

Inclusiveness of Tanzania's small-scale jewellers into global value chains: exploitation of artisanal industrial clusters

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Abstract

Purpose – In developing countries like Tanzania, gems and jewellery industry mainly consists of disintegrated and unstable micro and small workshops which operate in a way that misalign value addition processes. This study is aimed to bridge gap by focussing on exploitation of industrial clusters in social normalisation and economic resilience to developing countries. The world economic shocks has been not only individually experienced but also globally shared while disrupted lives across all countries and communities and negatively affected global socio-economic growth.

Design/methodology/approach – Furthermore, the explorative design was adopted in this study in order to explore needs of respondents, and with the aim to direct the study towards a descriptive design. The sample frame consists of participants in gems and jewellery activities in Tanzania whereby sample was drawn from Dar es Salaam and Arusha. Semi-structured interview was used to collect quantitative data to establish evidence of Tanzanians' SSJs linked to global value chains (GVCs).

Findings – Results revealed the benefits of exploitation of artisanal industrial clusters to Tanzanians' SSJs when linked to global value chains (GVCs). Findings of the study demonstrate the importance of artisanal industrial clusters in facilitating Tanzanians' SSJs to access GVCs. Further, insufficient education, trust and social protection directly affects inclusive GVCs, inferring that the impact of artisanal industrial clusters on inclusive GVCs in social normalisation and economic resilience.

Research limitations/implications – Study findings reveals shortcomings in existing regulatory framework of linking Tanzanians' SSJs to artisanal industrial clusters, for improvements to better support the inclusiveness in GVCs. Findings of this research invite interventions on institutional capabilities and entrepreneurial competencies to enhance the capabilities of small-scale jewellers (SSJs). Like other studies, this study involved cross-sectional data, limit targeted study population as representative of SSJs in industrial clusters and GVCs in economic crises at limited time.

Practical implications – The study findings makes important practical contributions to the Tanzania's SSJs by examining mediating role of artisanal industrial clusters hence informing policymakers of mining sector

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how to improve accessibility on GVCs by focus on offering great institutional capabilities and entrepreneurial competencies. These findings will help SSJs and policy makers to get better understanding of the relationships in exploitation of artisanal industrial clusters when accessing GVCs. Therefore, they can make better decisions on implementing artisanal industrial clusters as well as management accessing GVCs, so that SSJs will attain the best possible performance.

Social implications – This emphasises the importance of community empowerment in the GVCs process through artisanal industrial clusters. Study findings indicate the influence of industrial relations to social dynamics which are previously inadequately addressed and scantily researched. In actual fact study propose initiatives that ensure local communities benefit socially from the integration of SSJs into GVCs through artisanal industrial clusters. Findings suggest local communities that take into account inter-sectionality of artisanal industrial clusters and inclusive GVCs, by considering how factors like education, trust and social protection status intersect to influence the social inclusiveness of SSJs.

Originality/value – There is limited evidence of linking Tanzanians' SSJs to GVCs in social normalisation and economic resilience and few researchers have explored this topic. This article leverages exploitation of industrial clusters in normalisation and economic resilience to developing countries such as Tanzania as way of improving shared prosperity, sustainability, inclusive growth, cohesion, value chain upgrading and financial inclusion to SSJs.

Keywords Global value chains, Inclusiveness, Artisanal industrial clusters, Small-scale jewellers

Paper type Research paper

1. Introduction

Tanzania has a rich mineral resource base in terms of gold, diamonds and a wide variety of coloured gems (Phillips *et al.*, 2001; Lange, 2006). With its abundant resources in precious and semi-precious stones, Tanzania has a significant advantageous position in a gemstone-based global trade system (DeLeon, 2008; Macfarlane *et al.*, 2003). However, like most other African countries, so far Tanzania has been hardly affected by economic crises thus continuously unfit to exploit global value chains (GVCs), either in the field of lapidary or jewellery due to the fact that value chain currently initially was not operate in a way that fosters value addition (Kowalski *et al.*, 2015; De Backer and Miroudot, 2014). Even so, there is insufficient evidence on current capability on exploitation of gems and jewellery industry in Tanzania, specifically on how explain nexus between GVCs and inclusiveness of small-scale jewellers (SSJs) through cluster development to support sustainable development goals. In this Lawson and Chowdhury (2022) pointed out that artisanal and small-scale mining can have both positive and negative impacts in relation to the Sustainable Development Goals (SDGs).

The economic crises have been not only individually experienced but also globally shared. Economic crises disrupted lives across all countries and communities and negatively affected global socio-economic growth caused an unprecedented global economic impact at an astonishing rate, leading to rapid economic downturns in many countries (Pak *et al.*, 2020; Rahman, 2020). Initially, the socio-economic effects of the virus were expected to be short-term supply issues as factory output fell because widespread social-distancing initiatives and sharp contractions of GVCs are observed. Estimates so far indicate the virus reduced global economic growth to an annualised rate of 4.5% – 6.0% in 2020, estimates indicate that 95 million people may have entered into extreme poverty in 2020 with 80 million more undernourished compared to pre-pandemic levels (Jackson *et al.*, 2020). In this manner, there is a need to support businesses that are struggling as a result of the socio-economic fallout associated with the economic crises (Nicola *et al.*, 2020; Balde *et al.*, 2020).

According to Gereffi (2015), GVCs describe networks of functionally interrelated producers and buyers that are engaged on a global scale in processes of value creation as products pass across borders and between different actors in the chain. Empirically, Zeng (2010) hinted that policy makers, business people and scholars continue to debate on China's economic success, but one thing is clear: the performance and presence in GVCs through industrial clusters that emerged after the country's reforms are without doubt important engines of China's remarkable development. Therefore, for many countries, especially low-

income countries, the ability to effectively insert themselves into GVCs through industrial clusters is a vital phenomenon for attainment of social and economic development [United Nations Industrial Development Organization \(UNIDO\) \(2010\)](#).

