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Cushioning the Covid-19 Economic Consequences on Entrepreneurial Ecosystems: The Role of Stakeholders' Engagement, Collaboration, and Support

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ABSTRACT

The Covid-19 (corona virus) disruptions have necessitated a new way of thinking about how entrepreneurship and its environments (ecosystems) function in times of heightened uncertainty. Based on a sample of 237 entrepreneurial ecosystem (EE) stakeholders in Tanzania – an emerging economy, we examine the pandemic economic consequences steered by government countermeasures on the EE-perceived quality and performance. We further examined the role played by EE stakeholders' engagement, collaboration, and support during the crisis. Our structural equation model results suggest that strictness of government counter measures for containment of the current pandemic predicament has a bearing on EE- perceived quality and performance by fueling EE vulnerability via amplifying the magnitude of the negative effects. We further find that stakeholders' engagement and collaboration play a significant role in improving the EE-perceived quality and slowing down EE-vulnerability. We conclude by providing the implications and avenues for future research.

KEYWORDS

Entrepreneurial ecosystems;
coronavirus pandemic;
stakeholder theory;
vulnerability;
entrepreneurship

1. Introduction

Covid-19 has not only been a health catastrophe, but also it has caused other socio-economic disruptions across the globe following various imposed countermeasures such as lockdowns, social distancing, travel restrictions and cancellation of large events (Belitski, Guenther, Kritikos, & Thurik, 2021). These countermeasures have resulted into worldwide permanent or temporary shutdown of small and growing businesses (SGBs) especially in the second quarter of 2020 (Fairlie & Fossen, 2021). This can be attributed to drastic drop in demand which has resulted into cash flow shortages and inability to cover operational costs (Fairlie, 2020). As pointed out by Ratten (2020), the current pandemic disruptions have necessitated a new way of thinking about how entrepreneurship and its enabling environments (ecosystems) function in times of

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heightened uncertainty. While large businesses may have the financial muscle to navigate through the pandemic, SGB often lack resources and the technical knowhow leading to suspension or permanent cessation of operations. Thus, the ability of start-ups to develop, survive and recover after crises is contingent upon the health of the underlying entrepreneurial ecosystems-EEs (Spigel, 2017).

The global attention on the current pandemic and its economic consequences to various sectors such as entrepreneurship, triggers a need for creation of more conducive entrepreneurial environments “ecosystems” that support the birth and growth of innovative ventures capable of surviving in the new reality (Ratten, 2020). Isenberg (2010) coined a widely and generally accepted definition of entrepreneurial ecosystem as the interconnected and coordinated system comprising different entrepreneurial actors (such as startups and other entrepreneurial supporting actors), infrastructures, and processes that formally and informally connect, mediate, and govern the entrepreneurial performance and development.

Vibrant EEs provide necessary resources such as finances, human capital, infrastructures, and act as a platform for social networks (Jha, 2018). Thus, there exists a strong need for creation of more fertile EEs that support development of innovative businesses capable of withstanding major crisis such as Covid-19 (Ratten, 2020). However, the severity of current pandemic socioeconomic shocks has not been felt by entrepreneurs alone but also other different EE actors have experienced this adversity (Mason & Hruskova, 2021). First, support organizations such as incubators, accelerators have been forced to close their operations due to financial difficulties faced by their clients. Second, finance providers have grown reluctant to finance start-ups, rather they focus their resources on already established ventures. Third, social networks between EE actors that allow entrepreneurs to learn, and grow have been undermined by the pandemic courtesy of the counter measures (Kansheba & Wald, 2021).

To build a vibrant and healthy EE, there should be interconnectedness between stakeholders whose engagement, collaboration and support actively build, mold, and redefine such system (Bischoff & Volkmann, 2018). The interactions between these stakeholders in the forms of engagement, collaboration and support are vital for venture formation and growth (Onyeje, Court, & Agbaeze, 2020). Stakeholder engagement entails considering and balancing stakeholders’ interests by involving them in business decision-making processes while stakeholder support and collaboration intend to reap the stakeholder benefits and minimize potential harm to the firm (Bischoff, Volkmann, & Audretsch, 2017). During crisis (e.g. in the current Covid-19), stakeholder involvement facilitates mutual crisis management approaches (Ndlela, 2019). However, government countermeasures to contain the spread of Covid-19 and its related economic consequences have left entrepreneurial ecosystems and their stakeholders more vulnerable to the extent of endangering their quality and performance.

Extant literature on how entrepreneurship behave during disruptive moments has by large extent covered the management of crises such as financial crisis, natural disasters, and other pandemics (Doern, Williams, & Vorley, 2019) with regional effects that solely exhibit features far different from the new global pandemic with its peculiarity regarding the severity of social-economic impacts. The unprecedented

scope and scale of government measures on the ongoing Covid-19 pandemic provide an opportunity for research to find answers to the question of how EEs and their stakeholders can develop resilience to survive the current and potential future crisis (Kuckertz, Brandle, Gaudig, & Hinderer, 2020; Ligouri & Winkler, 2020).

The research on Covid-19 economic impacts on EEs has been largely dominated by conceptual studies focusing on developed world (Kuckertz et al., 2020; Maritz, Perenyi, Waal, & Buck, 2020; Ratten, 2020) while on developing and emerging world being under-researched. For instance, Ratten (2020) conceptually shed light on the effects of Covid-19 travel and labor mobility restrictions on international businesses focusing on how the pandemic has affected various EE entities in terms of stakeholder engagement. Basing on the identified research gap and extending the conceptual work by Ratten (2020), this study intends to empirically examine the extent to which the government pandemic countermeasures have affected the perceived quality and performance of entrepreneurial ecosystems and the role played by stakeholders' support, engagement, and collaboration in repelling the pandemic's negative economic consequences in developing economies using Tanzania as a context. We thereby seek to answer the following research:

(1) *How do the government countermeasures in reaction to the Covid-19 pandemic affect the perceived quality and performance of entrepreneurial ecosystems?*

