which are well below the recommended cut-off value of 5.0, indicating that multicollinearity was not a concern.

Table 2 reports the results of the reliability and convergent validity assessment. Cronbach's alpha values exceeded the recommended threshold of 0.70 for symbiotic relationships ($\alpha = 0.897$), product innovation ($\alpha = 0.896$), and export performance ($\alpha = 0.894$), demonstrating satisfactory internal consistency (Hair et al., 2017). Similarly, composite reliability (CR) values ranged from 0.905 to 0.927, exceeding the recommended minimum value of 0.70. Convergent validity was further confirmed, as the Average

Variance Extracted (AVE) values for symbiotic relationships (0.643), product innovation (0.645), and export performance (0.613) all exceeded the recommended threshold of 0.50 (Hair et al., 2022).

Discriminant validity was evaluated using both the Fornell–Larcker criterion and the Heterotrait–Monotrait (HTMT) ratio. As shown in Table 3, the square root of the AVE for each construct exceeded its correlations with other constructs, satisfying the Fornell–Larcker criterion. Furthermore, HTMT values ranged from 0.668 to 0.673, remaining well below the recommended threshold of 0.90 (Hair et al., 2022). Collectively, these findings confirm that the measurement model demonstrates satisfactory reliability, convergent validity, and discriminant validity.

Analytical Procedure and Results

To effectively test the study hypotheses, SMART PLS regression analysis (PLS-SEM) was employed, covering two stages of structural model assessment: (1) direct relationships among the study constructs and (2) the mediation effect of product innovation on the relationship between symbiotic relationships and export performance. The methodology of Hair et al. (2022) was adopted to assess multicollinearity before conducting the structural model analysis. The researcher examined the variance inflation factor (VIF) for each model to evaluate multicollinearity, particularly among the predictor variables. As noted by Hair et al. (2022), multicollinearity was not a concern, with VIF values ranging from 1.187 to 3.744, which are within the recommended threshold. Additionally, SmartPLS utilises to estimate path models involving latent variables. The outer model describes the relationships between latent constructs and their indicators, whereas the inner model estimates the structural relationships among the latent constructs. The significance of the hypothesized relationships was evaluated using the standardized path coefficients (β), t-values, and p-values generated through the bootstrapping procedure. Mediation analysis was conducted using the indirect effects obtained from the PLS-SEM model.

From Table 4, the results of Structural Analysis 1 indicate that symbiotic relationships have a significant positive effect on export performance ($\beta = 0.408$, $T = 5.507$, $p < 0.05$). The standardized path coefficient indicates that stronger symbiotic relationships are associated with higher levels of export performance, supporting the hypothesized positive relationship between the two constructs. This finding provides empirical support for the first research hypothesis (H1), which posits that symbiotic relationships exert a significant positive effect on export performance.

Table 4 further indicates that symbiotic relationships significantly and positively affect product innovation ($\beta = 0.505$, $T = 11.498$, $p < 0.05$). This finding indicates that firms with stronger symbiotic relationships tend to exhibit higher levels of product innovation. The standardized path coefficient for the relationship between symbiotic relationships and product innovation ($\beta = 0.505$) is larger than that for the relationship between symbiotic relationships and export performance ($\beta = 0.408$), suggesting a comparatively stronger association with product innovation. Therefore, this finding provides empirical support for the second hypothesis (H2), which posits that symbiotic relationships exert a significant positive effect on product innovation. Table 5 presents the mediation analysis, showing that product innovation significantly mediates the relationship between symbiotic relationships and export performance ($\beta = 0.280$, $T = 5.155$, $p < 0.05$).

The positive and statistically significant indirect effect indicates that symbiotic relationships enhance export performance partly through their positive influence on product innovation. This finding suggests that firms are more likely to achieve superior export performance when the resources and capabilities acquired through symbiotic relationships are transformed into innovative products. Accordingly, this finding provides empirical support for the third hypothesis (H3), which proposes that product innovation mediates the relationship between symbiotic relationships and export performance.

Discussion and Implications

This study contributes to the international entrepreneurship and export performance literature by demonstrating that product innovation serves as an important mechanism through which symbiotic relationships enhance export performance among non-traditional exporters in Ghana. The findings extend Resource Dependency Theory by showing that firms operating under resource constraints can leverage collaborative relationships to acquire valuable resources, transform them into innovative products, and ultimately improve their export performance.