Despite of advantages in terms of natural resource endowments, low labour costs and growing consumer markets, Tanzania's SSJs were unable to access GVCs, compete successfully and capture the gains of industrial clusters even in pre-pandemic ([Kuah, 2002](#); [Mbowe et al., 2016](#)). Several researchers define entrepreneurial competencies and institutional capabilities as a higher level construct that can builds on the interaction of resources at any socio-economic stage. For instance, [Ihucha \(2014\)](#) hinted that, exported rough Tanzanite despite of being found only in Tanzania, it has generated about 250,000 jobs in Jaipur city of India compared to 119 jobs created in Tanzania. This mismatch between high availability of gems and jewellery versus low productivity and output has traditionally been attributed to SSJs-specific constraints preventing access to GVCs ([Damodaran, 2010](#); [Lawson and Chowdhury, 2022](#)).

Generally, gems and jewellery industry has also sparked the interest of international and national policy-makers as they seek to improve economy ([Mwaipopo et al., 2004](#); [Phillips et al., 2001](#)). This attention from policy makers in economic crises have paved way for the researcher of this to focus in micro and small industrial clusters and its effectiveness into inclusive development ([Kaabinezhad et al., 2014](#); [UNIDO, 2010](#)). But, in developing countries like Tanzania, gems and jewellery industry mainly consists of disintegrated and unstable micro and small workshops ([Agarwal et al., 2018](#); [Donahue, 2018](#)). Often, however, their development potential remains untapped, as SSJs operate in isolation, locked into uncompetitive and incompetent value chain patterns ([Belussi and Sedita, 2010](#); [Turyahikayo et al., 2018](#)).

There has been considerable interest and activities in industrial clustering and concomitant relation to significant economic and sustainable development in recent times ([Jevwegaga et al., 2018](#)). Also, [Setyoko and Kurniasih \(2022\)](#) and [Meramveliotakis and Manioudis \(2021\)](#) mention, a small or even a medium business will find it difficult to operate autonomously in economic crises with developed business, in contrast to a net of businesses. Most researchers agree on the benefits that may arise for the micro and small industries such as SSJs, if they unify powers in industrial cluster can gain productivity and competitive advantage in domestic and international level ([von Weltzien Høivik and Shankar, 2011](#); [Makedos, 2014](#)). Developing such a joint platform is often crucial in jump starting into entrepreneurial competencies on GVCs in developing countries ([Asian Development Bank and Asian Development Bank Institute, 2015](#); [D'Annunzio et al., 2015](#)).

Numerous authors in literature of education, trust and social security recognise importance of exploitation of micro scale industrial clusters and GVCs. For instance, effect of GVC involvement along two dimensions – GVC participation and GVC position – on innovation performance in China's manufacturing industries was examined by [Yang et al. \(2020\)](#), while [Fuerst \(2010\)](#) consider GVCs and local cluster development in a perspective on domestic small enterprises in the 3D-animation industry in Colombia; an outlook of [Humphrey and Schmitz \(2000\)](#) finds support for the governance and upgrading in linking industrial cluster and global value chain research; but [Giuliani et al. \(2005\)](#) suggest an upgrading in GVCs on lessons from Latin-American clusters. So far there has been limited debate focussing in economic crises normalisation and economic resilience on business capabilities and opportunity exploitation of industrial clusters. This invite more studies to focus on inclusiveness of SSJs into GVCs, and therefore current study has bridging practical and theoretical gap by focussing on exploitation of artisanal industrial clusters (AICs) in crises normalisation and economic resilience to developing countries to support sustainable development goals.

Remainder of this paper is organised in the following way, the next section present the literature review, which is followed by a sub-sections of characterisation of SSJs into inclusive GVCs, effect of AICs to inclusive GVCs, mediation of AICs on SSJs dimensions and inclusive GVCs. Section three presents the research methods, which includes the method followed aim and study setting, research design, characteristics of participants and sampling procedures, and mode of data collection used in this paper. Subsequently, section four describes the analytical procedures through presentation of descriptive analysis and relationship between study variables and the results from mediation effects of AICs towards inclusive GVCs. Section five focus on results and discussion, while the final section provide the conclusion, study theoretical and empirical implications and ended with study limitations.

2. Literature review

When generating valuable insights of AICs in GVCs studies to date leave a number of issues uncovered. This paper intends to shed more light on SSJs' reactions to industrial clusters on inclusive GVCs in crises normalisation and economic resilience in developing countries to support sustainable development goals. The conceptual framework presented here is therefore a literature review informed by a variety of types of resource. It aims to touch upon every aspect related to SSJs and industrial clusters on inclusive GVCs in mapping comprehensive perspective. Economic crises normalisation and economic resilience to developing countries, however, still a work in progress, but form a grounding upon which further development of SSJs and industrial clusters on inclusive GVCs can be based.

It has been noticed that despite all benefits global trading systems may have, accessing inclusivity of GVCs by individual SSJ is a markedly difficult task that cannot be easily accomplished (Carrigan *et al.*, 2017; Cusolito *et al.*, 2016). In fact, a growing body of literature has looked at industrial clusters as a distinctive unit in the analysis of economic development, and a consensus exists on seeing inclusive GVCs as vital component in global–local nexus of development is increasingly. Challenging inclusive GVCs craft necessity of coping with both domestic and international competitors; therefore inclusion of SSJs in GVCs opens new opportunities for profits and expansion of trade horizon; but on the other hand, exposes SSJs to risks previously shielded by market boundaries and geographic distances.