(2) *Can entrepreneurial ecosystems' stakeholders' engagement, collaboration, and support curb down the Covid-19 economic consequences on EEs perceived quality and performance?*

Our article contributes to three (3) folds. First, we extend the discussion on how entrepreneurship behaves during crises. Extant studies have largely focused on the effects of the crises on start-ups' performance (Doern et al., 2019). However, we argue that start-ups' performance and survival during crises can be well understood by studying how their underlying EEs have been as well affected by the crisis (pandemic) (Mason & Hruskova, 2021). Second, as EEs are contextual specific (Mujahid, Mubarik, & Naghavi, 2019), we fill the empirical gap on Covid-19 pandemic impacts on EEs in developing world using Tanzanian entrepreneurial ecosystem as our context. Third, we borrow from the stakeholder theory (Freeman et al., 2010) to examine the role played by EE stakeholders' engagement, collaboration, and support (Bischoff & Volkmann, 2018) in protecting EEs during Covid-19.

The rest of the paper flows as follows. Section 2 provides the review of extant literature on entrepreneurship during disruptive times, the concept of entrepreneurial ecosystem, the effects of government Covid-19 countermeasures and EE-vulnerability to Covid-19 economic consequences, and the role played by EEs stakeholders. The review culminates in a set of hypotheses. Section 3 presents the employed research methods while section 4 presents the findings of the study followed by a discussion of the main findings in Section 5. The article ends with Section 6 that presents conclusions, implications, limitations as well as suggestions of the areas for further research.

2. Literature review and hypotheses development

2.1. *Entrepreneurship during disruptive times*

The occurrence of disruptive events has always been associated with unbridled opportunities and challenges to entrepreneurs (Isenberg & Schultz, 2020). Though some events may be firm specific, for instance product failure, litigations, utilities loss (Herbane, 2010), other events such as pandemics and financial crisis can interrupt the normal functioning of most entrepreneurs (Williams, Gruber, Sutcliffe, Shepherd, & Zhao, 2017). The repercussions of these events are serious to entrepreneurs and start-ups as they are associated with the enormous challenge of customer loss (Doern et al., 2019). Resilience can help ensure continuity during disruptive times as it enables entrepreneurs to bounce back from hardships by adapting to the new environment (Davoudi, 2012). This involves the ability to react spontaneously and quickly to disruptions by devising unconventional strategies of dealing with them. Central to this is crisis management strategy which involves altering business practices such as changing sales, distribution, marketing as well as staffing strategies to cushion against shocks caused by disruptive events (Doern et al., 2019). Firms that utilize crisis management recover twice as quickly as opposed to those which do not (Williams et al., 2017). However, resource constraints and weak markets often impede small businesses to effectively employ crisis management strategies leading to discontinuity (Corey & Deitch, 2011).

The role of entrepreneurial ecosystem to promote business continuity during disruptive events cannot be ignored (Maritz et al., 2020). However, this depends on the quality of the ecosystem reflected by the presence of conducive culture, facilitating policies and leadership, availability of dedicated finance, infrastructures and relevant human capital, venture-friendly market for products and institutional and infrastructural support. Well-functioning and performing EE are evidenced by the presence of large number of new start-ups joining early-stage entrepreneurial activities (Kansheba & Wald, 2020), and innovative and high-growth start-ups with longer survival rate (Nicotra, Romano, Del Giudice, & Schillaci, 2018).

2.2. *The effects of the government Covid-19 countermeasures on the entrepreneurial ecosystems*

There has been increasing attention from the public, private, and civil society actors on entrepreneurial activities that has resulted into popularity of the EE concept. Isenberg (2010) referred to this concept as a combination of social, political, economic, and cultural elements that holistically support the development and growth of innovative start-ups. It involves collaboration between different elements, sectors and actors working together to create a supportive environment for entrepreneurial development. This environment can manifest in different levels including national, regional, or local (Kansheba & Wald, 2020).

Highly disruptive events, such as the outbreak of the Covid-19 pandemic, have brought unprecedented levels of uncertainty in the market thus distorting the environment in which entrepreneurs operate. Mason and Hruskova (2021) identified four (4) potential ways in which Covid-19 counter measures could affect different EE elements. First, skyrocketing business failures due to lockdowns has significantly reduced

entrepreneurial intention by discouraging risk taking behavior. Second, the support organizations such as universities, accelerators, incubators, and technical service providers have suffered losses resulting to permanent or temporary cessation of operations. Third, finance providers such as venture capitalists, angel investors have grown reluctant to invest in start-ups instead they opt to support established business ventures. Fourth, restrictions on social gatherings have put a strain on the magnitude of social networking activities between EE actors such as entrepreneurs and business leaders or mentors thus hindering knowledge transfer. Adding to the fact that strictness of Covid-19 counter measures has been unparalleled around the world, we thus hypothesize that:

H1a: The stricter the government's countermeasures on Covid-19 are, the lesser the EE-perceived quality.

H1b: The stricter the government's countermeasures on Covid-19 are, the more the EE-perceived vulnerability to Covid-19 economic consequences.

Furthermore, EEs exposure (vulnerability) to Covid-19 economic consequences can affect their quality by impeding the proper functioning of individual eco-factors. Access to finance and support e.g. physical infrastructure are among crucial eco-factors to sustainable EE (Isenberg, 2010), however, their quality has been impaired during Covid-19. An example can be sourced from the Australian EE which has been vulnerable to economic consequences of the current pandemic (Maritz et al., 2020). Investors have become reluctant to invest in or lend to start ups, market conditions have worsened due to drastic drop in demand while access to physical infrastructure has been very limited. Additionally, access to entrepreneurial education and technical services in the country has been limited due to closure or scaling down of incubators', universities', and professional & technical services operations (Donthu & Gustafsson, 2020). These problems have therefore adversely affected the birth and growth of start-ups which define the quality of a particular EE (Nicotra et al., 2018). We thus hypothesize that;

H1c: The more the EE-perceived vulnerability to Covid-19 economic consequences, the lesser the EE-perceived quality.

