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Clustering as a Catalyst for Sectoral Transformation: The Coordination structure

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ABSTRACT : *The Lesotho Cluster Model, a context-specific framework for revitalizing the textile and apparel sector through thematic clustering and coordinated governance. The model emerged from participatory diagnostics involving over 500 MSMEs across three key industrial zones, this model organizes enterprises by product typology—such as traditional wear, school uniforms, and protective clothing reflecting the structural realities of Lesotho's textile ecosystem. The study introduces a multi-tiered coordination structure grounded in the Triple Helix model, integrating government, academia, and industry actors through a proposed Cluster Apex Body. This framework was selected due to its ability to facilitate inclusive governance, innovation, and strategic alignment across thematic clusters. Drawing on global benchmarking, the paper positions Lesotho's approach within broader discourses on industrial competitiveness and MSME empowerment. Methodically, stratified purposive and snowballing sampling technique, focus groups and stakeholder workshops were employed to validate cluster logic and governance proposals. The findings underscore clustering's potential to enhance productivity, foster innovation, and build resilience among MSMEs. Replicability for emerging economies to transform fragmented sectors through participatory and context-sensitive strategies. Policy and guidelines for future research, academic integration, market development, and longitudinal monitoring are recommended. Ultimately, clustering is positioned as a technical intervention, and strategic pathway toward inclusive industrial transformation.*

KEYWORDS - *Clustering model; Sectoral transformation; Participatory diagnostics; Coordination framework; Triple Helix; Industrial revitalization.*

I. INTRODUCTION

The textile and apparel sector in Lesotho remains a cornerstone of industrial development, employment generation, and export performance. Yet, MSMEs within the sector face persistent challenges—fragmentation, limited innovation, and weak coordination mechanisms—that constrain their competitiveness and resilience. In response, the Ministry of Trade, Industry and Business Development, with support from UNDP Lesotho, commissioned a national clustering initiative aimed at revitalizing the sector through structured coordination and inclusive innovation. This manuscript presents the outcomes of that initiative, led by the author through a participatory diagnostic process involving over 500 textile enterprises. It introduces the Lesotho Cluster Model, a novel thematic clustering approach that organizes MSMEs by product type rather than geographic location—reflecting the structural realities and production typologies of the sector. The study also proposes a multi-tiered coordination framework, grounded in the Triple Helix model, to facilitate governance, innovation, and stakeholder alignment across clusters. By integrating global benchmarking, local fieldwork, and stakeholder co-creation, the study contributes original insights into how clustering can serve as a transformative tool for industrial revitalization, inclusive development, and policy reform. The Lesotho Cluster Model offers a replicable framework for emerging economies seeking to empower MSMEs through collaborative and context-sensitive strategies.

1.1 Understanding the Clustering Concept

Clusters are geographic concentrations of interconnected companies and institutions within a particular field (Joshi & Malik, 2007) [1]. They encompass linked industries and entities critical to competition, including suppliers of specialized inputs, service providers, and institutions such as universities and vocational training centres.

In this study, clusters are conceptualized as ecosystems of related industries or firms characterized by inter-industry interdependencies. These may be geographically based or formed through functional relationships—such as raw material suppliers, garment manufacturers, and logistics providers. Clustering promotes both competition and cooperation, enabling firms to share resources, reduce costs, and enhance innovation.

Clusters are generally defined as groups of firms, enterprises, related economic actors, and institutions that are located near each other and have reached a sufficient scale to develop specialised expertise, services, resources, suppliers and skills. Clusters are referred to both as a concept and a real economic phenomenon, such

as the Silicon Valley, the effects of which, such as employment concentration, can be measured. Porter, (1998) [2] defines clusters as economic concentrations of enterprises, small and medium sized enterprises, especially, on a given geographical area, interconnected with their own cores of research, professional training centres, specialized suppliers, in a certain field, that are in competition with one another but also in relations of cooperation. Kamalovich (2024) [3] highlights how clustering enhances the competitiveness of textile products by fostering innovation, improving quality standards, and enabling firms to respond more effectively to global market demands. This reinforces the strategic rationale for cluster development in emerging economies like Lesotho

In the context of this study, clusters are considered as ecosystems of related industries or firms within one industry and competences featuring a broad array of inter-industry interdependencies. The key point here is the interrelatedness and interdependency of these firms placed in one cluster. Clusters may be geographical; in which case they will be grouped according to their proximity to each other. Alternatively, they may be developed based on the dependency of one firm/company on the other; in this case sellers of raw materials, garment manufacturers and transport/currier agencies may be grouped in one cluster. Lastly, firms/companies may be put in one cluster if they manufacture the same or similar products.