A SSJ interplays between entrepreneurial competencies and institutional capabilities on inclusive GVCs and industrial clusters. However, economic crises normalisation and economic resilience to developing countries of SSJ, industrial clusters and inclusive GVCs is present need for current research and practice. At any stage, therefore, an economic crises normalisation and economic resilience to developing countries is seen as a snapshot of a developing work, and as a means of communicating the various elements and variables to be analysed, not an attempt to accurately portray entirety of causal and effect relationship between SSJs, industrial clusters and inclusive GVCs. Although there may be gaps in a framework, however, attempting to organise SSJs and industrial clusters into inclusive GVCs aspects into a single model is an important step in identifying those gaps. Thereby, study, aims at identifying and improving evidence from reviewed literatures to support transformation and better integration of SSJs into inclusive GVCs through exploitation of industrial clusters in economic crises normalisation and economic resilience to developing countries to support sustainable development goals.

Literatures of current study shows necessity for inclusion of SSJs in inclusive GVCs in economic crises normalisation and economic resilience to developing countries is evident; however, but there is still question of how to achieve entrepreneurial competencies and institutional capabilities. Correspondingly, is set to portray: what happens when SSJs' entrepreneurial competencies are inserted into inclusive GVCs through exploitation of industrial clusters? Does it imply opportunity or threat when SSJs' entrepreneurial

capabilities are linked into inclusive GVCs through exploitation of industrial clusters? But the general aim of this study therefore, intends to explore and examine how exploitation of small industrial clusters may influence inclusiveness of gems and jewellery industry into inclusive GVCs in economic crises normalisation and economic resilience to developing countries. Main assumption of research question is that there must be something quite unique about inclusiveness of SSJs into inclusive GVCs, which gives remarkable propensity to exploit industrial clusters endeavours in the midst of education, trust and social security of Tanzanian SSJs'.

2.1 Characterisation of small-scale jewellers into inclusive global value chains

The study attempts to understand problems faced by gems and jewellery artisans (GJAs) in accessing inclusive GVCs to support sustainable development goals. The study reviews relevant academic work relating to determinants of inclusive GVCs and exploitation of industrial clusters in Tanzania. This research will also attempt to study the broad determinants of small businesses' inclusiveness into GVCs in the context of social cultural values and competitive capabilities of AICs in Tanzania. The study also focuses on the need to have exploitation of AICs in developing countries by selecting Tanzania as a sample population to arrive at meaningful policy alternatives.

Studies of [Kowalski et al. \(2015\)](#) and [De Backer and Miroudot \(2014\)](#) noted that like most other African countries, so far Tanzania has been unable to exploit GVCs, either in the field of lapidary or jewellery due to the fact that value chain currently does not operate in a way that fosters value addition ([Kowalski et al., 2015](#); [De Backer and Miroudot, 2014](#)). In specific incidences, [Cicea et al., 2019](#) and [Lins et al. \(2017\)](#) show that there is a relationship between social protection and trust in SMEs such as SSJ and business performance at different stages of business growth, supported by [Estevez-Abe et al. \(2001\)](#) and [Shinozaki and Rao \(2021\)](#) argue the existence of a positive relationship between the characteristics of SSJ with business performance. The study also questions; why the gems and jewellery artisans in developing are excluded into GVCs?

AICs, as used in this study can be defined as sectoral and geographical concentration in gems and jewellery industry of GJAs, faced with common opportunities and threats which can give rise to Inclusive GVCs. Generally, this study is aimed to explore and examine how exploitation of small industrial clusters may influence inclusiveness of gems and jewellery industry into GVCs in Tanzania. Too often, inclusive GVCs fail to include developing economy – in context of education, trust and social security and GJAs. However, at present, there is scarce comprehensive review of the effect SSJ as measured by education, trust and social security in exploitation of GVCs in economic crises in Tanzania. Based on empirical evidences described above, it can be hypothesised that:

- H1a.* There is a significant negative relationship between the education of SSJ and inclusive GVCs to GJAs.
- H1b.* There is a significant negative relationship between the trust of SSJ and inclusive GVCs to GJAs.
- H1c.* There is a significant negative relationship between the social protection of SSJ and inclusive GVCs to GJAs.

2.2 Effect of artisanal industrial clusters to inclusive GVCs

[UNIDO \(2004\)](#) defines clusters as a sectoral and geographical concentration of enterprises that produce and sell range of related or complementary products and thus face common challenges and opportunities. In this study, artisanal industrial cluster is a geographically

proximate group of interconnected GJAs and associated institutions, linked by commonalities, collective efficiency and complementarities with active chain of value addition, share specialised infrastructure with common objectives, opportunities and challenges. Generally, industrial clusters are natural manifestation of specialised competencies, supporting infrastructure and networks to enhancing productivity in a spatially bounded area.

A synergy of inter-firms networks, rivalry and need for optimise multiple conflicting objectives while minimising constraints, affect the value chain environment in industrial clusters. The literatures from Gereffi and Lee (2016) suggests that industrial clusters matter for economic inclusiveness because, first, the agglomeration of productive activities generates not only economies of scale and scope external to individual firms but also internal to the cluster, and, second, it facilitates local collective efficiency by cluster individuals, firms and institutions to address common problems based on their interdependence.

According to Mezzadri (2014) clusters are connected to the outside world by value chains which link individual firms through local, regional, national, and global channels, from raw material extraction to retail selling and finally consumers. Moreover, once forged, this inter-firms network by its knowledge transfer process creates the artisan clusters' capacity to upgrade themselves in the value chain processes, after observing higher rates of returns are accrued as one moves up the value chain ladder. In summary, the industrial cluster literature highlights the importance of cluster governance operating horizontally between cluster members and institutions in local contexts while vertically with GVCs that links global lead firms to both first-tier and local suppliers in international production networks.