H1d: The more the EE-perceived vulnerability to Covid-19 economic consequences, the lesser the EE-perceived performance.

2.3. The nexus between stakeholder theory dimensions and the EE quality and performance

The functioning of EEs can be well understood through the interconnectedness between entrepreneurial stakeholders and their importance in fostering entrepreneurial development (Isenberg, 2010). The stakeholder theory defines stakeholders as all individuals who can either affect or be affected by the business endeavors (Freeman et al., 2010). The theory operates on the assumption that the interests, needs and opinions of different

stakeholder groups are unparallel. These disparities in stakeholders' needs pose a tremendous challenge to firms in balancing them and satisfying each group. Thus, alternatively firms are urged to pay very close attention to each stakeholder group to continue reaping the benefits of their resources (Choi & Shepherd, 2005).

This is even more important during crisis as crisis management calls for constant identification, management, and communication of risks to key stakeholders (Ndlela, 2019). However, the level of stakeholders' involvement relies significantly on the risks identified as well as the extent at which the proposed solutions affect them. Bischoff and Volkmann (2018) identify three (3) ways in which EE stakeholders are interconnected to foster EE functioning namely; stakeholders engagement, collaboration and support.

2.3.1. EE stakeholder engagement

Startups need to engage their stakeholders if they are to successfully create and sustain value (Freeman et al., 2010). Stakeholder engagement refers to "practices that the organization undertakes to involve stakeholders in a positive manner in organizational activities" (Greenwood, 2007, pg. 315). It pertains to involvement of internal and external stakeholders by creating networks for knowledge and resources sharing with entrepreneurs which eventually allow them to put into action innovative business strategies (Shams & Khojastehpour, 2019). Stakeholder engagement entails involving key stakeholders in firm's decision making by establishing constructive dialogue and productive communication with them to balance their interests and ultimately foster business performance (Chandler & Werther, 2013). Stakeholder engagement is vital during disruptive times as they are usually dynamic depending on the prevailing conditions. Thus, engaging various entrepreneurial stakeholders results into decisions aimed at meeting their distinct interests. We opine that not only stakeholder engagement can improve the EE-quality but also it is paramount during disruptive times as it enables sharing and exchanging key resources and information that can help in designing and carrying out effective collective crisis management strategies. We therefore postulate that:

H2a: The more the EE stakeholders' engagement, the higher the EE-perceived quality.

H2b: The more the EE stakeholders' engagement, the lesser the EE-perceived vulnerability to Covid-19 economic consequences.

2.3.2. EE stakeholder collaboration

Stakeholder collaboration is a practice of creating new observers and new possible actions together, in a mood of commitment to take care of the concerns of all stakeholders as best as possible (Denning & Dunham, 2010). It entails communicating, teaming up and partnering with various stakeholder groups in the EE which helps create shared values and collective understanding which fuel entrepreneurial development (Bischoff & Volkmann, 2018). These collaborations foster the flow of tangible resources as well as the exchange of knowledge which leads to collective proactive decisions amid difficulties (Bianchi & Noci, 1998). Sloan (2009) postulates that when engagement involves collaboration with stakeholders rather than controlling them, more chances for innovation, learning and business transformation are created. Successful crisis management process

is contingent upon firm's ability to timely and appropriately communicate and work with their stakeholders during different phases of crisis (Ndlela, 2019). We postulate that strong stakeholder collaboration during disruptive times may blanket EE from the adversity caused by COVID-19 countermeasure making it less vulnerable. We thus hypothesize that:

H3a: The more the EE stakeholders' engagement, the more the EE-stakeholder collaboration.

H3b: The more the EE stakeholders' collaboration, the higher the EE-perceived quality.

H3c: The more the EE stakeholders' collaboration, the lesser the EE-perceived vulnerability to Covid-19 countermeasures' economic consequences.

2.3.3. EE stakeholder support

Stakeholder theory posits that without the support of key stakeholder groups the firm has no chance of survival (Freeman et al., 2010). Different stakeholders provide different types of support that contribute to entrepreneurial success (Bischoff & Volkmann, 2018). Stakeholder support is crucial for a healthy EE by building trust among actors which facilitates flow of resources that are mutually beneficial to all of them (Theodoraki, Messeghem, & Rice, 2017). Support can be sought from governments whose role is to monitor and guide entrepreneurs by providing crucial information such as technical, market as well as setting regulations, standards and taxation systems that promote entrepreneurial development (Tehseen, Rmayah, Ahmed, & Qureshi, 2019). On the other hand, financial institutions support entrepreneurs by providing them with credit to curb cash flow problem which is rampant among small entrepreneurs that helps them acquire fixed assets and boost working capital (Al-Shammari et al. 2018). When disruptive events such as Covid-19 become severe, entrepreneurial stakeholders (enablers) are stretched thin in terms of their support capabilities which eventually impair the quality of EE and make it more vulnerable to such disruptive events. We therefore opine that:

H4a: The more the EE stakeholders' engagement, the more the EE stakeholders' support.

H4b: The more the EE stakeholders' collaboration, the more the EE stakeholders' support.

H4c: The more the EE stakeholders' support, the higher the EE-perceived quality.

H4d: The more the EE stakeholders' support, the lesser the EE-perceived vulnerability to Covid-19 economic consequences.

The above developed hypotheses (and the SEM estimates) are shown in [Figure 1](#).