This study examines how symbiotic relationships influence export performance, expanding on previous research that links these relationships to export success. Existing studies indicate that such relationships help firms improve competitiveness, lower costs, access new markets, and facilitate knowledge sharing, thereby impacting risk, returns, and overall results (Andriof et al., 2017; Kijkasiwat et al., 2021). Furthermore, earlier research emphasises strategic alliances, networks, and partnerships in enabling resource sharing, market entry, and knowledge exchange, all crucial for export success (Paul & Rosado-Serrano, 2019; Kijkasiwat et al., 2021). While some research investigates trust and commitment (Leonidou et al., 2018), the understanding of how deeper cooperation, like shared value creation, joint innovation, and adaptation, affects export performance remains limited (Kim & Hwang, 2021).

Consistent with the study's first hypothesis, the findings demonstrate that symbiotic relationships exert a significant positive influence on export performance. This relationship is particularly important within Ghana's non-traditional export sector, where firms frequently face financing constraints, inadequate market information, weak institutional support, and limited technological capabilities. Under such conditions, collaborative relationships provide access to external knowledge, resources, distribution channels, and strategic capabilities that individual firms may struggle to acquire independently. Consequently, exporters that cultivate strong symbiotic relationships are better positioned to respond to changing international market conditions and improve their export performance.

Our research finds, defined as direct activities with non-competitors and indirect community-based actions, and export success. This finding also reinforces the central proposition of Resource Dependency Theory, which argues that firms enhance performance by securing critical resources through external relationships rather than relying solely on internally available capabilities. These relationships enable firms to develop collective skills, co-create marketing strategies, and adapt to global market dynamics, enhancing competitiveness.

The present findings are consistent with previous studies reporting that collaborative relationships improve competitiveness, facilitate knowledge sharing, and strengthen firms' international market performance (Andriof et al., 2017; Kijkasiwat et al., 2021; Dana, 2006). However, unlike earlier studies that primarily focused on strategic alliances or general organisational performance, this study demonstrates that symbiotic relationships directly contribute to export performance within a resource-constrained emerging economy. This context-specific evidence extends existing knowledge by highlighting the strategic importance of collaborative relationships for exporters operating under institutional and financial constraints.

Organisations should therefore prioritize building long-term partnerships, setting shared goals, investing in mutual capabilities, and fostering trust and knowledge sharing with international partners. Policymakers and export organizations should promote cooperation through platforms for joint innovation, strategic alliance training, and trust-building initiatives between local exporters and international collaborators.

From a policy perspective, strengthening collaborative ecosystems among exporters, research institutions, financial institutions, and government agencies may improve firms' access to strategic resources that support innovation and export competitiveness. Such collaborative initiatives align with Ghana's National

Export Development Strategy, which emphasises innovation and strategic partnerships as key drivers of non-traditional export growth.

Recent studies support these conclusions: Alarcón et al. (2021) demonstrated that trust-based partnerships enhance adaptability and export growth. Zhao and Zou (2023) revealed that collaborative alliances improve performance through shared resources and market insights; and Kryeziu et al. (2022) noted that improve product quality and diversify. Additionally, symbiotic relationships can reduce operational risks, especially related to international ventures (Igwe & Kanyembo, 2019). Networking with industry peers, government officials, and business partners (Tse et al., 2021; Mikhailitchenko & Varshney, 2016) can strengthen alliances, expand market knowledge, and foster innovation, key elements for export success. Collectively, these findings reinforce the conclusion that it is the quality, depth, and strategic value of collaborative relationships, rather than the mere existence of business networks that contribute to sustained export success.

Theoretical Implications

This study contributes to the international entrepreneurship and export performance literature by extending Resource Dependency Theory (RDT) in three important ways. First, the findings demonstrate that symbiotic relationships constitute valuable strategic mechanisms through which firms acquire critical external resources, including knowledge, market information, technology, and distribution capabilities, thereby enhancing export performance. While previous studies have established that collaborative relationships improve general firm performance, this study provides empirical evidence of their direct contribution to export performance within Ghana's non-traditional export sector.

Second, the study advances RDT by demonstrating that the benefits derived from symbiotic relationships are not limited to resource acquisition alone but are realised through product innovation. The significant mediating effect of product innovation indicates that firms must transform externally acquired resources into innovative products before achieving superior export performance. This finding extends existing theoretical understanding by explaining the mechanism through which symbiotic relationships create export advantages.

Third, the study broadens the application of Resource Dependency Theory by providing evidence from an emerging economy characterized by resource constraints, institutional weaknesses, and limited innovation capabilities. Under such conditions, collaborative relationships become strategic resources that enable firms to compensate for internal resource deficiencies and strengthen their competitiveness in international markets. Consequently, the study reinforces the proposition that firms' ability to establish, manage, and leverage external relationships is fundamental to innovation, internationalization, and sustained export performance.