As explained by Skokan (2005) that industrial clusters develop over time; they are not a phenomenon that just appears or disappears overnight. In addressing formation of AICs, many researchers recognise typical locational factors in agglomeration as materials availability, climate, university research, external economies, local division of labour and influence of social structures on the nature of competition (Capozza *et al.*, 2018; Gordon and McCann, 2013; Boari, 2001). However, they all agree that there is no general law on how clusters are emerging. Among the most frequent sources of cluster development are specific aspects of the location, specific business environment conditions, related clusters and the long-term impact of specific entrepreneurial decisions by private or public sector leaders (Ketels and Memedovic, 2008; Ketels, 2004).

Literatures of this study shows how the need for inclusion of SSJs in inclusive GVCs in economic crises normalisation and economic resilience to developing countries is evident; however, but there is still question of how to achieve entrepreneurial competencies and institutional capabilities. Correspondingly, is set to portray: what happens when SSJs' entrepreneurial competencies are inserted into inclusive GVCs through exploitation of industrial clusters? Does it imply opportunity or threat when SSJs' entrepreneurial capabilities are linked into inclusive GVCs through exploitation of industrial clusters? But the general aim of this study therefore, intends to explore and examine how exploitation of small industrial clusters may influence inclusiveness of gems and jewellery industry into inclusive GVCs in economic crises normalisation and economic resilience to developing countries to support sustainable development goals. Main assumption of research question is that there must be something quite unique about inclusiveness of SSJs into inclusive GVCs, which gives remarkable propensity to exploit industrial clusters endeavors in the midst of education, trust and social security of Tanzanian SSJs. Against the above assumptions, the study hypothesises:

H2. There is a significant positive relationship between AICs and inclusive GVCs.

2.3 Mediation of artisanal industrial clusters on small-scale jewellers dimensions and inclusive global value chains

In summary then, economic crises normalisation and economic resilience to developing countries in this study map step-by-step causal and effect relationship through, *firstly*, providing a basis from of interpret causal relationship of SSJs and industrial clusters into inclusive GVCs and form a coherent whole from further literature in economic crises normalisation and economic resilience to developing countries. *Secondly*, structuring evaluation process on causal effect relationships when assess SSJs and industrial clusters towards inclusive GVCs in economic crises normalisation and economic resilience. *Thirdly*, integrating various factors and indicators involved in designing on direction of relationship of SSJs and industrial clusters on inclusive GVCs in economic crises normalisation and economic resilience to support sustainable development goals. And *fourthly*, by enabling articulation of the study findings while mapping magnitude of relationship between variables and indicators of SSJs and industrial clusters for inclusive GVCs in economic crises normalisation and economic resilience to developing countries.

Henceforth, objective of the study was to establish the driving forces behind the effects of AICs to inclusive GVCs to SSJs in economic crises. The study had postulated that relationship between SSJ and inclusive GVCs to GJAs in economic normalisation and economic resilience in terms of application of industrial clusters is thinly applied even in economic crises as a result developing countries are highly under-represented in GVCs. In such a scenario, the education, trust and social security of Tanzanian SSJs are in doubt. The argument of this study starts from the position that discussion of SSJs, industrial clusters and inclusive GVCs has tended to conflict ideas arising from quite different perspectives, which are sometimes complementary and sometimes contradictory. The indicators of AICs (entrepreneurial competencies and institutional capabilities) were used to test mediation effect to SSJ dimensions on inclusive GVCs. In establishing mediation effect of AICs on relationship between SSJ on Inclusive GVCs in terms of, the following hypotheses were tested.

- H3a.* AICs mediate the relationship between education of SSJ and exploitation inclusive GVCs.
- H3b.* AICs mediates the relationship between trust of SSJ and exploitation inclusive GVCs.
- H3c.* AICs mediates the relationship between social protection of SSJ and exploitation inclusive GVCs.

3. Methods

3.1 Aim and study setting

Since literatures on inclusiveness of SSJs into GVCs are not extensive or specific enough to exploit industrial clusters, a quantitative study is needed to be conducted. This study looks into the role of inclusiveness of SSJs into GVCs through exploitation of industrial clusters with accompanying critical realist ontological and epistemological assumptions. The approach seeks to obtain knowledge of what entrepreneurial competencies and institutional capabilities exist and to establish how we can identify the relative significance of existing competitive and entrepreneurial competencies in economic crises normalisation and economic resilience to developing countries.

As stated, the purpose of this study is to create a better understanding of the interplay between inclusiveness of SSJs into GVCs and exploitation of industrial clusters at national, regional and global level in the social and economic context of Tanzania. This entails a

detailed study on understanding of global and local context factors influencing inclusion of SSJs into GVCs, the processes of inclusion at local level to global level and ensuing change resulting from inclusion process. Such a focus leads to the adoption of interpretive stance on inclusiveness of SSJs into GVCs, which seeks to uncover truth by understanding the phenomena in their real-life context. A quantitative approach through cross sectional was, therefore, used to describe the inclusiveness of SSJs in GVCs through exploitation of industrial clusters in economic crises normalisation and economic resilience to developing countries.

3.2 Research design

The research design applied in this study is a combination of exploratory and descriptive design. As [Bless and Higson-Smith \(2000\)](#) stated that the main purpose of an exploratory research is to gain insight into a situation, phenomenon, community or a person. Nonetheless, in this study exploratory research design is conducted with goals intended to: (1) determine scope, magnitude, problem or behaviour of SSJs' entrepreneurial competencies and institutional capabilities towards inclusive GVCs through exploitation of industrial clusters; (2) generate some initial ideas about drivers, opportunities and constraints of industrial clusters on inclusion of SSJs in GVCs, or (3) test the practicality of undertaking a more extensive study regarding weaknesses and threats of SSJs when linked into GVCs through industrial clusters in economic crises normalisation and economic resilience to developing countries support sustainable development goals. Furthermore, the explorative design was adopted in this study in order to explore the needs of respondents, and with the aim to direct the study towards a descriptive design.