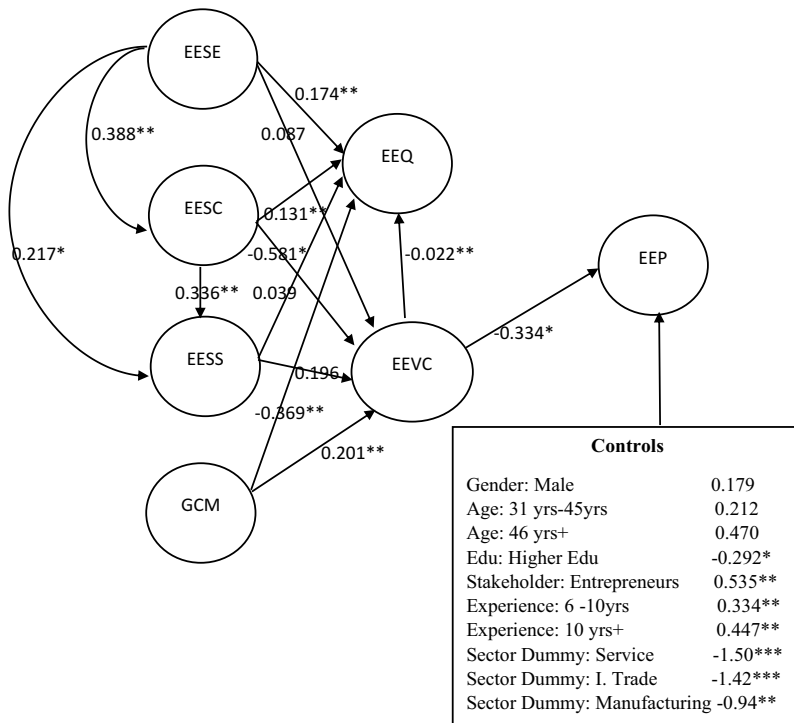


Figure 1. SEM Model Results.

3. Methods

3.1. Research setting

The hypotheses are tested using the sample of 237 stakeholders from the Tanzanian EE including both entrepreneurs and non-entrepreneurs. The latter provide supporting entrepreneurial activities and include employees, customers, suppliers, financial institutions, government agencies, learning institutions, incubators, accelerators, professional consultants, family members, and friends. Tanzania is well-suited as the research context for two main reasons. First, for the past five years, the country has attained a remarkable economic growth of 6.4% geared by sound industrialization initiatives directed toward creating conducive environment for business and investment (The World Bank, 2020). Entrepreneurship is very important to the country's economy and accounts to one-third of the country's GDP and employing 20% of the labour force (Galperin & Melyoki, 2018). Second, just like other countries in the region, Tanzania also has had a fair share of challenges since the Covid-19 pandemic reached the country's shores in March 2020.

Consequently, the government started implementing counter measures from March 2020 which began with international air travel restrictions. These were followed by cancellation of public events, and closure of schools and colleges. At the end of June, schools and colleges started opening with mandatory social-distancing measures in place which were followed by lifting of air travel restrictions.

However, unlike neighboring countries such as Kenya and Uganda, Tanzania adopted a no-lockdown strategy which may have helped cushion EE against adversity caused by Covid-19 government counter measures. Choices of crisis management strategies by EE actors during disruptive moments have subsequent implications on the functioning of the ecosystem.

3.2. Sample and data collection

For the Tanzanian economy, about 76% of the workforce not engaged in agriculture works in the informal sector (Galperin & Melyoki, 2018). This makes it extremely difficult to establish the exact population of EE stakeholders particularly start-ups as most are not officially registered. Thus, the use of random-sampling technique using databases of registered companies was not possible. Therefore, we employed a convenient sampling approach. Data from 237 different EE stakeholders were collected between September and November 2020. To ensure our sample is representative enough the data collection covered major four municipalities of the Dar Es Salaam which is a metropolitan city and main business hub in Tanzania (Mensah, Agyapong, & Zamore, 2019). To encourage a high-response rate, respondents were given crucial insights about the study and nature of the information needed from them. This was done by revealing the purpose of the study, risk, and benefits of participation as well as the fact that information given will be treated with high confidentiality and for scholarly purpose only.

Following Mensah et al. (2019), we administer the survey for data collection in two stages. The first stage (September-2020) of data collection intended to solicit information regarding the stakeholders' perception on the quality of entrepreneurial ecosystem (EE), EE stakeholder engagement, collaboration, and support during the Covid-19 pandemic. Total of 450 questionnaires were distributed to different EE stakeholders whereby 384 (85.3%) questionnaires were retrieved. After preliminary data cleaning, 41 questionnaires (respondents) were eliminated due to incompleteness (unfilled or partially filled questionnaires) and straight-lining problem where respondents provide similar answers to 10 or more consecutive items including items from other different multiple-item constructs (Shneor & Munim, 2019). Thus, the second phase (November-2020) of data collection involved only those respondents who fully cooperated and adequately responded to our survey in the first phase. Accordingly, 343 questionnaires were administered soliciting information regarding the effects of government countermeasures, EE vulnerability to the Covid-19 economic consequences, and the EE performance during the pandemic. In this stage 292 of them were retrieved after a month. We further performed data sorting and cleaning processes, and only 237 questionnaires (52.7%) were retained for subsequent data analyses.

3.3. Constructs' measurement development and assessment

The latent constructs have been measured with multiple measurement items developed from prior studies (Nicotra et al., 2018; Liguori et al. 2019; Ratten, 2020) and slightly conceptually adjusted to fit the studied context. Different 5-point likert scale measures were used as they are deemed most suitable in capturing respondents' perception (Campbell, Bonacci, Shelton, Exline, & Bushman, 2004). Original data were first

subjected to the exploratory factor analysis (EFA) that led to elimination of some of items that did not load sufficiently to respective constructs. The retained items had significant factor loadings of 0.7 (or closely to 0.7) and above (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). However, to avoid extreme data reduction two items with factor loading below 0.7 were retained for practical purposes as they hover above 0.5 cutoff (Hair, Black, Babin, Anderson, & Tatham, 2006).

3.3.1. Perceived entrepreneurial ecosystem performance during Covid-19 pandemic

Nicotra et al. (2018) refers to eco-outputs as performance indicators of a vibrant entrepreneurial ecosystem. Moreover, Kansheba (2020) posit further that a well-performing entrepreneurial ecosystem is that which foster productive entrepreneurship. Thus, we used 5 measurement items (e.g. *the rate of new startups joining early-stage entrepreneurial activities, the rate of high-growth startups*) in a 5-points likert scale (1 = very low to 5 = very high) to measure EE stakeholders' perceptions regarding the extent of EE performance during the pandemic. Other items are presented in Table 1.

