Original Article

Factors Influencing Investments in *Tectona grandis* and *Pinus patula* Tree Seeds Production in Tanzania

Fortunate Stephen Senya[1, 2], Yonika Mathew Ngaga[2] & Greyson Zabron Nyamoga[2]*

[1] Tanzania Forest Services (TFS) Agency, P. O. Box 373, Morogoro, Tanzania.
[2] Sokoine University of Agriculture, P. O. Box 3011, Morogoro, Tanzania.
* Author for Correspondence Email: forjan2003@yahoo.com

ABSTRACT

Investments in *Tectona grandis* and *Pinus patula* seeds have had a significant role in the economic growth of the forest sector in the World. Investors not only provide capital but also facilitate access to international markets, management and organizational abilities, as well as advanced and efficient technologies. This study investigated the main factors influencing investments in tree seed production focusing mainly on *Tectona grandis* and *Pinus patula* seeds. The study assessed the factors that attract or discourage investors from investing in the production of *Tectona grandis* and *Pinus patula* seeds. A purposive sampling design was employed for selecting species and study sites. Data were collected using mixed techniques including Key Informants' Interviews (KII), Focus Group Discussions (FGD), researcher's direct observation and literature review. Both quantitative and qualitative data were collected and analyzed using various techniques. The collected data were analyzed using the SPSS (version 23.0) and Excel programs. In addition, descriptive statistics and multiple regression analysis were used to analyze the collected data. Findings indicate that the availability of market information and favourable government policies and regulations were among the factors attracting investors in the tree seeds production industry. On the other hand, unavailability of market information, unfavourable government policy and regulation, inadequate awareness of the tree seeds production value chain and the longtime nature of tree seeds investment were factors discouraging investors from engaging in the tree seeds industry. Further, factors influencing tree seed price setting include demand for seeds, quality of seeds and costs of production. Investors require a substantial amount of information that could guarantee safety and a favourable business environment to enable easy control of tree seed business risks and uncertainties. Tree seeds market and production value chain information should therefore be provided to investors through various media. In order to regulate and protect the tree seeds sector in the country, the Government policies and regulations pertaining to tree seeds should be enacted.

INTRODUCTION

Investment in the production of tree seeds with the best quality is important for the growth of the forest sector and its related factories globally and in Tanzania. Prosperity in forest plantations is highly dependent on among other things the supply of good quality and sufficient quantity of seeds particularly the *Pinus patula* and *Tectona grandis* seeds (Msanga, 1998). To have good quality and sufficient seeds requires the availability of good quality seed sources. Tanzania has only a few improved seed orchards of mostly potential and commercial trees such as *Pinus patula* and *Tectona grandis* (TTSA, 2010). As a result, most plantations and woodlots continue to be established using seeds of low genetic quality (Chamshama and Nshubemuki, 2011). The inadequate seed sources jeopardize the long-term survival, productivity, adaptive capacity, and future reproductive success of restored tree populations (Alfaro *et al*., 2014). The use of improved seeds is essential in the improvement of growth, stem quality and other characteristics of the plantation. Estimates based on African Forest Landscape Restoration Initiative (AFR100) activities, suggested that an extra cost per tree seedling of less than 5% invested in improving genetic quality, would generate more than USD 5 billion of additional income for tree growers (Lillesø et al., 2021). The costs involved for restoration through improved planting materials with high quality might be very expensive (Kindt et al.,2005), as it requires more advanced knowledge, equipment and techniques which require the involvement of both stakeholders including local and foreign investors. The investment in forestry is long-term in nature and the time required from sowing to harvesting is often long, so an improved growth rate gives a faster return, and for relatively slow-growing species, shortens the rotation to an acceptable level (Mbora et al., 2009). Most of the African countries are generally poor with low incomes and domestic savings which creates a need to stimulate both internal and external financing.

An investment simply means the commitment to saving into any alternative that is expected to generate positive income (Thapa, 2017). Investment is considered to be an engine of economic growth for any economy or country (Tehranchian and Behravesh, 2011). It is argued that increased investment not only increases production but also creates more job opportunities in the economy or country. However, financing is an important component of investment. It has a positive impact on the economy as funds that are placed in financial assets are then moved through financial intermediaries to fund investments by individuals and firms. Investment besides bringing capital, facilitates the transfer of technologies, organizational and managerial practices and skills as well as access to international markets (Jongwanich and Kohpaiboon, 2008).

Developing countries' governments including Tanzania give much emphasis to attracting private investment and specific bodies have been

launched to facilitate and provide support to investors (Pfeferman and Madarasy,1990). In Tanzania such a task is mandated to the Tanzania Investment Centre (TIC), in Uganda it is the Uganda Investment Authority and the Private Sector Foundation and in Kenya it is the Kenya Investment Promotion Center while in Ethiopia is the Ethiopia Investment Authority (Pfeferman and Madarasy,1990). On the other hand, an investor is one who makes an investment into one or more categories of assets to make a profit (Narayana, 2012). According to Mahiti, (2012), foreign investors can contribute to economic growth by providing needed capital, skills and technology transfer through promoting industries. Theoretically, foreign investors can boost economic growth, create employment (Bui, 2020) and as a source of financing to a lot of developing countries (Moosa, 2002). Tanzania is now committed to attracting both local and foreign investors by creating a suitable attractive and competitive business environment (Naiko, 2008) including those in the tree seeds industry. It is also important to note that, the forest sector is among the sectors contributing significantly to the economic growth and development in Tanzania. Therefore, high productivity of quality wood-based materials from woodlots and forest plantations is essential for the economy. The contribution of the forest and beekeeping sector to

GDP is estimated to be about 3-4% (MNRT, 2021) and it is estimated that forest-based activities generate employment for about 3 million people per year (Chamshama, 2011; Ngaga, 2011) in which half of them are women.

This study therefore aimed to provide information on factors influencing investments in the tree seeds industry towards formulation of policy, laws and regulations that will ensure a conducive business environment in order to attract both local and foreign investors to invest in the tree seeds industry in the Country. Specifically, the study intended to assess the factors that attract or discourage investors from investing in the production of *Tectona grandis* and *Pinus patula* seeds. It is anticipated that local and foreign investments in the tree seeds industry will ensure sustainable availability of quality and sufficient amounts of planting materials and high productivity in the forestry industry.

MATERIALS AND METHODS

Description of the Study Sites

The study was conducted in Five forest plantation seed sources (Fig.1) and one tree seed station managed by the Tanzania Forest Services Agency (TFS) under the Ministry of Natural Resources and Tourism (MNRT).