3.3 Characteristics of participants and sampling procedures

The sample frame consists of participants in gems and jewellery activities in Tanzania. Moreover, the sample was drawn from the Tanzania in sampled two cities Dar es Salaam and Arusha because they are dominant regions of Tanzania in terms of economic activity. The study data were collected cross-sectional data from 294 small-scale jewellers. By selecting a geographically limited sampling frame has the advantage of guaranteeing that all respondents sampled share the similar socio-cultural behaviours and institutional context. Thus, all respondents contained within the sample are likely to face similar levels of scrutiny insofar as they conform to the same political, socio-economic and environmental demands and hence can be analysed alike. Sampling designs can be classified as either probability or non-probability sampling. Probability sampling is undoubtedly the most frequently used method and involves random selection of elements, where each element has an equal probability (chance) of being included in that sample. While in most business and management studies use probability sampling, stratified random sampling was used to select study samples.

3.4 Mode of data collection

In order to address research objectives, a self-administered survey questionnaire was developed to collect data from the selected from key policymaking institutions, i.e. the Ministry of Trade and Industries, SSJs, precious stones miners, brokers and dealers/processors in this cross sectional study. A self-administered survey questionnaire and closed ended was chosen as the best suited data collection method in terms of time saving and enable respondents to give relevant choice since different options were provided. This method of data collection is best suited for this study because it gives freedom to respondents to furnish truthful opinions since there was no one to challenge their answers as it is in the case of

interviews. A self-administered survey questionnaire gives a complete confidence to respondents to effectively answer questions without feeling shy or being scared.

The first part of questionnaire consists of characteristics of SSJ in terms of education trust and social protection. The second part was designed for measuring inclusive GVCs. This concept was operationalised with attribute and overall inclusive GVCs measures. Attribute inclusive GVCs measures represented six variables, namely value chain upgrading, governance, financial inclusion, innovative capabilities, innovative capabilities and contextual factors. The inclusive GVCs were measured with four to six items. All inclusive GVCs variables were rated on a five point scale, ranging from “strongly disagree”(1) to “strongly agree” (5). The third part of the questionnaire included four items regarding of exploitation of industrial clusters are entrepreneurial competencies and institutional capabilities. Generally, data was gathered from November 2021 to April 2022.

4. Basis of analytical procedures

With reference to the analysis of the data, it was decided that hypothesis and propositions was formulated. Quantitatively, this study addresses objectives and propositions via a methodological investigation of the internal consistency and reliability prior to evaluating its construct validity using Structural Equation Modeling (SEM) in examination of correlational patterns. Study applied statistical package for social sciences (SPSS) version 26 for data management, and later transferred it to STATA version 15 for data cleaning and analysis. Procedures involved were described in terms of descriptive statistics which was followed by tests of reliability and validity in the form of SEM analyses while examining correlational patterns between variables. Since in real-world cases, multiple and conflicting objectives have to be improved simultaneously and multi-objective optimisation techniques have to be applied for minimising constraints versus resources optimisation. In this study, venturing into multiple and conflicting objectives as sources of exclusiveness of SSJs in industrial clusters and GVCs was be explicitly determined. Therefore this study proposes multiple regression analysis for solving multiobjective optimisation problems to overcome challenges of multiple objective selection and optimisation.

4.1 Descriptive analysis and relationship between study variables

Descriptive analysis of data limits generalisation and provides valuable information about the nature of the particular group of individuals. The descriptive analysis of data provides, firstly, estimates and summaries, arranged in tables and graphs, to meet the objectives. Secondly, information about the variability or uncertainty of data, and thirdly, indications of unexpected patterns and observations that needs to be considered when doing formal analysis. After grouping data, different statistical measures were used to analyse data and draw conclusions. For present study, descriptive analysis was used measures of central tendency, measures of variability, measures of divergence from normality and measures of probability to compute statistical testing.

In order to ascertain the degree of association between constructs under investigation, the Pearson correlation was computed. [Table 1](#) below presents the correlations between the constructs. As can be seen, the correlations decrease as one move away from the main diagonal, meaning that the correlations decrease as a function of the number of lags between the factors – a typical feature of a correlation structure ([Joreskog and Sorbom, 1984](#)). The findings from the research indicate that the correlation between the independent variables and the dependent variable ranged from 0.558 to 0.867.

The correlation matrix as presented in [Table 1](#) shows the degree of association between the variables of this study that is, SSJ, AICs and inclusive GVCs. The correlation

Dimension	M	SD	1	2	3	4	5	6	7	8	9	10	11
1 Education	2.32	0.624	(0.91)a										
2 Trust	2.57	0.714	0.721**	(0.85)a									
3 Social protection	2.88	0.676	0.853*	0.767**	(0.86)a								
4 Institutional capabilities	2.76	0.873	0.697**	0.669**	0.464*	(0.86)a							
5 Entrepreneurial competencies	2.36	0.654	0.639**	0.715**	0.675**	0.663**	(0.84)a						
6 Shared prosperity	2.92	0.676	0.753*	0.752**	0.765*	0.678**	0.787**	(0.93)a					
7 Sustainability	2.34	0.814	0.767**	0.675**	0.646**	0.765**	0.762**	0.713**	(0.87)a				
8 Inclusive growth	2.69	0.648	0.824**	0.589**	0.712**	0.734**	0.715**	0.695**	0.669**	(0.85)a			
9 Social cohesion	3.12	0.753	0.675**	0.663**	0.853*	0.649**	0.652*	0.735**	0.753*	0.692*	(0.82)a		
10 Value chain upgrading	2.58	0.778	0.682**	0.692**	0.767**	0.673*	0.769**	0.742**	0.764*	0.648**	0.757**	(0.79)a	
11 Financial inclusion	3.17	0.725	0.765**	0.551**	0.673**	0.592**	0.693**	0.764**	0.573**	0.715**	0.873*	0.772**	(0.86)a

Note(s): * $p < 0.05$ (2-tailed test); ** $p < 0.01$ (2-tailed test) while “a” = Cronbach’s alpha
Source(s): Authors’ own work

Table 1.
Means, standard
deviations and
intercorrelations of
dimensions

matrix indicates a significant relationship between of the study variables. Table 1 shows that entrepreneurial competencies and institutional capabilities are positively and significantly correlated with AICs ($r = 0.639; 0.715, p < 0.01$, respectively). On the other hand inclusive GVCs' variables (shared prosperity, sustainability, inclusive growth, social cohesion, value chain upgrading and financial inclusion) is significantly and positively correlated with AICs ($r = 0.765, 0.346, 0.312^{**}, 0.253^*, 0.567$ and $0.673; p < 0.01$, respectively).