3.3.2. Perceived entrepreneurial ecosystem quality during Covid-19 pandemic

We followed Isenberg (2010) EE framework to measure the quality of the EE. We customized the elements (eco-factors) provided within the framework (e.g. *access to finance, market availability*) to measure the extent of EE quality during the pandemic in 5 points (1 = very low to 5 = very high) likert scale (Ratten, 2020). The full list of items is shown in Table 1.

Table 1. Summary of Construct Measurement(operationalization)and Reliability Results.

Constructs and Measurement Items	Loadings	Remarks
Entrepreneurial Ecosystems Performance (EEP) during COVID-19 pandemic (Nicotra et al., 2018; Kansheba, 2020)		
CA = 0.906 CR = 0.88 AVE = 0.606		
EEP1 The rate of new startups joining early-stage entrepreneurial activities	0.85***	
EEP2 The rate of high growth startups	0.83***	
EEP3 The rate of innovation of startups	0.70***	
EEP4 The survival rate of startups	0.80***	
EEP5 The level of productive entrepreneurship	0.70***	
Entrepreneurial Ecosystem Quality (EEQ) during COVID-19 pandemic (Isenberg, 2010; Ratten, 2020; Maritz et al., 2020)		
CA = 0.728 CR = 0.74 AVE = 0.490		
EEQ1 Access to financial resources	0.68*	
EEQ2 Presence of entrepreneurship supporting culture	0.72***	
EEQ3 Availability of Market	0.69***	
EEQ4 Government support eg good policies and programs	0.43	Removed
EEQ5 The level of knowledge creation and transfer eg availability of universities and R & D centers	0.4	Removed
Entrepreneurial Ecosystem Stakeholder Collaboration (EESC) during COVID-19 pandemic (Denning & Dunham, 2010; Ndlela, 2019; Bischoff & Volkmann, 2018; Maritz et al., 2020)		
CA = 0.931 CR = 0.93 AVE = 0.82		
EESC1 The extent of key information sharing among EE stakeholders	0.86***	
EESC2 The extent of interaction and networking among EE stakeholders	0.94***	
EESC3 The extent of partnering among EE stakeholders	0.92***	

(Continued)

Table 1. (Continued).

Constructs and Measurement Items		Loadings	Remarks
<i>Entrepreneurial Ecosystem Stakeholder Support (EESS) during COVID-19 pandemic</i> (Tehseen et al., 2019; Al-Shammari et al. 2018; Bischoff et al., 2017)			
CA = 0.761 CR = 0.76 AVE = 0.518			
EESS1	Support from financial providers eg. Good financial terms	0.70***	
EESS2	Support from customers and other business partners	0.75***	
EESS3	support from other EE stakeholders eg universities, government agents, and accelerators	0.46	Removed
EESS4	Support from the community eg. family members and friends	0.71***	
EESS5	Support from talented and innovative employees (human capital)	0.39	Removed
<i>Entrepreneurial Ecosystem Stakeholder Engagement (EESE) during COVID-19 pandemic</i> (Shams & Khojastehpour, 2019; Chandler & Werther, 2013; Bischoff & Volkmann, 2018)			
CA = 0.726 CR = 0.77 AVE = 0.524			
EESE1	The extent that entrepreneurs and startups involve and work with financial providers in daily operations	0.73***	
EESE2	The extent that entrepreneurs and startups involve and work with their business partners such as customers and suppliers in their daily operations	0.74***	
EESE3	The extent that entrepreneurs and startups involve and work with government agents in their daily operations	0.44	Removed
EESE4	The extent that entrepreneurs and startups involve and work with other entrepreneurial enablers such as incubators, accelerators, large companies, professionals	0.37	Removed
EESE5	The extent that entrepreneurs and startups involve and work with community in daily operations	0.70***	
<i>The effect of Government COVID-19 measures on EE (GCM)</i> (Ratten, 2020; Maritz et al., 2020)			
CA = 0.70 CR = 0.73 AVE = 0.579			
GCM1	The effect of travel restrictions on the quality and functioning of EE	0.59*	The item is retained for practical purpose as it hovers around .5 cutoff (Hair et al., 2006)
GCM2	The effect of social distancing and closure of social events on the quality and functioning of EE	0.90***	
<i>Entrepreneurial Ecosystem Vulnerability to COVID-19economic consequences</i> (Kuckertz et al., 2020; Ligouri & Winkler, 2020; Ratten, 2020)			
CA = 0.70 CR = 0.76 AVE = 0.631			
EEVC1	The extent that COVID-19 has affected the functioning of the EE	0.53*	The item is retained for practical purpose as it hovers around .5 cutoff (Hair et al., 2006)
EEVC2	The Extent that COVID-19 has weakened the quality of the EE	0.99***	

CFA Model fit indices: Chi-square = 289.74, df = 168, CFI = 0.925, TLI = 0.907, RMSEA = 0.057, SRMR = 0.071. CA stands for Cronbach Alpha, CR stands for Composite Reliability, and AVE stands for Average Variance Extracted. In parentheses are standard errors. *, **, and *** = Statistical Significance at 10%, 5%, and 1% respectively.

3.3.3. Government Covid-19 measures effect on entrepreneurial ecosystem

We followed Maritz et al. (2020) to measure the effect of government pandemic containment measures on the quality and functioning of the EE. Thus, we used two measurement items (containment measures) namely *travel restrictions and social distancing and closure of social events* (Ratten, 2020) in 5 points (1 = very low to 5 = very high) likert scale. As pointed early, these were mainly countermeasures applied in Tanzania.

3.3.4. Entrepreneurial ecosystem vulnerability to Covid-19 economic consequences

EE became vulnerable ever since the Covid-19 outbreak. Thus, in 5 points (1 = very low to 5 = very high), we used two statements to capture stakeholders' perceptions on the extent that the pandemic has affected *the functioning* (Kuckertz et al., 2020) and *quality* (Ligouri & Winkler, 2020) of the EE.