It is common knowledge that the clusters promote both competition and co-operation. Rivals compete intensely to win and retain customers. Competition is the seed of clusters because without that vigorous competition, a cluster is more likely to fail than it is to succeed. Yet there is also an element of co-operation, much of it vertical, involving companies in related industries and government body and other financial institutions. An example of sourcing raw materials together and sharing the transportation, marketing and warehousing costs are the direct benefits of clusters.

Competition can coexist with co-operation because they occur on different dimensions and among different players. Companies that want to invent this competitive edge of the world which is now inevitable, will have to do away with a type of programme where everyone in the unit producing own products, at a single place, and their consolidated efforts in arriving at the target only.

The situation in this project permitted participation only from garment manufacturers. Without a wider choice for the clustering process, it was deemed appropriate therefore to cluster participating companies according to the similarities of the textile products they manufacture. This however will still require that the clusters outsource other services for sourcing raw materials, transportation and warehousing to complete the production cycle.

1.2 Value of Clustering

According to Suarez et al., (2021) [4], grouping several textile enterprises in clusters permits establishing common goals and projects for acquiring finance easily, setting strategies of technological innovation to step up competitiveness and productivity to develop levels of internationalization that can compete at the post-pandemic period and beyond.

A competitive pole is a regional innovative cluster with national and international vocation or a cluster network. Another benefit of clusters is the collaborations that the players bring on board, these are illustrated in Figure 1 below, the triple helix indicates the involvement of players from three different fields of expertise.

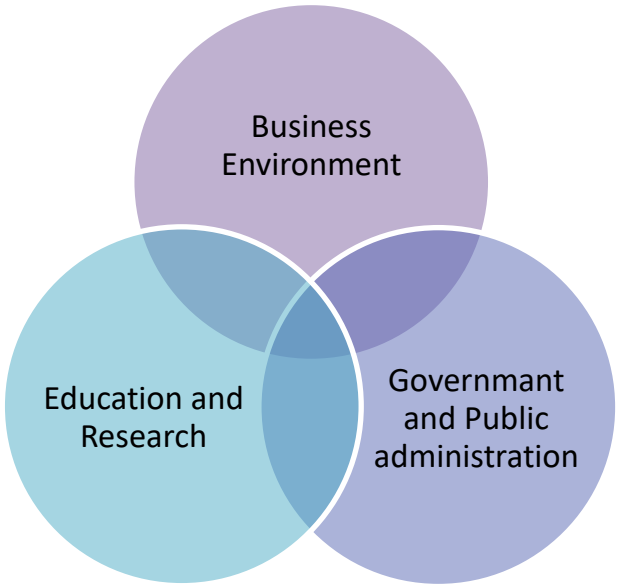

Figure 1: Triple Helix of University-Industry-Government: Implications for Policy and Evaluation for clustering

Whether the helical structure is in place or not; the main objectives of clustering remain the same. They include but are not limited to: (Asaloş and Iordanescu, 2015) [5]

1. The establishment of partnerships between the stakeholders with expertise in clusters;
2. The promotion of a global environment conductive to innovation;
3. The availability of strategic research and development projects that would benefit from the support of public authorities

In addition to the ones already mentioned in the introductory paragraphs above; clusters generally contribute greatly in facing and in a way winning the global competition jointly for achieving the target by the following:

1. Increasing productivity
2. Encouragement, involvement &motivation.
3. Feeling of team sprits.
4. Ethical business activity, which makes goodwill of company

A cluster also allows companies to operate more productively in sourcing inputs; accessing information, technology, and needed institutions; coordinating with related companies; and measuring and motivating improvement. Some of the benefits of clusters are categorised below in relation to what the producers/manufactures, the consumers and the suppliers as they can be seen in Table 1 below:

Table 1: Benefits of clustering for different beneficiaries

BENEFITS OF CLUSTERING TO DIFFERENT CATEGORIES OF BENEFICIARIES

PRODUCERS	***SUPPLIERS***	***CONSUMERS***
• Availability of land on reasonable rate. • Enabled access to finance • Boost innovation • Facilitate internationalization • Enhance competitiveness • Relaxation in government rules and regulations – eased legal frameworks • Availability of good infrastructure • Availability of skilful labour - more players • Centralized purchasing – cost reduction • Easy to handle waste disposal. • Higher possibilities of sufficient cost return	• Approachable • Centralized supplying • Proper logistics cycle. • More customers. • Cost saving in transportations • Bulk orders • High consumption	• Approachable • Easy to find • More variety to choose from • Reasonable prices

Earlier and present scholars noted the importance of clusters in increasing competitiveness of textile products in a number of ways. For instance, Porter, (1998) [2], Sitkevich, (2022) [6] and Kamalovich, (2024) [3] are in agreement that clustering approach has a notable role to play in increasing innovations and ultimately competitiveness of textile products. This has been found to be critical in the textiles industry because in most developing countries it is one of the major economic contributors and often the second largest employer after the public service. The need to be competitive through innovations and much effort is inevitable.

In summary, clustering models foster collaboration, innovation, and competitiveness within the textile industry, a collection of various skills machinery and other resources polled for a similar purpose shall contribute to the overall growth and resilience in the business world with its unpredictable markets.

Previous studies revealed that the existing industrial clusters have been maintained through associations of industrialists. Most individual companies do not apply strategies to increase productivity and seek to benefit from tax incentives and other privileges that the government grants them to stay in the market through export (Das T.K. and Teng B.-S., 2000) [7]. According to Suárez, et, al., (2021) [4], most of the leading countries in the textile sector located in Asia, Europe, and Latin America work through clusters and global value chains through which they are grouped and work together, in this way, they acquire more strength and positioning in the markets. This revelation informs governments and organizations initiating the development of clusters that grouping players in the same value chain to work together opens more opportunities of growth for the entire industry with benefits directly to the initially small enterprises while contributing positively to the national economic growth.

1.3 Global Success Stories

China Story: As far back as 1970 and most likely before, some countries have been transforming their economies through clustering approach particularly in the textile industry. Zhang, et. al., (2004) [8], reported that the phenomenon of industrial clustering of textiles and apparel has enormous significance. These clusters have helped strengthen in the international market the position of China, which is now the largest producer and exporter of textile and apparel products in the world. They have had significant impacts on the economic development of the localities, and on the economic geography of the country. Through the development of these

clusters, large number of enterprises have been created, entrepreneurs enhanced, and employment generated. All these have important plus positive economic and social implications for the nations within which clusters are established. Shengze started with silk production. This was expanded into domestic trade of silk. Very soon light-weight fabric manufacturing began to develop. This further promoted the growth of trading. Textile machine companies, both domestic and foreign, also set up offices in Shengze to sell machines and machine parts, and to provide services to the fabric manufacturers. It is said that none of the plants would keep any spare parts. If a belt is broken, even at midnight, a new one can be ordered and delivered in less than 20 minutes. These have significantly lowered the production costs, and are part of the external economies of the industrial clusters. As Shengze has become a fabric centre, showrooms and selling offices of other fabrics, such as denim, are also set up in Shengze.

Cape Town Story – South Africa: According to Fallon, (2024) [9] of Invest Cape Town, the manufacturing industry in Cape Town is the shining light of the province despite the unpredictable year. The authors noted that the subsectors comprising the Clothing Textiles Footwear and Leather (CTFL), managed to adapt well. They further reported that in the fourth quarter of 2020, the sector drove the provincial economic recovery with a notable 25.8% contribution to SA's gross domestic product (GDP). This is said to have translated to a notable increase in employment. The report continues to highlight that the key to the growth and development is the Cape Clothing and Textile Cluster (CCTC) which is said to have been established collaboratively between government and the industry in 2005, the vision for which is to support clothing and manufacturing in Cape Town and the greater Western Province region. CCTC is said to assist in building the sector into a competitive local industry with World-Class manufacturing capabilities.