Figure 1: Distribution of Five Government Forest Plantations in Tanzania.
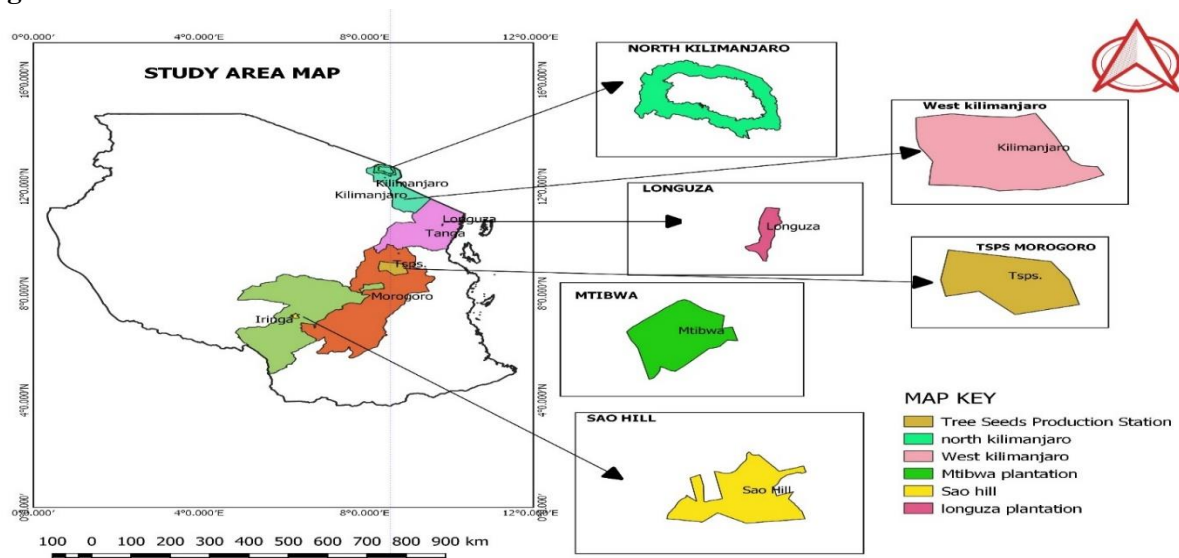
Table 1: Characteristics of the Five Forest Plantations and Tree Seed Station Selected in the Study Area

District	Plantation/Station	Coordinates; Latitude(S), longitude (E)	Altitude (m.a.s.l)	Mean annual Rainfall (mm)	Temperature (oC)
Mafinga	Saohill	8º15' – 8º 41' and 35º 6'– 35º 45	1400 - 2000	750 - 2010	15ºC -25ºC
Siha	West Kilimanjaro	2º59' - 3º10' and 2º30'- 37º10'	1562 - 3125	658	15ºC
Mvomero	Mtibwa	6' -6°10' and 37°40' -37° -45'	457	1205	28^0 C - 33^0 C
Morogoro	TSPS	6º46' 40.9 and 37º 39' 39 29.5	475	821 -1505	16ºC - 33ºC
Muheza	Longuza	4°48′ -5°13′S and 38°32′ - 38°48′E	180	1,548	15°C - 20°C
Rombo	North Kilimanjaro	3º05' 3º15'and 37º 15'- 42º05'	1800 – 2250	900	17°C

RESEARCH DESIGN

In this research, a purposive sampling design was employed. The five forest plantations (FP) i.e. Mtibwa, North Kilimanjaro, West Kilimanjaro, Saohill and Longuza were chosen (Table 1) due to the availability of several seed source compartments with information on the establishment and management costs of the *Tectona grandis* and *P*inus *patula* seeds. The tree seeds station was selected due to the staff's knowledge of *T*ectona *grandis* and *Pinus patula* seeds collection, processing, testing, packaging and their direct interaction with customers. The stations interact with large private forest companies, the Tree Growers Association, and private tree seed nurseries in different ways regarding tree seeds and seedling prices. This design was preferred because it is statistically accepted, robust and at the same time economical in terms of funds and time used. Purposive sampling design enabled the study to select the most appropriate respondents who would provide adequate relevant information regarding the factors that influence investment in *T. grandis* and *P. patula* seeds production.

Data Collection

In order to acquire the required information, the forest plantation managers (5), silviculturists (5), Officers in charge of the tree nurseries (5), forest planners (6), forest legal staff (3), tree seed collectors (3), tree seed dealers (2), and prospective purchasers of tree seeds and seedlings (13) were selected and interviewed. These groups were chosen based on their availability and the deliberate selection of participants with knowledge of tree seed investment. The selected respondents provided the necessary information including factors attracting and discouraging investors to engage in the *T. grandis* and *P. patula* seeds industry as well as factors influencing tree seeds price setting. Data were collected using field observations, key informant interviews (KII), focus group discussion (FGD) and literature reviews. Key informant interviews involved Tanzania Forest Service (TFS) Agency plantation managers, silviculture officers, Officers in charge of nurseries, tree seeds and seedlings customers, large private forest companies, tree growers associations and private tree seed nurseries. A review of literature from a variety of sources was conducted, including the strategic documents and policies of the Ministry of Natural Resources and Tourism, the data bank of the Tanzania Investment Centre (TIC), the Bank of Tanzania (BoT), Tanzania Official Seed Certified Institute (TOSCI), the annual reports and management plans of the TFS, and the seed catalogue of Tree Seed Production Station.

Data Analysis

In this study, data were analyzed using descriptive statistics where mean scores and standard deviations were generated through the Statistical Package for Social Sciences and the Microsoft Excel program. The study also used regression analysis to ascertain the nature of the relationship between the independent and dependent variables. The following multiple regression model was adopted in the study.

$$Y = \beta_0 + \beta_1 AMI + \beta_2 FGP + \beta_3 ACL + \beta_4 FCC + \beta_5 ATP + \beta_6 IMI + \beta_7 UGP + \beta_8 ITP + \beta_9 LTI$$

Where:

Y	=	Investment decision
β_0	=	The Constant term
$\beta_1 - \beta_9$	=	The coefficients for the various independent variables
AMI	=	Availability of Market Information
ATP	=	Awareness of Tree Seed Production Value Chain
FGP	=	Favourable Government Policy and regulation
ACL	=	Availability of Cheap and skilled Labor
FCC	=	Favorable Climatic Condition
IMI	=	Inadequate Market Information
UGP	=	Unfavourable Government Policy and Regulation
ATV	=	Inadequate Awareness of Tree Seed Production Value Chain
LTI	=	Long-time nature of Tree Seed Investment

RESULTS

Factors Attracting and Discouraging Investors to Engage in *Tectona grandis* and *Pinus patula* Seed Production

Results in Table 2 indicate that the availability of market information, favourable Government policies and regulations, availability of both cheap and skilled labour, favourable climatic conditions and awareness of the tree seeds production value chain were the factors attracting investors to engage in the *Tectona grandis* and *Pinus patula* seeds industry. The availability of market information was the factor with the highest rank in attracting investors to engage in the *Tectona grandis* and *Pinus patula* seeds industry followed by favourable Government policy and regulation. The availability of cheap and skilled labour and favourable climatic conditions were ranked as intermediate factors whereas awareness of the tree seeds production value chain was ranked the lowest to be attracting investors to engage in the *Tectona grandis* and *Pinus patula* seeds industry (Table 2).