After analysis of fit indices and factor intercorrelations, in terms of intercorrelations, results explain the empirical relationships between the manifest variables measured. Accordingly, the relations between empirical measures can be explained in terms of 11-factors correlation structure.

4.2 Mediation effects of artisanal industrial clusters towards inclusive GVCs

Hierarchical regression was performed to examine the mediating effect of AICs on inclusive GVCs in economic crises. According to Baron and Kenny (1986), in hierarchical multiple regression analysis the following conditions have to be met to determine the variable's mediating functions: firstly, the independent variable should make a significant contribution to the dependent variable in the absence of mediator variable; secondly, the independent variable should make a significant contribution to the mediator variable; and thirdly, the mediator variable should make a significant contribution to the dependent variable. In hierarchical multiple linear regression full mediation holds when the independent variable is no longer related to the dependent variable after the mediator is included and the beta coefficient of regression is reduced to non-significant level. Mediation in hierarchical multiple regression analysis holds when the beta coefficient of the independent variable value is still statistically significant after the inclusion of the mediator. In sum, the regression result reveals that the first, second and third conditions of mediation test are achieved; therefore, AICs does act as mediating variable in the relationship between entrepreneurial competencies and institutional capabilities and inclusive GVCs.

Table 2 summarise results of the moderated regression analyses of the tested hypothesis. In Model I, education of SSJ was found to have a significant but strong negative influence on inclusive GVCs in economic crises ($\beta = -0.623, p < 0.01$). Trust of SSJ was shown to have a significant but strong influence on exploitation of inclusive GVCs in economic crises ($\beta = -0.739, p < 0.01$). Social security in SSJ was found to have a significant but strong negative relationship with Inclusive GVCs in economic crises ($\beta = -0.703, p < 0.01$). In above findings it can be observed that all SSJ dimensions despite of having strong negative relationship, but are capable of explaining total variability of SSJ and inclusive GVCs in economic crises (having p value of lower than 0.01).

From Table 2 indicates that, one percent increase in Education of SSJ will decrease inclusive GVCs in economic crises with 62.3%. These findings portray evidence that trust in SSJ is the source of exclusivity of GJAs on GVCs during economic crises. Also, Table 2 shows one percent increase trust of in SSJ will decrease inclusive GVCs in economic crises with 73.9%, this is evidenced by a study of Turyahikayo *et al.* (2018) and Belussi and Sedita (2010) who observed that development potential remains untapped, as SSJs operate in isolation, locked into uncompetitive and incompetent value chain patterns. In the same line of argument, results of Table 2 indicate that one percent increase in Social security to SSJ cause decrease of inclusive GVCs in economic crises of 70.3%.

Furthermore, Table 2, results from Model I indicate significant suitable effect Size ($f^2 = 0.007$), which is significant at $p < 0.01$, whereby 26.4% of the variation of AICs towards Inclusive GVCs in economic crises are explained by entrepreneurial competencies and institutional capabilities. Also, the presence of AICs magnitudes

Variable	Model 1		Model 2		Model 3.1		Model 3.2		Model 3.3	
	β	<i>t</i> -value	β	<i>t</i> -value	β	<i>t</i> -value	β	<i>t</i> -value	β	<i>t</i> -value
Intercept (B_0)	-0.038	56.310	0.036	49.875	0.732	0.768	0.743	0.651	0.803	0.678
Education (ED)	-0.623	19.612	0.443	18.671	0.687	11.892	0.815	2.784	0.698	11.986
Trust (TS)	-0.739	17.731	0.262	15.438	0.742	13.356	0.686	15.653	0.747	13.476
Social security (SS)	-0.703	16.865	0.341	16.367	0.864	14.189	0.776	21.988	0.801	22.763
Step II: main effects										
Artisanal industrial clusters (AICs)			0.789	5.675	0.765	5.312	0.843	5.318	0.769	5.332
Step III: interaction effects										
ED*AIC					0.703	31.074				
TS*AIC							0.814	23.107		
SS*AIC									0.866	27.561
R^2	0.264		0.573		0.571		0.571		0.571	
Adjusted R^2	0.572		0.566		0.548		0.565		0.549	
F-value	13.326		15.865		18.643		18.643		18.643	
ΔR^2	0.005		0.009		0.023		0.023		0.023	
f^2 (effect size)	0.007		0.011		0.028		0.028		0.028	
F-change	2.712		4.134		6.342		6.342		6.342	

Note(s): All parameters are statistically significant at 1%; standardised regression coefficients (β) are reported

Source(s): Developed by the authors using data from questionnaire survey, authors' own work

Table 2.
Mediation effects of
artisanal industrial
clusters on small-scale
jewellers and
inclusive GVCs

individually in Model 1 improved the R^2 to 0.573. Additionally, AICs parameters have a positive and significant relationship with Inclusive GVCs ($\beta = 0.789$, $p < 0.01$). From findings of Table 2, it can be deduced that AICs dimensions have to be given more attention as GJAs can apply them to exploit Inclusive GVCs in economic crises recovery. In this manner, the regression results in Model 2 confirm that AICs parameters are a true predictor of GJAs on exploitation of Inclusive GVCs in economic crises. Thereby, study results concurred to hypothesis that AICs dimensions significantly affect Inclusive GVCs in economic crises.