Bologna-Italy Story*:* This is one of the most remarkable and long-lasting textile clusters of history. As with many clusters, a university sits at its centre: founded in AD 1088, the Studium of Bologna was the major educational innovation of Europe's second millennium. About two hundred years later, towards the end of the thirteenth century, we start to see the first Bolognese silk mills, which became a major industry. The major innovation lay in an extraordinary machine already in use in Lucca, about 150 kilometres southwest of Bologna. This round, mechanical spinning machine was capable of twisting dozens and dozens of threads at the same time. The innovation of the Bolognese silk makers was to operate the Lucca machine with a hydraulic wheel, instead of by hand. Thanks to this technological innovation—made possible by Bologna's canals and ample supply of water—by the 15th century, Bolognese mills had expanded from small-scale production to busy factories that took up three or four floors (Casamada, 2021) [10]. Italy's textile sector offers another compelling example. Sitkevich (2022) [6] illustrates how clusters have preserved competitiveness through innovation networks, regional branding, and adaptive policy frameworks.

Uzbekistan Story - The clusters were created on a first-come-first served basis. The number of cotton-textile clusters increased exponentially, from 15 in 2018 to 75 in 2019. In 2019, the areas with cotton clusters generated higher cotton yields than the areas without clusters. Some clusters have topped up wages of cotton pickers. The clusters have invested in mechanization of cotton production and harvesting. The clusters helped increase an overall efficiency of ginning and reduce a wastage of raw cotton. Many clusters have invested in cotton processing. Private and public investments have led to a significant increase in the export of higher-value products (Zorya, 2020) [11]. In Uzbekistan, Safoevna and Utkirovna (2021) [12] emphasize the organizational and economic foundations necessary for successful cluster development, highlighting the role of coordinated governance and financial mechanisms.

Tirupur Textile Cluster, India - The readymade garments (RMG) and textile sector is not only the biggest export earner and employer of Bangladesh but also the leader in many advance initiatives in the country. In its journey of about 35 years the RMG sector has emerged as one of the bona fide destinations for apparel sourcing in the world. In recent years Bangladesh RMG industry has proactively taken the issue of environmental sustainability as one of the core areas to address. To date Tirupur is known as the "knit capital of India," it has emerged as a successful textile cluster exporting various types of knit fabrics and garments, and employing around 600,000 people and exported around USD 3.29 billion in 2014-15. To ensure sustainable business and decrease pollution load in the environment Tirupur Textile cluster started their journey towards Zero Liquid Discharge (ZLD) back in 2005. It was a huge challenge that time for the textile belt to implement ZLD, but due to strong policy and financial support from the central and state government of India they succeed in implementing ZLD in their industry. It is a unique success story in the South-Asian region (Ashraf, S., 2015) [13].

1.4 Lessons from the success stories

General lesson informs that government, industry and academia are in collaboration. Most of the success stories start with a depressed economy in one way or another. However, efforts are made by the government and the immediate stakeholders – industry and academia to collaborate in an attempt to save the situation.

From Tirupur; it is worth noting that there were "strong policies and financial support from the central and state government of India. In Uzbekistan; government took the lead in the reforms to accomplish the resolutions made after announcing the abolishment of the state production quota for cotton in Uzbekistan, this led to reduced forced labour and growth of the cluster as well as the cotton industry. From Bologna in Italy, we record carefully that the cluster has the University at the centre, this made innovation and research in general possible and so it drove the inventions made for the successful transformation of the silk mills. It can be learned from the Cape Town success story that the City of Cape Town is in collaboration with the industry. It is from this same story that we learn that many players in the value chain are part of the cluster from yarn and fabric manufactures through apparel manufacture to retailers, we also note the innovation that is taking place which is usually driven by academia through research. Finally, from China we learn that innovation happened through the industry revolution and academia and government were involved.

II. METHODOLOGY

A participatory investigative methodology was employed to ensure contextual relevance and stakeholder ownership. The approach included:

Sampling: Stratified purposive sampling of 500 MSMEs across Maseru, Leribe, and Butha-Buthe, with two hundred enterprises observed intensively and one engaged longitudinally over two years. Due to the geographical structure, Leribe was further divided into Pitseng and Hlotse to ease access to the workshop venue and have homogenous groups dealt with in one given time. Only enterprises in textiles and apparel were included, many were found through snowballing technique.