Table 2: Factors Attracting Investors to Engage in *Tectona grandis* and *Pinus patula* Seed Production

Attraction factors	Mean	Std.Deviation	N
Availability of market information (AMI)	2.82	1.758	74
Government Policy and Regulatory Framework (FGP)	2.8	1.553	53
Availability of cheap and skilled labour (ACL)	1.86	1.49	37
Favourable climatic conditions (FCC)	1.74	1.763	34
Awareness of tree seed production value chain (ATP)	0.6	0.894	12
Total	**1.54**	**1.772**	**210**

On the other hand, inadequate market information had the highest rank in discouraging investors from engaging in the *Tectona grandis* and *Pinus patula* seeds industry, followed by unfavourable Government policy and Regulatory frameworks; inadequate awareness of the tree seeds production value chain was the factor with intermediate rank

whereas longtime nature of tree seeds investment had the lowest rank (Table 3).

Table 3: Showing Factors Discouraging Investors to Engage in *Tectona grandis* and *Pinus patula* Seed Production

Attraction factors	Mean	Std. Deviation	N
Unavailability of Market Information (UMI)	2.08	1.354	86
Unfavourable Government Policy and Regulatory Framework (UGP)	2.92	1.621	68
Inadequate awareness of the Tree seed Production value chain (ITP)	1.94	1.304	41
Long-time nature of Tree seed Investment (LTI)	1.87	1.204	15
Total	**1.93**	**1.975**	**210**

Factors Influencing Price Setting for T. grandis and P. patula Seeds

Results indicate that the costs of production, demand, quality and customer's seed preference were the main factors influencing the setting of the price for *Tectona grandis* and *Pinus patula* seeds. The results further indicate that the costs of production had the highest rank in influencing the price of *Tectona grandis* and *Pinus patula* seeds followed by demand and the quality of seeds which were ranked as intermediate factors. The customers' seed preference was ranked as the lowest factor that influenced the process of setting prices of both *Tectona grandis* and *Pinus patula* seeds (Table 4).

Table. 4 Showing Factors Influencing *Tectona grandis* and *Pinus patula* Seeds Price Settings.

Price Setting Factors	Mean	Std. Deviation	N
Costs of production (COP)	1.81	1.450	37
Seed demand (SD)	2.82	1.259	22
Quality of seeds (QOS)	3.41	1.469	22
Customers seeds preference (CSP)	2.50	1339	18
Total	**2.52**	**1.508**	**99**

Regression Analysis on the Factors Influencing Investment in *Tectona grandis* and *Pinus patula* Seed Production

The coefficient of determination is the speed at which changes in the dependent variable (factors influencing investment decisions) may be explained by each of the independent variables. The regression results led to the adoption of the model hereunder.

Y = 5.010 + 2.024AMI + 1.757FGP + 1.201ACL + 0.350FCC − 2.167ATP + 0.849IMI + 0.561UGP − 0.691ITP − 0.258LTI + 0.475

The model indicates that availability of market information (β = 2.024, p = 0.000); favourable Government policy and regulatory frameworks (β = 1.757, p = 0.000); availability of cheap and skilled labour (β = 1.201, p = 0.000); favourable climatic condition (β = 0.350, p = 0.000) had positive coefficients and influenced the investment decisions significantly (Table 5) while awareness of the tree seeds production value chain (β = −2.167, p = 0.065) had negative and significant influence on investment decisions. On the other hand inadequate market information (β = 0.849, p = 0.050) and unfavourable Government policy and Regulatory frameworks (β = 0.561, p = 0.050) both had a positive and significant influence on investment decisions whereas inadequate awareness of the tree seed production value chain (β = 0.691, p = − 0.208) and longtime nature of tree seed investment (β = 0.258, p = − 0.517) both had negative and insignificant influence on investment decisions (Table 5). The results also indicate that the nine independent variables that were investigated explain more than fifty percent of the variation in the factors influencing investment decisions with an R^2 value of 52.5%. This means that the error term which

explains the variation resulting from factors other than the nine independent variables described is 47.5%.

Table 5: **Summary of Prediction of Dependent Variable to Independent Variable on Factors Attracting Investors to Engage in *Tectona grandis* and *Pinus patula* Seed Production**

Model	Unstandardized Coefficients Beta	Std. Error	Standardized Coefficients Beta	R Square	t	Sig.
Constant	5.01	0.17		0.525	11.01	0.000***
Availability of market information (AMI).	2.024	1.127	0.856	-	1.796	0.000***
Favourable Government policy & regulatory frameworks (FGP).	1.757	1.193	0.648	-	1.712	0.000***
Availability of cheap and skilled labour (ACL)	1.201	0.487	0.533	-	2.463	0.000***
Favourable climatic conditions (FCC).	0.35	1.291	0.324	-	0.271	0.000***
Awareness of tree seed Production value chain (ATP).	-2.167	1.266	0.265	-	1.473	0.065**
Inadequate market information (IMI)	0.849	0.43	0.342	-	1.975	0.050**
Unfavourable Government policy and regulatory frameworks (UGP)	0.561	0.396	0.196	-	1.416	0.058**
Inadequate awareness of tree seed production value chain (ITP)	-0.691	0.548	0.658	-	-1.262	0.208*
Long-time nature of tree seed investment (LTI)	-0.258	0.397	0.453		-0.65	0.517*

N= 210, *** and ** indicate significance at the 1% and 5% levels respectively.

Regression Analysis on the Factors Influencing *Tectona grandis* and *Pinus patula* Seed Price Setting.

Y = 3.409 + 1.598 COP + 0.909 SD + 0.809 QOS – 0.591CSP + 0.28

Results in the model indicate that costs of production (β = 1.598, p = 0.000); demand of seeds (β = 0.909, p = 0.043); and quality of seeds (β = 0.899, p = 0.062) both had positive and significant influence on tree seed price setting decision while customers seed preference (β = 0.021, p = 0.163) had negative and insignificant influence on *Tectona grandis* and *Pinus patula* seed price setting (Table 6). The results also indicate that the four independent variables that were investigated explain more than seventy percent of the variation in the factors influencing investment decisions with an R^2 value of 72%. This means that the error term which explains the variation resulting from factors other than the four independent variables described is 28%.

Table 6: Summary of Prediction of Dependent Variable to Independent Variable on Factors Influencing *Tectona grandis* and *Pinus patula* Seed Price Setting.