Results from Table 2 demonstrated in Model 3 signify that AICs significantly mediates the relationship between SSJ and Inclusive GVCs in economic crises ($R^2 = 0.571$, Adjusted $R^2 = 0.548$, F-Value = 18.643). In addition, the regression model results in Model 3 depicts that the Effect Size (f^2) = 0.028 is significant at 0.000 ($p < 0.01$) and appropriate at $\Delta R^2 = 0.023$ and F-Change = 6.342. The change in R^2 value in the regression Model I and regression Model 3 (Table 2) is 30.7% (i.e. 57.1-26.4% = 30.7%), and the beta value illustrate improvement from negativity to positivity which shows that the strength of entrepreneurial competencies and institutional capabilities are source of AICs being considered as mediating variable. Therefore, AICs meaningfully mediates the relationship between SSJ and Inclusive GVCs in economic crises ($p < 0.05$). This indicates that, if SSJ dimensions (education, trust and social security) are more strongly, AICs will exhibit more tendencies to mediate the relationship between SSJ and intention of GJAs to exploit Inclusive GVCs in economic crises. Even though the change of R^2 value is small, but the finding depicted in Table 2 support hypothesis that AICs mediates the relationship between SSJ and Inclusive GVCs in economic crises.

5. Results and discussion

In the first instance study intends to examine effects of small scale jewellery (SSJ) parameters on Inclusive GVCs in economic crises. The results indicate a significant negative association SSF parameters and Inclusive GVCs in economic crises support sustainable development goals. Thus, results support the hypotheses H1a, H1b and H1c showing negative beta values to all relationships. These result implied that when SSF parameters were at a lower level, inclusive GVCs had a lower effect on economic crises. Similar results have been reviewed by Lawson and Chowdhury (2022) and Damodaran (2010) in their different empirical works by evidencing that mismatch between high availability of gems and jewellery versus low productivity and output has traditionally been attributed to SSJs-specific constraints preventing access to GVCs. Kowalski *et al.* (2015) and De Backer and Miroudot (2014) have empirically justified how most of developing countries continuously unfit to exploit GVCs, either in the field of lapidary or jewellery due to the fact that value chain currently initially was not operate in a way that fosters value addition.

Results indicate that Inclusive GVCs constraints restrict SSJs to operate autonomously in economic crises with developed business, in contrast to a net of businesses and thereby preclude them from pursuing more profitable opportunities. This suggests that formulation of AICs to SSJs can be instrumental in increasing aggregate shared prosperity, sustainability, inclusive growth, social cohesion, value chain upgrading and financial inclusion in developing countries. An important policy question is the magnitude of these effects. A point estimate was used to quantify the potential gains from exploitation of industrial clusters in economic crises normalisation and economic resilience to developing countries across trade regimes to support sustainable development goals.

In second intention, this study aim to assess effects of AICs on Inclusive GVCs in economic crises. The study results indicate a significant positive association between Artisanal Industrial Clusters (AIC) and Inclusive GVCs in economic crises. Thus, results support the hypothesis H2 showing AICs parameters have a positive and significant relationship with Inclusive GVCs, significant at 0.01 confidence level (t-value = 5.675). The positive beta values indicate that level of effectiveness in AICs has a positive influence on inclusive GVCs of SSJs. This implies that an increase in effective AICs causes an increase in inclusive GVCs. Similar views were established by Makedos (2014) and von Weltzien Høivik and Shankar (2011) who asserted that unify powers in industrial cluster can gain productivity and competitive advantage in domestic and international level. The findings are also consistent with the finding by UNIDO (2010) which showed that the ability to effectively insert themselves into GVCs through industrial clusters is a vital phenomenon for attainment of social and economic development. The findings that effectiveness in AICs has a positive influence on Inclusive GVCs is in line with a findings by researchers define entrepreneurial competencies and institutional capabilities as a higher level construct that can builds on the interaction of resources at any socio-economic stage.

Lastly, the model tested for the mediated effect of AICs on the relationship between SSJ and Inclusive GVCs in economic crises. Results of Model 3.1 as indicated in Table 2, a significant interaction exists between AICs against education and inclusive GVCs in economic crises ($\beta = 0.703, p < 0.001$), and the explained variance in the model due to main effects shows statistically significant improved prediction for Inclusive GVCs in economic crises compared to Model 1 ($\beta = -0.623, p < 0.001$). Also, the interaction of AICs against trust and inclusive GVCs in economic crises shown in Model 3.2 (Table 2) is significant and positive ($\beta = 0.814, p < 0.01$), and the explained variance in the model due to main effects shows statistically significant improved prediction for inclusive GVCs in economic crises ($\beta = -0.739, p < 0.01$).

Similarly, the interaction of AICs against social protection and inclusive GVCs in economic crises shown in model 3.3 (Table 2) is significant and positive ($\beta = 0.866, p < 0.01$), and the

explained variance in the Model 3 due to main effects shows statistically significant improved prediction for inclusive GVCs in economic crises compared to Model 1 ($\beta = -703, p < 0.01$). Thus, H3a, H3b and H3c are supported. However, when analysing the relationship of SSJ and inclusive GVCs in economic crises was strengthened by the inclusion of AICs to GJAs as addition of AICs in the relationship create significant change in adjusted R^2 value for the model. Results implied that AICs have a significant effect on enhancing exploitation of Inclusive GVCs in economic crises by focussing on exploitation of industrial clusters in economic crises normalisation and economic resilience to developing countries.