2.1 Data Collection: Semi-structured interviews, focus group discussions for enterprises located within close proximity to each other, and field observations were conducted to capture enterprise dynamics, production typologies, and stakeholder perspectives. For field observation the researcher went to the individual workshops where the enterprises worked from. The floor layout, procedures, equipment and finished products were observed.

2.2 Clustering Logic: Enterprises were grouped based on product type; they were allowed freedom to select one product as many of them manufactured more than one type of products, production capacity, and interdependencies within the value chain.

2.3 Validation: Stakeholder workshops were held in the three districts; Buthabuthe, Leribe and Maseru, this was done to refine cluster themes and coordination proposals, ensuring alignment with local realities and aspirations.

This methodology integrated ethical fieldwork principles and participatory action research to support inclusive and grounded outcomes.

III. LESOTHO CLUSTERMODEL

Specific to the assignment, the MSMEs were to be organized in clusters following a model deemed appropriate for the Lesotho industry. It is worth noting that not all players in the industry are involved; it is basically the garment construction players that were included in the clustering process. From that type of participation, the model followed was based on the type of garment each SMME produced. These clusters will later be referred to as sectors even though they are still broad and not specialized. There was a total of eleven (11) thematic clusters that were developed and they are as follows:

1. Men's wear
2. Traditional wear
3. Wedding and evening wear
4. School Uniforms
5. Work Wear (office) and Suits
6. Protective Clothing
7. Lounge Wear
8. Outer Garments
9. Household Textiles
10. Accessories
11. Children's Wear

Traditional wear emerged as the largest and most culturally resonant cluster, reflecting local identity and market demand. The SMMEs indicated their commitment to producing/manufacturing each type of garments. These clusters are going to form sectors that are hoped to grow to some extent of specialization that will later birth customized products in the same sector for instance in traditional wear some customized sub-sectors could focus on Original Seshoeshoe with tucks while other may focus on western Seshoeshoe and yet others may focus other traditions. Out of all the clusters/sectors, traditional wear proved to be the largest followed by outer garments, school uniforms and evening/wedding wear respectively. Other clusters/sectors

were outstandingly small that they were while combined. The combinations were decided upon based on the similarities of the products with the exception of children's wear which was paired with accessories for convenience only. Clusters were later paired for operational efficiency. The pairs developed after the initial clustering are as follows;