Model	Unstandardized Coefficients Beta	Std Error	Standardized Coefficient Beta	R Square	t	Sig.
Constant	3.409	0.303		0.72	11.46	0.000***
Costs of production (COP)	1.598	0.117	0.375	-	4.257	0.000***
Seed demand (SD)	0.909	0.098	0.443	-	2.051	0.043**
Quality of seeds (QOS)	0.899	0.144	0.420	-	1.405	0.062**
Customers seeds preference (CSP)	-0.591	0.035	0.571	-	1.171	0.163*

N= 210, *** and ** indicate significance at the 1% and 5% levels respectively.

DISCUSSION

Factors Influencing Investors to Engage in *Tectona grandis* and *Pinus patula* Seeds Production

The availability of market information was ranked the highest in attracting investors to engage in the *Tectona grandis* and *Pinus patula* seeds industry. Given the high demand for tree seeds and insufficient supply, this market information is indeed a strong signal for both local and foreign investors to explore opportunities in tree seed production, distribution, and source establishment. By considering this factor, investors can strategically enter the tree seeds market, making data-driven decisions that balance profitability with risks and sustainability. This observation aligns with the findings by Ball et al., (1999) which assert that market information is important to the growing number of investors in the private sector, especially small-scale tree growers who may lack the means or the knowledge to carry out their assessments of the potential risks and rewards from plantation. According to Lin (2002) and Richardson (1997), to reduce the risks involved in decision-making, information is crucial when making investments. Financial markets and their products are changing rapidly in the World, therefore well-informed investors can handle risks more efficiently because it enables them to reduce uncertainty in the markets. In addition, the findings in this study concurs with those obtained by Mehta and Chaudhari, (2016) and Ivkovic and Weisbenner (2005) who claimed that information structures and market factors systematically influence investment decisions as well as the market outcomes. Cognizant of that, investment decisions are a function of several factors such as market features, risk profiles and disclosed accounting information (Kannadhasan, (2016) & Mishra (2018)). According to Park and Chai (2020), information asymmetry has existed in the market for a long time and influences investment decisions, informed investors may take benefit to earn excess profits.

Favourable Government policies and regulations were found to be the second highest-ranked factor that attracts investors to engage in the tree seeds industry. Empirical evidence indicates that favourable government policies and regulatory frameworks reduce uncertainties, lower operational costs, and provide financial incentives that directly enhance the attractiveness and profitability of investments. It is a powerful motivator for investment decisions because they create a more predictable and supportive business environment. Policies such as tax breaks, grants or low-interest loans, and subsidies reduce the cost of capital for investors and increase the profitability of the tree seed projects leading to greater financial flexibility that will attract capital, boost economic activity and promote sector growth hence benefiting the broader economy. When Governments establish policies that encourage investment, lower risks, and reduce costs, they attract both domestic and foreign investors. This observation corresponds with the study conducted by TIC (2022) and Busse and Groizard (2008), which guarantees that the government has improved the business

environment through the Blueprint for Regulatory Reforms to Improve the Business Environment in Tanzania. To date, 45 laws and regulations have been amended, 232 fees have been eliminated, and the issue of institutions having overlapping roles has been resolved hence lowering the time and expense of conducting business in the Country. As a result of the improved business and investment environments in Tanzania, the flow of foreign investments increased to about USD 1,190.5 million in 2021 compared with USD 943.8 million in 2020 which is an increase of about 26% (TIC, 2022). The observed increase might be due to improving the investment and business conditions as well as the implementation of the Blueprint recommendations in the Country.

It is evident that awareness of the tree seeds production value chain is among the factors attracting investors to engage in the *Tectona grandis* and *Pinus patula* seeds production industry. Awareness of the tree seeds production value chain has a significant influence on investment decisions, as it provides a clear picture of the profitability potentials, risks, and strategic opportunities across each stage of the value chain. A comprehensive understanding of the value chain enables investors to make well-informed decisions by highlighting profitability points, reducing risks, aligning with sustainable practices, and capitalizing on growth opportunities and strategic investments that support both financial and environmental objectives. These findings are similar to those obtained by Nyoka et al. (2011) and Ngaga (2011) who described that nursery operators and other stakeholders face challenges such as lack of technical information and capacity and limited access to high-quality germplasm. In their study, Nyoka *et al.,* (2015) found that the tree seeds supply chain refers to the collection, production, distribution, and quality control of reproductive material of trees, including seeds, seedlings, wildlings, and vegetatively propagated materials. Thus, People decide to choose a certain value chain because they usually have enough product information available in society as well as using past experience on the products. Moreover, this study indicated that friendly, favourable Government policies and regulations attract investors in the tree seeds industry as a result of the improved investment and business environment in the Country (TIC, 2022), Busse and Groizard, 2008).

In addition to the positive factors influencing investors in the tree seed production industry in Tanzania, the study also identified several factors which are negatively affecting the sector. Among others, inadequate awareness of the tree seeds production value chain tends to discourage investors from engaging in the *Tectona grandis* and *Pinus patula* seeds production industry. Without clear knowledge of the seed production process, investors may see the sector as risky due to a limited understanding of its profitability, challenges, and benefits. This can lead to lower confidence in investing hence resulting in fewer funds being directed toward the development and growth of the seeds production industry. It may prevent investors from recognizing the full potential and value of investing in tree seed production. Consequently, they may underestimate the sector's profitability or assume it has limited growth potential. Investors may fail to address or invest in critical areas that could improve the sector's efficiency and output. This can cause bottlenecks in production and reduce overall productivity, which may discourage future investments in the sector. Investors will not be in a position to advocate for necessary policy support, subsidies, or incentives that could enhance the sector's competitiveness. Without these supports, seed production may struggle to grow and remain financially viable. It is therefore important to encourage investments, raising awareness about the value chain and the associated benefits, potential returns, and risks.

The study by Ngaga (2011) highlighted that very often smallholder tree growers attributed to a low level of knowledge and technical capacity aggravated by limited access to advisory services, and improved seeds and this has become a barrier to successful commercial forest actors. A study by Cernansky (2018), reported that even when quality tree seeds are available for planting, tree

growers are not aware or do not always know or fully consider what trees to plant, and where, so they are effectively matched to planting environments and purposes. According to Loibl and Hira (2009), timeous access and utilization of relevant information helps to identify and minimize some of the investment risks and uncertainties.