The results Model 3 are supported with the findings of Makedos (2014) and von Weltzien Hoivik and Shankar (2011) as they agree on the benefits that may arise for the micro and small industries such as SSJs, if they unify powers in industrial cluster can gain productivity and competitive advantage in domestic and international level. Moreover, empirical findings of Asian Development Bank and Asian Development Bank Institute (2015) and D'Annunzio *et al.* (2015) showed that developing such a joint platform is often crucial in jump starting to entrepreneurial competencies and institutional capabilities on inclusive GVCs in developing countries.

6. Conclusion and implications

The study set out to investigate driving forces behind the effects of AICs to inclusive GVCs to SSJs in economic crises support sustainable development goals. To achieve this, two hypotheses were formulated. The first objective was to determine effects SSJ dimensions (education, trust and social protection) on exploitation of Inclusive GVCs in economic crises. The findings indicated that ineffective application of SSJ dimensions (education, trust and social security) causes a decrease on exploitation of Inclusive GVCs support sustainable development goals. Secondly, the study established that there was relationship between the effective AICs towards inclusive GVCs in economic crises. The study concludes that on aggregate, the SSJs can exploit AICs to gain productivity and competitive advantage in regional and global level in economic crises to support sustainable development goals.

Thirdly, the study endeavoured to evaluate the moderation effects of AICs on relationships between SSJ dimensions and exploitation inclusive GVCs in economic crises. The findings showed that most respondents were unsatisfied with existing education, trust and social security in attaining shared prosperity, sustainability, inclusive growth, social cohesion, value chain upgrading and financial inclusion measured. Based on this finding the study concluded education, trust and social security can builds on the interaction of resources into GVCs through industrial clusters in economic crises normalisation and economic resilience to developing countries and is vital phenomenon for attainment of sustainable development goals.

6.1 Theoretical implications

This study contributes to inclusive economy and sustainable development literature by shedding light on AICs, SSJ and inclusive GVCs in economic crises to support sustainable development goals. It reveals logical constructive factors which can comprehend the mediating effect of AICs on SSJ and inclusive GVCs in economic crises to support sustainable development goals. Previous studies mostly examined GVCs and industrial clusters (Gereffi and Lee, 2016; Giuliani *et al.*, 2005) and industrial clustering on SMEs' performance (Jevwegaga *et al.*, 2018; Fuerst, 2010). However, this study set conceptual landscape of SSJ parameters as the dependent variable and took an exploratory approach, with a specific focus on the education, trust and social protection. As the first of its kind, this study presents useful information how the SSJs can exploit AICs to gain productivity in economic crises. This study observes that inclusive GVCs in economic crises is not directly reduced by general initiatives,

but rather through the specific mediatory role of AICs. Another academic contribution is that cross section surveys were conducted by matching gems and jewellery artisans and AICs to minimise social and economic pains in economic crises.

This study was conducted in Tanzania as developing country, where the economic crises have been a clinical and economic danger, gems and jewellery artisans are facing critical exclusion from value chains. Thus, this study set to examine how AICs can be a catalyst to SSJ towards Inclusive GVCs in economic crises. This study is an addition to the already existing body of knowledge about Inclusive GVCs (Cusolito *et al.*, 2016; Asian Development Bank and Asian Development Bank Institute, 2015; De Backer and Miroudot, 2014; Yang *et al.*, 2020). In terms of prospect theory accentuate the industrial clusters normalisation and economic resilience to developing countries, based on defining education, trust and social protection in economic crises to support sustainable development goals. Also, study findings add value to the theory by demonstrating how quantitative analysis of AICs can provide mediating effect of AICs on SSJ and inclusive GVCs in economic crises. By adopting the AICs, this study accrue a more in-depth understanding of SSJ responses to the characteristics of SSJ when interacting with GVCs and further insights into the underlying reasons for normalisation and economic resilience in economic crises.

6.2 Practical implications

In response to growing concerns over the global economic impact of the economic crises, this study focus on the use all appropriate policy tools to sustain economic growth in economic crises. Study reflects largely on inability to access GVCs perpetuated by insufficient dynamic education, trust and social security in economic crises normalisation and economic resilience. In this context, inclusion of industrial clusters in GVCs can be a key policy priority to Tanzania and developing countries in general. In this way, it contributes to literature in several key ways to support sustainable development goals. Firstly, empirical evidence of the extent and sources of inclusion of industrial clusters in GVCs that has faced significant domestic policy challenges were provided, hence generated study findings can provide valuable lessons for similar contexts globally to support sustainable development goals.

Secondly, industrial clusters are considered as important engine for growth of employment, economic and opportunities for innovation in economic crises normalisation and economic resilience in developing countries to support sustainable development goals. Thirdly, there is also a case regarding the focussing on dynamics of GVCs in economic crises normalisation and economic resilience as opposed to abstract macroeconomic management. Fourthly, study on inclusion of industrial clusters in GVCs provides a conceptual framework for rethinking and refocussing economic policy in economic crises normalisation and economic resilience that will help policymakers to set priorities and get optimum impact out of limited resources. Fifthly, study invites the need of local policy to be aligned with, and contribute to, a country's broader development objectives in economic crises normalisation and economic resilience to support sustainable development goals.

6.3 Study limitations

Study received guidance from an experienced researcher in all necessary steps towards its finalisation, but there were certain observed limitations. Like other empirical studies, this study had some limitations, notwithstanding the researcher's attempts to follow valid and reliable research procedures, using mono method to gather data from a large and representative sample with a high response rate. This limit targeted study population as representative of SSJs in industrial clusters and GVCs in economic crises at limited time of approximately three months. This may affect generalisation of study findings, however some steps were undertaken, to reduce effects of these limitations towards its generalisation.

Developed variables were taken from accessed literatures reviewed, as this affect type of variables to be used in measuring key concept thus, variables may differ based on diverse of literatures which are not included in current study.

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