3.3.5. EE stakeholders' engagement, collaboration, and support during Covid-19 pandemic

We adapted Bischoff and Volkamann (2018) framework for stakeholders' role in enhancing EE sustainability. They argue that EE (actors') stakeholders' engagement, collaboration, and support play a crucial role in ensuring the effective functioning of the ecosystem. Thus, we used 5 points (1 = very low to 5 = very high) likert scale to measure the three constructs in the pandemic context. Three items were used for stakeholders' collaboration (e.g information sharing, interaction, and networking) (Denning & Dunham, 2010). Five items were used for stakeholders' support (e.g support from financial providers, customers, employees) (Al-Shammari et al. 2018; Tehseen et al., 2019). Five items were also used for stakeholders' engagement (e.g. extent that entrepreneurs and startups involve and work with financial providers, business partners, government agents) (Shams & Khojastehpour, 2019). Table 1 provides for constructs' measurement items, their reliability, and sources.

3.4. Non-response and common method biases check

Data collection through surveys are normally accompanied with non-response bias problem. Thus, we checked for such a problem by performing a wave analysis following Shneor and Munim (2019). To perform this analysis, we divided our sample into two sub-samples of the first 118 respondents and last 118 respondents. Thereafter, mean differences of selected demographic variables were tested and no statistically significant mean difference among the sub-samples was reported as shown in Table 2. This confirms the absence of severe non-response bias in our studied sample.

We further checked for common method bias by using Herman's single factor and common latent factor tests and their recommended cutoff points (Conway & Lance, 2010). The created single factor explains about 13% of the variation being clearly below the threshold of 50%. Additionally, a common latent factor was performed for further confirmation. This was done by adding a common latent factor in the original confirmatory factor analysis model. The common latent factor was found to be uncorrelated with other latent factors and fixed equal factor loading of all measurement items of the common factor. The value of equal factor loading (0.003) suggests that the common

Table 2. Non-response Bias Test: Mean Comparison between Two (First 119 Responses and Last 118 Responses) sub-samples.

Variable	Test value	df	p-value
Gender	Chi = 2.256	1	0.133
Age	F = 0.413	1	0.521
Education	F = 0.283	1	0.595
EE stakeholders` type	F = 0.027	1	0.641
Experience	F = 0.215	1	0.526
Sector	F = 0.034	1	0.854

factor explained about 0.0009% of the variance which is below the recommended threshold of 50%, thus confirms the absence of common method bias problem (Riecardo, Zolloa, Alberto, & Illan, 2019).

3.4 Convergent and discriminant validity check

These data also met the convergent and discriminant validity criteria. Convergent validity was evidenced by all constructs having reliability (Cronbach alpha and composite reliabilities) values of 0.7 and above and the average variance extracted (AVE) for most constructs exceeded the cutoff point of 0.5 (Hu & Bentler, 1999) except for one construct which had the AVE of 0.49 close to 0.5(Conway & Lance, 2010). The AVE were greater than the squared correlation between the latent constructs that confirms the discriminant validity (Hair, Black, Babin, & Anderson, 2010). We further performed the confirmatory factor analysis (CFA) suggested that revealed factors match with our prior conceptualization. Table 3 provides for the discriminant validity results.

3.5 Model goodness-of-fit check

We further examined and confirmed the model goodness-of-fit using commonly and widely accepted fit indices from Confirmatory Factor Analysis (CFA)and Structural Equation Model (SEM). The ratio of chi-square (289.74) and degree of freedom (168) of 1.72 are less than the recommended cutoff of 3. Also, the other model goodness-of-fit indices met the recommended thresholds. The Comparative Fit Index (CFI) of 0.925 and Tucker-Lewis Index (TLI) of 0.907 are all close to cutoff point of 1.0 (Hair et al., 2010). The Root Mean Square Error of Approximation index (RMSEA) of 0.057 and the Standardized Root Mean Square Residual index (SRMR) of 0.071 are all below the

Table 3. Discriminant Validity Results.

	EP	EEQ	EESC	EES	ESE	GCM	EEVC
EEP	1						
EEQ	0.002	1					
EESC	0.018	0.052	1				
EES	0.06	0.101	0.013	1			
ESE	0.136	0.321	0.095	0.198	1		
GCM	0.054	0.058	0.017	0.327	0.059	1	
EEVC	0.000	0.000	0.002	0.083	0.012	0.011	1
AVE	0.606	0.490	0.823	0.518	0.524	0.579	0.631

Table 4. Descriptive Statistics.

Variables	Obs	% of total Obs	Mean	SD	Min	Max
General characteristics of the respondents						
<i>Gender</i>						
Female	123	0.52	0.481	0.501	0	1
Male	114	0.48				
<i>Age</i>						
Below 31 yrs	102	0.43	1.717	0.707	1	3
31 yrs-45 yrs	100	0.42				
46 yrs and above	35	0.15				
<i>Education</i>						
Basic Education	144	0.61	0.392	0.489	0	1
Higher Education	93	0.39				
<i>Experience</i>						
Below 6 yrs	34	0.14	2.422	0.943	1	4
6 yrs-10 yrs	161	0.68				
10 yrs and above	42	0.18				
<i>Entrepreneurial Ecosystem Stakeholders</i>						
Entrepreneurs	113	0.48	0.477	0.501	0	1
Other stakeholders	124	0.52				
<i>Sectors</i>						
Local and retail trade	31	0.42	2.236	0.984	1	4
International trade	14	0.19				
Services	48	0.24				
Manufacturing	20	0.15				
Constructs						
<i>Entrepreneurial Ecosystem Performance (EEP)</i>	237		2.763	1.493	1	4
<i>Entrepreneurial Ecosystem Quality (EEQ)</i>	237		3.318	2.174	1	5
<i>EE Stakeholder Collaboration</i>	237		3.273	1.979	1	4
<i>EE Stakeholder Support</i>	237		2.127	1.255	1	5
<i>EE Stakeholder Engagement</i>	237		3.034	1.977	1	5
<i>EE Vulnerability to COVID-19 (COVID-19 Impact to EEQ) (EEVC)</i>	237		4.450	2.539	1	5
<i>Government COVID-19 Measures (GCM)</i>	237		4.154	2.054	1	5

threshold of 0.08 (Shneor & Munim, 2019). Furthermore, the results from the main SEM, show that the R-square of the latent outcome constructs explains 49% of the variation of EE-performance, 13% of the variation of EE-quality and EE vulnerability to Covid-19 countermeasures respectively, 24% of the variation of EE-stakeholder support, and 18% of the variation of EE-stakeholder collaboration.