The longtime nature of tree seeds investment is another factor discouraging investors from investing in the production of *Tectona grandis* and *Pinus patula* seeds. Long-term investments are inherently exposed to future uncertainties, like economic cycles, inflation, environmental risks, and policy changes. This can increase the perceived risk profile, making investors more cautious about investment in the industry. Given the long-term nature, policy stability in the seeds business and the forest sector in general becomes crucial. Investors are more likely to commit if there are supportive policies that incentivize long-term investments, such as tax breaks, subsidies, or payments for ecosystem services. Changes in policy over time, however, can impact investors' confidence, affecting their willingness to invest in such type of business which requires long-term to realize the return. In response, some may avoid the sector altogether or seek additional risk management mechanisms, like insurance or government-backed guarantees. To optimize tree seed investment, fostering an environment that reduces the risks and financial burden associated with long timelines is therefore crucial. Similar results were reported by Kjaer and Foster (1996) where investors perceived that *Tectona grandis* is a slow-growing species which needs a long time to realize the investment benefits. The rotation age of *Tectona Grandis* is traditionally very long ranging from 60 to about 100 years depending on the site class. However, the long rotation age can be reduced to about 35 - 20 years by using improved planting materials or seeds. For both *T. grandis* and *P. patula,* the production of viable seeds starts when the trees are 5 years old but the seeds are usually prolific at about 8 to 10 years (Louppe *et al*.,2008 and KEFRI, 2009). Although investing in tree seed production is a long-time

investment, trees are very important in providing materials for domestic construction, furniture, cosmetic and mining industries. In addition, trees increase in value exponentially as they grow, with relatively low startup costs, low labour costs, and low maintenance costs. However, due to the large investment made in forestry and tree seed production in general, the productivity of plantations needs to be high and sustainable for the business to be economically viable (Tiarks *et al*., (1998) and Lopez *et al*., (2010)). The use of improved (superior) seeds can create economic incentives for investors to pursue plant domestication (Sedjo, 2003; Chamshama and Nshubemuki, 2011).

Price for Tectona grandis and Pinus patula seeds

The pricing of *Tectona grandis* and *Pinus patula* seeds is affected significantly by the costs of production. The production costs are a critical factor in shaping investment decisions, influencing not only potential returns but also perceived risks and the overall feasibility of the business. To attract investments, companies must demonstrate strong cost management strategies, innovative approaches, and a clear understanding of their cost structures. According to Kotler and Keller (2006), the continuity and survival of every company depends on the company's pricing decisions and how they manage production costs. The profitability of the business also depends on the pricing decision made regarding the commodity in question in this case the *Tectona grandis* and *Pinus patula* seeds. Empirical evidence indicates that most firms get losses because they fail to compensate for their direct and indirect production costs (Nagle and Holden, 1995). Among others, a key step in pricing any product or commodity is to identify all the associated relevant costs when setting prices for such product. The relevant costs referred to are those that determine the profit impact of the pricing decision undertaken.

Another important factor considered when pricing the *Tectona grandis* and *Pinus patula* seeds is the demand. In economic theory, Demand and supply

are market-based aspects that are important in price setting. Thus, excessive demand causes price augmentation while excess supply diminishes prices (Jackson, 2009). Therefore, the majority of firms take into account the demand when setting the price or making decisions about the price of the product or commodity (Gölgeci *et al*., 2019). The study by Msanga *et al*. (2016) and TTSA, (2010) reported that only a few seed sources of genetically improved tree seeds exist in Tanzania and the seed supply does not meet the ever-increasing demands. This therefore causes the price of tree seeds to keep increasing over time. Empirical evidence from Tanzania indicates that there is an inadequate supply of tree seeds where only 18.3 tons of seeds are produced annually while the demand is 40 tons (Marunda, 2016). The setting of these prices for *Tectona grandis* and *Pinus patula* seeds might be influenced by the demand for the seeds in addition to other factors.

The quality of the produced seeds of *T. grandis* and *P. patula* also influences its pricing. It is expected that higher quality seeds will fetch the highest price compared to lower quality ones. The quality of seeds is also expected to affect the growth of the trees and the wood produced. According to Kindt *et al*. (2006) and Harwood et al. (1999), lack of high-quality tree planting materials has frequently been identified as a major constraint to the successful establishment of woodlots, forest plantations and agroforestry production systems. Moreover, it was revealed that the majority of forest plantations and woodlots in Tanzania are owned by small-scale growers making up 72% of the total forest planted area (Said, 2016), and most of these plots, woodlots or plantations are established using seeds of low genetic quality (Chamshama and Nshubemuki, 2011) which results into poor and low forest production and productivity. Large forest companies and a few Government plantations which constitute about 28% of the total forest planted area in Tanzania have been established using expensive imported genetically improved seeds (Said, 2016). According to the Ministry of Natural Resources and Tourism

Government Notice No. 59 of 2022, the price of unimproved seeds of *Pinus patula and Tectona grandis* is about TZS 55,000/= and 20,000/= per Kilogram while the price for improved seeds is about TSZ 300,000/= and 50,000/= per Kilogram respectively. The high price for the improved seeds is due to more costs of establishment and management as well as modern equipment and techniques required in the production process and seeds processing facilities. The use of high-quality tree germplasms has largely been achieved for industrial plantation tree species in most of the developed countries of North America and the Organization for Economic Cooperation and Development (OECD) member countries (Nanson, 2001). Furthermore, it was revealed that the highest price a customer is willing to pay is linked to the highest perceived value the product represents to a customer (Kotler and Armstrong, 2012). Generally, pricing strategies are about how businesses can capitalize on price in order to generate the intended profit. From the marketing point of view, consumers tend to believe that price is a good indicator of quality.

Consumer preferences cannot be underestimated in influencing the price of *Tectona grandis* and *Pinus patula* seeds. With such knowledge, tree seeds producer also uses such a factor in their decisions for price setting. A study by Ingenbleek et al. (2010), revealed that customers make decisions based on the perception of benefits from the item being offered and how these benefits are perceived and weighted by the customers in relationship to the price they pay. It was observed in this study that, *Pinus patula* seeds are highly preferred in the Southern highlands zone of Tanzania due to favourable weather conditions, available market as well as large quantity of seed per Kilogram compared to other tree species. Literature indicates that there are about 1500 and 120,000 seeds in one kilogram of *Tectona grandis* and *Pinus patula* respectively (TTSA, 2010). On the other hand, *Tectona grandis* seeds are most preferred in the Eastern zone which might be due to the favourable weather conditions and the high value of the timber which also has a very reliable export market. It is common that, what the

customers choose will highly depend on several factors including the status of the individual, expected benefits, number of risks, tastes and, the advertisements being carried out. Therefore, when customer needs are met effectively, it often leads to higher customer satisfaction, which in turn fosters customer loyalty (Bett, 2018).