Practical Implications

The findings offer several practical implications for entrepreneurs, managers, and policymakers involved in Ghana's non-traditional export sector. First, the significant positive relationship between symbiotic relationships and export performance suggests that exporters should view collaborative relationships as long-term strategic assets rather than short-term transactional arrangements. Developing strong partnerships with suppliers, customers, research institutions, financial institutions, government agencies, and other industry stakeholders can improve firms' access to valuable resources, market intelligence, and technological capabilities required for international competitiveness.

Second, the positive influence of symbiotic relationships on product innovation indicates that managers should actively encourage collaborative learning, joint product development, and knowledge-sharing initiatives with strategic partners. Such collaborations can enhance firms' ability to develop innovative products that satisfy changing international market requirements and strengthen their competitive position in foreign markets.

Third, the mediating role of product innovation demonstrates that collaboration alone is insufficient to improve export performance. Firms must possess the capability to transform externally acquired knowledge and resources into innovative products that create value for international customers. Consequently, managers should invest in innovation capabilities, research and development activities, employee training, and to maximize the benefits derived from symbiotic relationships.

From a policy perspective, government agencies such as the Ghana Export Promotion Authority (GEPA) and the Ministry of Trade and Industry should continue promoting collaborative innovation ecosystems through export networking programmes, innovation hubs, technology transfer initiatives, and partnerships between exporters, universities, and research institutions. Strengthening these collaborative ecosystems will improve exporters' innovation capabilities, enhance international competitiveness, and support the objectives of Ghana's National Export Development Strategy.

Limitations and Future Research Direction

This study examined Ghanaian firms engaged in non-traditional export activities, including manufacturing (processing and semi-processing), agriculture, and handicrafts. Although the study provides important insights into the relationships among symbiotic relationships, product innovation, and export performance, several limitations should be acknowledged.

First, the cross-sectional research design limits the ability to establish causal relationships among the study variables (Creswell & Creswell, 2018). Future studies should employ longitudinal research designs to examine how symbiotic relationships, innovation capabilities, and export performance evolve over time and whether these relationships remain stable under changing market conditions.

Second, the study focused exclusively on firms operating within Ghana's non-traditional export sector. While this context provides valuable evidence from a resource-constrained emerging economy, the findings may not be fully generalisable to firms operating in traditional export sectors, service industries, or other developing and developed economies. Future research could undertake comparative studies across industries and countries to assess the generalisability of the proposed relationships.

Third, the study relied on self-reported survey data, which may be susceptible to common method and social desirability biases despite the procedural and statistical remedies adopted (Bryman, 2019; Creswell & Creswell, 2018).

Future research could adopt mixed-methods approaches by combining survey data with interviews, case studies, or secondary performance data to obtain a richer understanding of how symbiotic relationships influence innovation and export performance.

Finally, future studies could extend the present model by examining the moderating roles of institutional quality, digital transformation, government support programmes, export market turbulence, and firms' digital capabilities. Investigating how digital platforms facilitate collaborative innovation and export competitiveness would further enhance understanding of firms' internationalization strategies within emerging economies.

Conclusion

This study investigated the influence of symbiotic relationships on export performance among Ghanaian firms operating in the non-traditional export sector, with product innovation examined as a mediating mechanism. Drawing on Resource Dependency Theory, the findings demonstrate that symbiotic relationships significantly enhance export performance directly and indirectly through product innovation. These findings suggest that firms are more likely to achieve superior export performance when they leverage collaborative relationships to acquire valuable external resources and transform those resources into innovative products that satisfy international market demands.

Symbiotic Relationships and Innovation

Beyond confirming the positive effects of symbiotic relationships, this study contributes to the international entrepreneurship literature by explaining the mechanism through which collaborative relationships improve export performance. Specifically, the findings demonstrate that product innovation represents the pathway through which resources acquired from symbiotic relationships generate sustained export competitiveness, thereby extending the application of Resource Dependency Theory within the context of emerging economies.

From a practical perspective, the findings emphasise that exporters should view collaborative relationships as strategic assets capable of strengthening innovation, improving market responsiveness, and enhancing international competitiveness. For policymakers, the results underscore the importance of promoting innovation ecosystems, strategic partnerships, and institutional support mechanisms that facilitate collaboration among exporters, research institutions, financial institutions, and government agencies.

Overall, this study demonstrates that sustained export success depends not only on firms' ability to establish collaborative relationships but also on their capacity to convert externally acquired knowledge and resources into innovative products that create value in international markets. Strengthening both collaboration and innovation will therefore be essential for improving the competitiveness and long-term growth of Ghana's non-traditional export sector.

Author Contribution Statement

Conceptualization, data collection, analysis and discussion: LNT

Conflict of Interest Statement

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Symbiotic Relationships and Innovation

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