3.6 Descriptive statistics and correlation results

Table 4 presents the descriptive statistics for the sample of 237 responses. The sample comprised 52% of females and 48% of males. In terms of age, most of respondents had the age below 31 years (43%) followed by those with age ranging between 31 years and 45 years (42%) where few had the age of 46 years and above (15%). The majority had basic education level (61%) where 39% had higher education. In terms of experience with entrepreneurial activities majority had an experience between 6 years and 10 years (68%). In terms of type of stakeholder, about 48% were entrepreneurs (start-ups) and 52% were stakeholders other than entrepreneurs. The other stakeholders are those that support entrepreneurial processes and activities including employees, customers, suppliers, financial institutions, government agents, learning institutions, incubators, accelerators, professional consultants, and community.

Table 5. Correlation Results among Constructs.

	EEP	EEQ	EESC	EES	ESE	GCM	EEVC
EEP	1						
EEQ	0.05	1					
EESC	-0.133	-0.229	1				
EES	0.246	0.318	-0.114	1			
ESE	0.368	0.567	-0.308	0.445	1		
GCM	0.233	0.24	-0.132	0.572	0.243	1	
EEVC	-0.006	-0.016	0.046	0.288	0.11	0.106	1

Regarding to measured constructs, the results from [Table 4](#) further show that during corona pandemic there was an average EE- performance, EE- quality, EE-stakeholder collaboration, and EE-stakeholder engagement, respectively while EE-stakeholder support reported to be low. Furthermore, the findings show that the corona pandemic and subsequent government measures have high negative impact on entrepreneurial ecosystem. Results in [Table 5](#) confirm lack of serious multicollinearity problem (correlations being below 0.7) among studied constructs (Hair et al., 2010; Kansheba, 2020)

4. Results

4.1. Model estimations

[Table 6](#) presents structural equation modeling estimation results for the tested four hypotheses. Our findings support the H1a and H1b ($p < 0.05$) which postulated that the perceived effects of the government countermeasures (GCM) negatively associate with the EE-perceived quality(H1a) and positively associates with the EE-perceived vulnerability to Covid-19 economic consequences (H1b). We further find support for H1c ($p < 0.05$) which hypothesized that the EE-perceived vulnerability to Covid-19 economic consequences negatively associates with the EE-perceived quality. The results also support H1d ($p < 0.1$) which postulated that the EE-perceived vulnerability to Covid-19 economic consequences negatively associates with the EE-perceived performance. We further postulated that EE-stakeholder engagement is positively associated with the EE-perceived quality (H2a) and negatively associated with the EE-perceived vulnerability to Covid-19 economic consequences (H2b). The findings supportH2a ($p < 0.05$) and do not support H2b.

The results further supportH3a and H3b($p < 0.05$) positing that EE stakeholder collaboration is positively associated with EE stakeholder engagement (H3a) and the EE-perceived quality (H3b) respectively. Moreover, we find support for H3c ($p < 0.1$) regarding the negative association between EE stakeholder collaboration and the EE-perceived vulnerability to Covid-19 economic consequences. We posited in H4 that EE stakeholder support is positively associated with stakeholder engagement (H4a), stakeholder collaboration (H4b) and the EE-perceived quality (H4c) while negatively associated with the EE-perceived vulnerability to Covid-19 economic consequences (H4d). The results in [Table 6](#) support H4a ($p < 0.1$) and H4b ($p < 0.05$).

Table 6. SEM Estimation Results.

	EEQ	EEVC	EESS	EESC	EEP
	<i>Estimate</i>	<i>Estimate</i>	<i>Estimate</i>	<i>Estimate</i>	<i>Estimate</i>
EEQ					0.463** (0.191)
EEVC	-0.1504* (0.077)				-0.107 (0.158)
EES	0.174** (0.067)	0.087 (0.163)	0.217* (0.126)	0.388** (0.139)	
EESC	0.131** (0.026)	-0.0581* (0.032)	0.336** (0.152)		
EES	0.039 (0.077)	0.196 (0.28)			
GCM	-0.369** (0.097)	0.201** (0.043)			
Gender Dummy: Male					0.089 (0.078)
Age Dummy 1: 31 yrs to 45 yrs					0.211 (0.222)
Age Dummy 2: 46 yrs and above					0.47 (0.332)
Education Dummy: Higher Education					-0.292* (0.158)
Stakeholder Dummy: Entrepreneurs (startups)					0.535** (0.269)
Experience Dummy 1: 6 yrs to 10 yrs					0.334** (0.157)
Experience Dummy 2: Above 10 yrs					0.447** (0.224)
Sector Dummy 1: Service					-1.5*** (0.212)
Sector Dummy 2: International trade					-1.42*** (0.169)
Sector Dummy 3: Manufacturing					-0.939** (0.292)

Model fit: Chi-square = 638.034, df = 355, CFI = 0.896, TLI = 0.871, RMSEA = 0.08, SRMR = 0.79. Observations = 237. In parentheses are standard errors. *, **, and *** = Statistical Significance at 10%, 5%, and 1% respectively.

5. Discussion

The current Covid-19 pandemic has led to new sets of challenges (and opportunities) for entrepreneurship. The pandemic predicaments have forced both entrepreneurs (startups) and other entrepreneurial stakeholders to halt their operations (Fairlie, 2020) permanently or temporarily. Our study examines the economic adversity caused by Covid-19 government countermeasures on the EE-perceived quality, performance as well as the protective role of stakeholder engagement, support, and collaboration. Our findings indicate that pandemic shocks caused by the strictness of countermeasures makes the EE become more vulnerable and adversely affects its quality and performance. The more government countermeasures get stricter, the more EE-functioning gets impeded which consequently led to a negative spill-over effect to entire entrepreneurial processes (Ratten, 2020).