Regression analysis on the factors influencing investment in *Tectona grandis* and *Pinus patula* seed production

The availability of market information had a positive and significant influence on investment decisions implying that timely and accurate market information contributes to enhancing the ability of local and foreign investors to make informed investment decisions. The market information in the model was a significant predictor, which may be, due to the fact that existing market data such as costs of production per hectare, amount of seeds produced per hectare and price of seeds per kg might enable the Government, Large Forest Companies, Tree growers' associations and the majority small scale tree farmers to assess the profitability and viability of seeds production. As a result, they may shift from managing traditional forest plantations to Seed Production Area (SPA) which has been defined as the stand of trees with superior phenotypic performance where inferior trees are removed and left with superior ones for seed production. In Seed Production Areas (SPAs), both quality seeds and timber can be obtained from the same stand whereas in other seed sources i.e. seed orchards, seed management standards focus on high-quality seed production rather than timber output. This dual-purpose model, offering early returns from seeds and long-term gains from timber, can attract investment. The government, through TIC, can effectively promote SPAs as a lucrative and impactful opportunity in the tree seeds industry. These findings are in line with those by Pilbeam (2018) who found that leveraging accurate market data empowers investors to make more strategic, timely, and profitable decisions at the same time minimizing risks and aligning their actions with the true value of the assets.

Supportive government policies clarify legal requirements, reduce regulatory challenges, and boost business confidence. Simplified regulations lower entry barriers for new players, facilitate expansion for existing tree seed companies and enhance the competitiveness of local industries. Simplified rules and regulations on tree seed importation and exportation especially reducing the number of days in obtaining phytosanitary certificates and import permits will motivate investors in the seeds production sector in Tanzania. In addition, it will ensure and enhance the survival, germination and growth of imported seeds and other propagated materials such as Pines and Eucalyptus clones. Imported seeds and clones can be used to establish seed orchards and seed production areas, improving the quality of local seed sources and forestry productivity. Once mature, these seeds can be used locally or exported, generating foreign currency and boosting Tanzania's economy. Other studies have reported that strengthening the protection of property rights, reducing government intervention, and lowering barriers to capital flows and foreign investment create a favourable environment for both domestic and international investors (Kapuria-Foreman, 2007). Therefore, the Government should create regulatory frameworks that promote tree seed investment while ensuring easy access to market information through collaboration with the private sector. It is observed that the value of the R^2 is 52.5% which implies that there are other elements or factors affecting decision-making in the tree seed production which have not been identified in the current study. It is therefore important for future research to consider looking into other factors that may be contributing to making decisions to engage in *Tectona grandis* and *Pinus Patula* seeds production. However, the regression model used in this study seems to fairly explain the relationship between the dependent and independent variables.

Although it is insignificant, the inadequate awareness of the tree seeds production value chain had a negative influence on investment decisions. This means that inadequate information on tree

selection, seed production and collection, seed supply, tree establishment, and management practices greatly increase uncertainty for investors in forestry projects. These uncertainties manifest in poor tree growth, higher costs and delayed returns all of which can undermine the success of the investment. Understanding the importance of seed quality and proper sourcing is essential to ensuring the success of forestry investments not only in Tanzania but also in other Countries. The insignificance of the inadequate awareness of tree seeds production value chain in the model might be due to the fact that incomplete understanding of the value chain can lead to poor quality control practices, as companies may overlook critical stages such as seeds harvesting, storage and handling. This can compromise the quality of seeds, impacting customers' satisfaction and the reputation of the brand or Company. According to Kindt *et al.* (2019), inadequate information on how to select trees for planting, along with poor practices in seed collection, seed production, seed supply, tree establishment, and management, significantly increases uncertainty for investors in forestry projects. Proper knowledge and expertise in tree seed production are critical and essential for better decision-making and overall investment performance in this sector.

Due to the long-time nature of tree seed investment, forest investments are not easily converted to cash because it requires some decades for the trees to grow to a harvestable size, leading to a long waiting period before realizing the expected profits. The long-term nature of tree seed investment will be influenced by favourable government policies and regulations. These will help create a conducive business environment, attracting both local and foreign investment into the sector. Their availability will increase the number of improved seed sources established with intensive management, for example, the presence of Kilombero Teak Valey Company through the use of quality seeds and intensive management of their plantation the rotation age of teak has been reduced from 35 to 18 years. The situation prompted TFS through research to change the *Tectona grandis* rotation age from 35 to 20 years.

Moreover, the use of appropriate planting materials and intensive management practices will reduce the time for seed and timber production. Investing in trees is widely regarded as a lucrative long-term investment due to its potential to generate both financial and social returns over an extended period (Ohaga, 2019). The government's provision of a suitable and conducive business environment is crucial for encouraging tree seed investors.

The knowledge of the production costs enabled the investors or Companies to have better financial planning and make informed decisions regarding the profitability and viability of their investments. Tree seed businesses must carefully analyze production costs and market conditions to set prices that ensure profitability to consumers while remaining attractive to consumers. Adjusting tree seed prices in response to changes in production costs is essential for maintaining financial health and competitiveness in the market. With a clear picture of costs, firms can strategically price products to attract customers while securing desired profit margins. This insight allows firms to analyze the profitability of individual tree seeds, by assessing which tree seed species yield the highest margins and focus on high-value seeds as well as making decisions about expanding operations, introducing new tree seed species for the purpose of maximizing the overall profitability. Empirical evidence indicates that setting prices based on the costs of production is the simplest and most popular method because it carries a sense of financial prudence (Simon *et al*., 2008). Both the Government and Investors' knowledge of these costs is essential for setting prices that cover expenses, provide returns on investment, and remain competitive in the market.

CONCLUSION

Investors in tree seed production require a substantial amount of information that could guarantee safety and favourable business environments before making any investment decision. Accessibility to market data, knowledge of the tree seeds production value chains, and supportive government legislation and regulations

are also important factors for attracting investors in the tree seeds industry in Tanzania. However, the long-term nature of tree seed investment and lack of knowledge of the value chains involved in tree seed production seems to discourage investors interested in the production of *Tectona grandis* and *Pinis patula* seeds. On the other hand, setting prices for *Tectona grandis* and *Pinus patula* seeds is influenced by the costs of production, demand for seeds and quality of seeds. Therefore, market information and awareness of the tree seed production value chains should be provided to both local and foreign investors by enhancing collaboration between the Government and the private sector. This could be achieved through using various affordable and accessible media and it will ensure that proper knowledge during the establishment, management of seed sources, seeds collection, processing and marketing of *Tectona grandis* and *Pinus patula* seeds. To regulate and protect the tree seeds industry in Tanzania, government policy and regulations pertaining to tree seeds should be enacted, specifically the Tree Seeds Act. Further, it is also important to ensure clarity regarding fiscal incentives, credits, and financial support for individuals and organizations interested in investing in tree seed production to encourage more local and foreign investors in the *Tectona grandis* and *Pinus patula* seeds industry in Tanzania. Furthermore, tree seed prices should be set based on the costs of production, demand and quality of the seeds in order to allow local and foreign investors easy control of the tree seeds business, risks and uncertainty.

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Conflict of interests

All authors declare that they have no conflict of interest regarding the contents and publication of this paper.

REFERENCES

Alfaro, R.I., Fady, B., Vendramin, G.G., Dawson, I.K., Fleming, R.A., Romero, R.A. and Roberto, A. (2014). The role of forest genetic resources in responding to biotic and abiotic factors in the context of anthropogenic climate change. Forest Ecology and Management 333: 76–7. https://doi.org/10.1016/j.foreco.2014.04.006.

Ball, J.B., Pandey, D., and Hirai, S. (1999). Global overview of teak plantation. Regional Seminar on Site, pp. 1-14. Technology and Productivity of Teak Plantation, Chiang Mai, Bangkok Thailand.

Bett, S. (2018). Pricing Strategy and Customer Satisfaction: An Assessment of Loyalty and Retention of Customers in Kenyan Commercial Banks. IJARKE Business & Management Journal), 168-171.

Bui, N. H. (2020). Effects of Foreign Direct Investment and Quality of Informal Institution on the Size of the Shadow Economy: Application to Vietnam. Journal of Asian Finance, Economics and Business, 7(5), 73- 80. https://doi.org/10.13106/jafeb.2 020. vol7.no5.073.

Busse, M., & Groizard, J. L. (2008). Foreign Direct Investment, Regulations and Growth, the World Economy (pp. 861-886). http://dx.doi.org/10.1111/j.1467-9701.2008.01106.x

Cernansky, R. 2018. How to plant a trillion trees. Nature 560:542– 544. https://doi.org/10.1038 /d41586-018-06031-x.

Chamshama, S.A.O. 2011. Forest Plantations and Woodlots in Eastern and North Eastern African Countries - a regional overview. African Forest Forum, Nairobi, Kenya. 72pp.

Chamshama, O. &Nshubemuki, L. (2011). Plantation Forest Management in Tanzania: Current Situation and Future Focus. Paper Presented at the Forest Plantations Pests, Insects and SoilProblems Workshop, Kibaha,

Tanzania. Common statistical methods for ecological and biodiversity studies. Nairobi: World Agroforestry Centre (ICRAF).

FBD. 2003.Technical specifications for management of forest plantations in Tanzania Forest and Beekeeping Division, Ministry of Natural Resources and Tourism, Dar es Salaam. 8 pp.

Gölgeci, I., Karakas, F. and Tatoglu, E. (2019). Understanding demand and supply paradoxes and their role in business-to-business firms. *Industrial Marketing Management*, 76,169-180.

Harwood, C., Roshetko J.M., Cadiz, R.T., Christie, B., Crompton, H., Danarto, S., Djogo, T., Garrity, D., Palmer, J., Pedersen, A., Pottinger, A., Pushpakumara, D.K.N.G., Utama, R., van Cooten, D. (1999) Working Group 3—domestication strategies and process. In: Roshetko JM, Evans DO (eds) Domestication of agroforestry trees in Southeast Asia. Forest, Farm and Community Tree Research Reports. Pp 217–225.

Ingenbleek, P., Debruyne, M., Frambach, R. T., and Verhallen, T. M. (2003). Successful new product pricing strategies: A contingency approach. Marketing Letters, 14(4), 289–305.

Ingenbleek, P., Frambach, R. T., & Verhallen, T. M. (2010). The role of value informed pricing in market-oriented product innovation management. Journal of Product Innovation Management, 27(7), 1032–1046.

Zoran, I. and Weisbenner, S. 2005 Local does as local is: Information content of the geography of individual investors' common stock investments, Journal of Finance, 60, 267-306.

Jackson, T. (2009). *Prosperity without Growth: Economics for a Finite Planet*. Routledge.

Jongwanich, J., Kohpaiboon, A. 2008. Private Investment: Trends and Determinants in Thailand, World Development, 2008, 36 (10), 1709-1724, ISSN 1873-5991.

Kannadhasan, M. (2015). Retail investors' financial risk tolerance and the risk-taking behavior: The role of demographics as differentiating and classifying factors. *IIMB Management Review*, 27(3), 175-184.

Kapuria-Foreman, Vibha. (2007). Economic freedom and foreign direct investment in developing countries. The Journal of Developing Areas 41(1), 143-154. Retrieved January 24, 2009, from Project MUSE database.

KEFRI. (2009). Tree seed information leanel. *Pinus patula.* Leaflet No. 25.

Kim, B.Y. and Oh, H. 2004. "How do Hotel Firms Obtain a Competitive Advantage?" International Journal of Contemporary Hospitality Management 16 (1): 65–71.

Kjaer E.D. and Foster, G. S. 1996. The Economics of Tree Improvement of Teak (Tectona grandis L.). Danida Forest Seed Centre, Humlebæk, Denmark.

Kindt, R. and Coe, R. 2005. Tree diversity analysis. A manual and software for.

Kindt, R., John, I., Ordonez, J., Dawson, I., Lillesø, J.P.B., Muchugi, A., Graudal, L. and Jamnadass, R. 2019. Agroforestry Species Switchboard: A synthesis of information sources to support tree research and development activities. Version 2.0. Nairobi, Kenya: World Agroforestry (ICRAF). http://www.worldagroforestry.org/products/switchboard.

Kindt R., Lillesø, J.P.B., Mbora A., Muriuki J., Wambugu C., Frost. W., Beniest. J., Aithal. A., AwimboJ., Rao. S., Holding-Anyonge, C. 2006. *Tree Seeds for Farmers: a Tool Kit and Reference Source. Nairobi*: World Agroforestry Centre

Kotler, P. and Armstrong, G. 2018. Principles of Marketing. 17th ed. Harlow: Pearson

Kotler, P. and Keller, L.N. (2006); Marketing Management (12th edition), New York, Pearson.

Kotler, P. and Armstrong, G. (2012). Principles of Marketing. 14th edition. Harlow: Pearson Education Limited, pages 12 and 290-299.

Lillesø, J.P.B., Dawson, I.K., Graudal, L. and Jamnadass, R. 2021. Quality seed for tree planting: Supporting more effective agroforestry and forest landscape restoration by learning from crop Integrated Seed System Development. ICRAF Policy Brief No. 54. Nairobi, Kenya: World Agroforestry (ICRAF). https://www.worldagroforestry.org /publication/quality- seed- tree- plantingsupp orting-more-effective-agroforestry-and-forest-landscape.

Lin, Q. (2002). Consumers' information search when making investment decisions. Citeseer.

Loibl, C. and Hira, T.K. 2009. A Gendered Perspective on Investor Information Search. Journal of Behavioral Finance 12(3):117-130DOI:10.1080/15427560.2011.600841

Louppe. D., Oteng – Amoake, A. A., Brink, M., Lemmens, R.H., Oyen, M.J. and Cobbinah, J.R. (2008). Plant Resource of Tropical Africa 7(1): timbers 1.) Plant Resource of Tropical Africa: No.7 (1)). PROTA Foundation (etc). https: edepot.wur.nl/565656.