Though our findings are based in an emerging economy, they can also be exemplified by the ongoing situation in developed economies where the Covid-19 countermeasures have been immensely applied. For instance, Australia experienced severe disruptions in EEs activities following imposition of lockdowns and social distancing measures in its major cities (Maritz et al., 2020). This involved scaling down and permanent or temporary closure of EE actors' operations all of which act as support structures for sustainable EE. Furthermore, the spill-over effects from deteriorating EE quality leads to a significant reduction in the provision of both tangible and intangible resources to entrepreneurs and their related startups which hinder their growth (Maritz et al., 2020). Similar effects could be observed in Germany whose strict lockdown rules caused limited access to physical infrastructure, technical services and finance, closure of universities and incubators which severely affected start-ups' operations (Kuckertz et al., 2020)

We consider the role of stakeholder collaboration, engagement, and support (Bischoff & Volkmann, 2018) in protecting EEs during Covid-19 to be the main finding of this study. In alignment with crisis management concept that advocates for stakeholders' involvement (Ndlela, 2019), our findings show that higher magnitude of stakeholder engagement and collaboration improves EE quality which makes EEs less vulnerable to shocks from pandemic counter measures. However, we did not find much statistical evidence for the role of stakeholders' support as previously postulated. This is associated with the fact that stakeholders' supports have been largely undermined by pandemic's containment measures such as social distancing measures that prohibit face-to-face activities as well as financial difficulties faced by stakeholders (Köpsel, de Moura Kuipper, & Peck, 2021).

We further show that stakeholder engagement significantly influences stakeholder collaboration which supports Sloan (2009) who stresses the relevancy of stakeholder engagement and collaboration in fostering innovation and business development. Our results stress the profundity of adopting a stakeholder-based approach during crises to efficiently contain adversity to EEs consistent with stakeholder theory and crisis management concept (Alpaslan, Green, & Mitroff, 2009). During crisis it is vital for entrepreneurial firms to seek support, collaborate and engage their key stakeholder in a search of coherent and mutual solutions.

6. Conclusion, implications, and future research

6.1. Conclusion

The current Covid-19 pandemic has brought unprecedented levels of uncertainties to the environment that supports entrepreneurial activities. This has been attributed to the government counter measures imposed to contain the spread of the virus which include lock downs, social distancing, travel bans and cancellation of public events. Start-ups as well as other EE stakeholders have suffered immensely from the adversity brought by these counter measures. Our study sheds light on the current Covid-19 pandemic and its consequences on EE functioning. So far, there are very few (predominately conceptual) studies that have examined how this phenomenon has impacted EE. Our study adds to previous literature by empirically examining the economic consequences caused by government countermeasures on the perceived quality, performance, and vulnerability of EEs. We further document the protective role of stakeholders' engagement, collaboration, and support during the crisis.

6.2. Theoretical implications

This study first extends the EE literature particularly by documenting how EEs behave during crisis. Moreover, our study contributes to stakeholder theory and crisis management literature (Freeman et al., 2010) by examining the enormity of stakeholders' involvement in EE functioning in the context of the current Covid-19 pandemic. Dwelling on Bischoff and Volkmann (2018) conceptualization, we show how stakeholders' engagement, collaboration, and support can protect EEs during major crises and yield to their sustainability. During crisis entrepreneurs and their related start-ups

need easy and fast access to critical resources. This can be largely facilitated by vibrant EEs characterized by healthy engagement, collaboration, and support from variety of actors/stakeholders (Ratten, 2020).

6.3. Practical implications

Policymakers at the national level need to acknowledge that the government countermeasures adversely affect EE functioning and concurrently increase its vulnerability. Upon deciding on countermeasures, governments should also consider mechanisms to blanket EEs from this adversity. Governments have to step in and give direction by devising recovery plans for entrepreneurs and other stakeholders. These plans should not only be focused on providing short-term relief to entrepreneurs but also there should be long-term-oriented plans to ensure growth (Kuckertz et al., 2020). Moreover, policies for protecting EE from adversity brought by disruptive events can be developed focusing on stakeholders' engagement, collaboration, and support, which are the cornerstones of EE functioning (Bischoff et al., 2017).

Our results show that stakeholders' support is undermined during Covid-19. This calls for initiatives and efforts toward improving stakeholders' support during major health crises by emphasizing the incorporation of technology such as online meetings that can stand as a substitute for face-to-face interactions between stakeholders. Government support schemes such as stimulus packages should strongly consider the multiplicity of EE actors rather than targeting entrepreneurs and their related startups only. Policies and assistances that largely target businesses (and less of other supporting actors) may be futile as start-ups' survival is highly dependent on resources supplied by EE stakeholders.

6.4. Limitation and future research

Our study examined the Covid-19 economic consequences on the EE by exploring stakeholders' perceptions from a single ecosystem. Future research (for more nuance generalization purpose) may benefit by exploring the phenomenon from multiple ecosystems. Moreover, further studies may explore how different stakeholders' roles e.g. government's ability to provide stimulus packages such as relaxed tax rules, lending and repayment rules affect EE quality and performance during the crisis.

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Appendix 1: Summary of tested hypotheses

Hypothesis	Relationship	Remarks
H1a	EEQ ~ GCM	Confirmed
H1b	EEVC ~ GCM	Confirmed
H1c	EEQ ~ EEVC	Confirmed
H1d	EEP ~ EEVC	Confirmed
H2a	EEQ ~ EESE	Confirmed
H2b	EEVC ~ EESE	Rejected
H3a	EESC ~ EESE	Confirmed
H3b	EEQ ~ EESC	Confirmed
H3c	EEVC ~ EESC	Confirmed
H4a	EESS ~ EESE	Confirmed
H4b	EESC ~ EESC	Confirmed
H4c	EEQ ~ EESS	Rejected
H4d	EEVC ~ EESS	Rejected