Lopez, J., De La Torre, R. and Cubbage, F. 2010. Effect of land prices, transportation costs, and site productivity on timber investment returns for pine plantations in Colombia. New Forests 39:313–328.

Mahiti, F. M. (2012). Determinants of Foreign Direct Investments in East Africa Countries of Tanzania and Kenya. Master Thesis, Mzumbe University.

Marunda, T. (2016). Situational analysis of commercial and community tree planting in Southern Africa: trends in tree improvement and tree germplasm supply. Nairobi: African Forest Forum, Kenya.

Mbora, A. J.P, and Jamnadass, R. (2009). Tree Seed Source Re-classification Manual. World Agroforestry Centre, Nairobi, Kenya.34 pp

Mehta, S. and Chaudhari, J. (2016). The Existence of Behavioural Factors Among Individual Investors for Investment Decision in Stock Market: Evidence from Indian Stock Market. *Global Journal of Research in Management*, *6*(1), 57-76.

Mishra, R. (2018). Financial Literacy, Risk Tolerance and Stock Market Participation. Asian Economic and Financial Review, 8(2), 1457–1471.

Moosa, I. A. (2002). The Determinants of Foreign Direct Investment in Mena Countries: An Extreme Bounds Analysis. Research Report, 1-13.

Msanga, H. P. (1998). *Seed Germination of Indigenous Trees of Tanzania*. Canadian Forest Service. 291 pp.

Msanga, P. (2016). *The status of tree germplasm improvement, production, supply and Demand in Eastern Africa*. Nairobi: African Forest Forum, Kenya

Mugasha, W.A., Laswai, F.F., Malimbwi, R.E., Chamshama, S.A.O., Abdallah, J.M. and Mauya, E.W.2021 Special Issue: Embracing Science and Technology in Nature Conservation. Optimal Rotation Age of *Pinus patula* in Government Forest Plantations in Tanzania. Tanzania Journal of Forestry and Nature Conservation, Vol 90, No. 3 pp 130-145 130.

Nagle, T.T. and Holden, R.K. (1995), the Strategy and Tactics of Pricing, Prentice-Hall, Englewood Cliffs, NJ.

Naiko, E.D.O. (2008). Tanzania investment guide 2008 and beyond. Tanzania investment centre.43 pp.

Nanson, A. (2001) The new OECD scheme for the certification of forest reproductive materials. Silv Genet 50(5/6):181–187.

Nantharath, P. and Kang, E. (2019). The Effects of Foreign Direct Investment and Economic Absorptive Capabilities on the Economic Growth of the Lao People's Democratic

Republic. Journal of Asian Finance, Economics and Business, 6(3) 151-162. https://doi.org/10.13106/jafeb.2019.vol6.no3.151

Narayanan, B. (2012). Investors Behavior in Various Investment Avenues a study. *International Journal of Technology Marketing.*

Ngaga, Y.M. 2011.Plantations and Woodlots in Tanzania. African Forest Forum Working Paper Series Vol. 1, Issue 16; African Forest Forum, Nairobi. 76 pp.

Nyoka, B., Roshetko, J., Jamnadass, R., Muriuki, J., Kalinganire, A., Lillesø, J.P., Beedy, T., Cornelius, J. (2015). Tree seed and seedling supply systems: a review of the Asia, Africa and Latin America models. Small Scale For 14(2):171–191 Nyoka B, Roshetko J, Jamnadass R, Muriuki J, Kalinganire A, Lillesø J-P, Beedy T, Cornelius J (2015) Tree seed and seedling supply systems: a review of the Asia, Africa and Latin America models. Small Scale For 14(2):171–191.

Nyoka, I., Mng'omba, A., Akinnifesi, K., Ajavi, O., Sileshi, G., and Jamnadass, R. (2011). Agroforestry Tree Seed Production and Supply Systems in Malawi. *Journal of Small-Scale Forestry. 10*(4), Pp. 419-434

Ohaga, J.B. (2019). Social Entrepreneurs: Invest in Trees. One Acre Fund 2019 Annual Report. Accessed on https://oneacrefund.org/blog/socialentrepreneurs-invest-in-trees.

Park, M., and Chai, S. (2020). The Effect of Information Asymmetry on Investment Behavior in Cryptocurrency Market. In Proceedings of the 53rd Hawaii International Conference on System Sciences (Vol. 3, pp. 4043– 4052). Hawaii. https://doi.org/10.24251/hicss.2020.4 94.

Pfeffermann, G.P. and A. Madarassy (1992) 'Trends in Private Investment in Developing Countries': International Finance Corporation : The World Bank, Washington D.C.

Pilbeam, K. (2018). *Finance & financial markets*. Macmillan International Higher Education.

Richardson, G.B.1997. The availability of market information; Information and Investment. A study in the working of competitive econo,y, 2nd edn (Oxford, 1997; online edn, Oxford Academic, 1 Nov 2003. https://doi.org/10.1093/0198292430.0002, accessed 20 Mar. 2024.

Said, A. (2016). Verification of the extent and expansion potential of forest plantations in Tanzania. A dissertation submitted in partial fulfillment of the requirement for the degree of Master of Science in Forest Resource Assessment and Management of the Sokoine University of Agriculture. Morogoro, Tanzania 75pp.

Sedjo, R.A. (2003). Biotech and planted trees: some economic and regulatory issues. AgBioForum 6, 113–119.

Simon, H., Bilstein, F. R., and Luby, Frank. (2008). Gerenciar para o lucro, não para a participa̧ cão de mercado. Porto Alegre: Bookman.

Tanzania Investment Report. (2018). Foreign Private Investment and Investor Perception. Retrievedfromhttp://www.tanzaniagov.de/images/downloads/tanzania_investiment_report _TIC_2018.pdf.

Tanzania Investment Report. (2022). Foreign Private Investment and Investor Perception. Retrievedfromhttp://www.tanzaniagov.de/images/downloads/tanzania_investiment_report _TIC_2012.pdf.

Tehranchian, A.M. and Behravesh, M. (2011), The relationship between savings and investment in Iran: Testing Feldstein's and Horioka's theory. African Journal of Business Management, 5(4), pp.1408–1412.

Thapa, S. (2017). Financial Institutions and Markets3rdedition.*Asmita'sPublication.*

Tiarks, A., Nambiar, E.K.S. and Cossalter, C.1998. Site management and productivity in

tropical forest plantations. CIFOR, Bogor, Indonesia. Occasional Paper No. 16. 11 pp.

TTSA, (2010). Tanzania Tree Seed Agency Report, 2010, Morogoro, Tanzania.