1. Work wear with suits,
2. Lounge wear with men's wear and
3. Children's wear with accessories

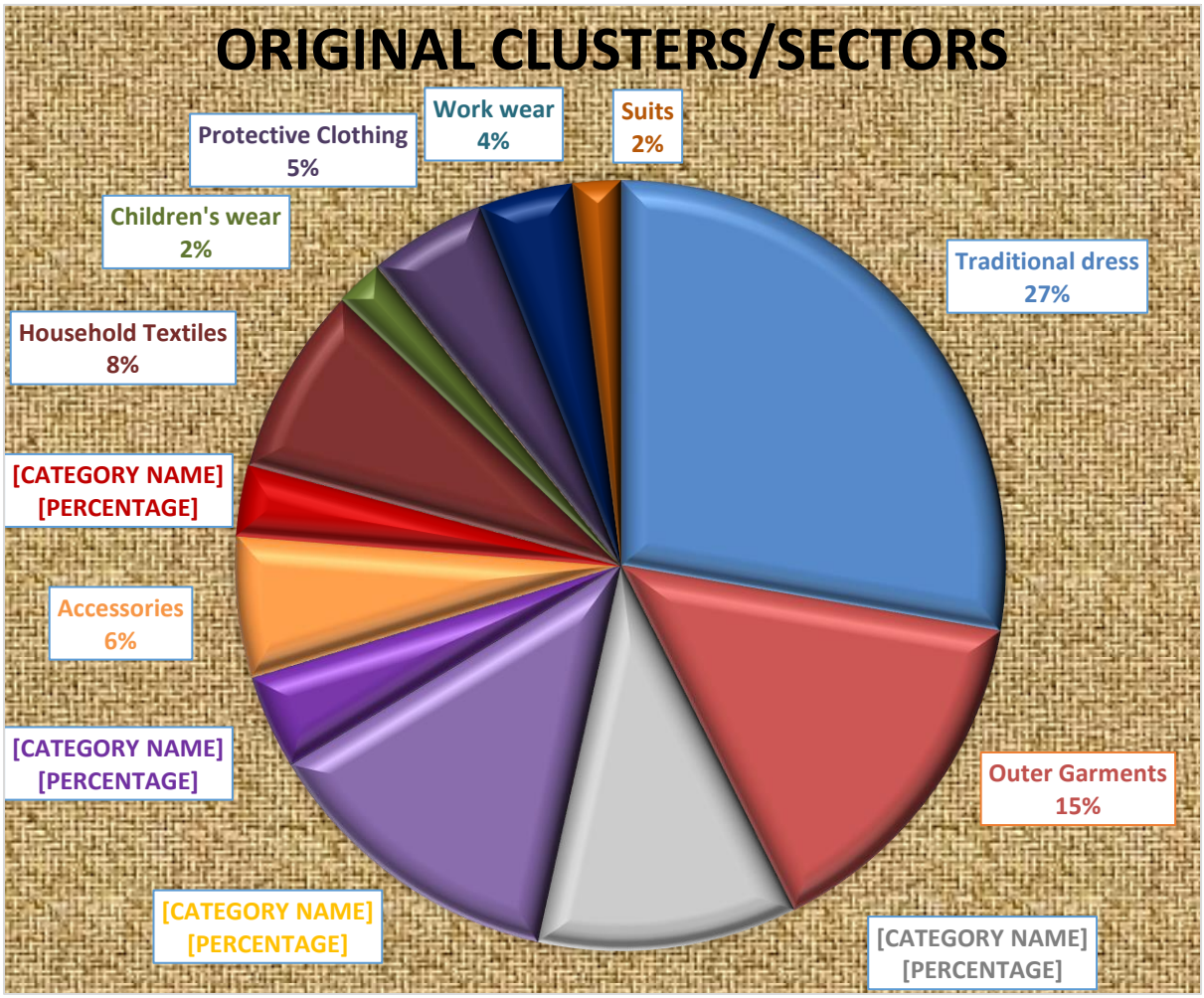

Figure 2: Thematic Clusters in the Clothing and Textiles industry (SMMEs) Lesotho – Maseru Industrial Point.

The indication construed from Figure 2 is that most of the SMMEs evaluated and present in the project manufacture and/or prefer to manufacture traditional wear. This could be due to the frequency of purchases of such garments that resulted in SMMEs perfecting the skill in the manufacturing process of the same. Other reasons for the popularity of this sector/cluster are the love and pride of manufacturing the local dress which appeals to the tourists most, also ease with which the fabric is handled as the 100% cotton fabric is stable and therefore easy to handle when working thus it does not require specialized skill to handle the fabric.

For all the clusters the contact person for each group is indicated with an asterisk, these MSMEs were contacted and have agreed to be contact persons for their clusters. These shall be combined with the other contact persons from the Leribe and Buthabuthe industrial points to form a team from which a working committee shall be developed to work together with the ministry's assigned officers for this project. It would be helpful to include a member from suppliers, buyers, potential big clients and a researcher in the field. It is further recommended that an association be formed from which an apex body may be derived for better and guided governance. Each cluster shall be guided to establish its own governing structure which all participating members shall contribute to. These structures shall then feed into the national apex body envisaged.

3.1 Conceptual Framework

The proposed coordination structure is anchored in the Triple Helix Model as described by (Etzkowitz and Leydesdorff, 2000) [14], which emphasizes dynamic collaboration among:

1. **Government:** Essential for policy formulation, infrastructure provision, support and regulatory oversight.
2. **Industry:** Large enterprises and firms are recommended for inclusion and active participation as well as support of the MSMEs together they are driving production, innovation, and market engagement.
3. **Academia:** Research institutions and vocational training centres contributing knowledge, skills, and innovation. These actors converge within a Cluster Apex Body, which facilitates governance, coordination, and strategic alignment across thematic clusters.

THE PROPOSED COORDINATION STRUCTURE

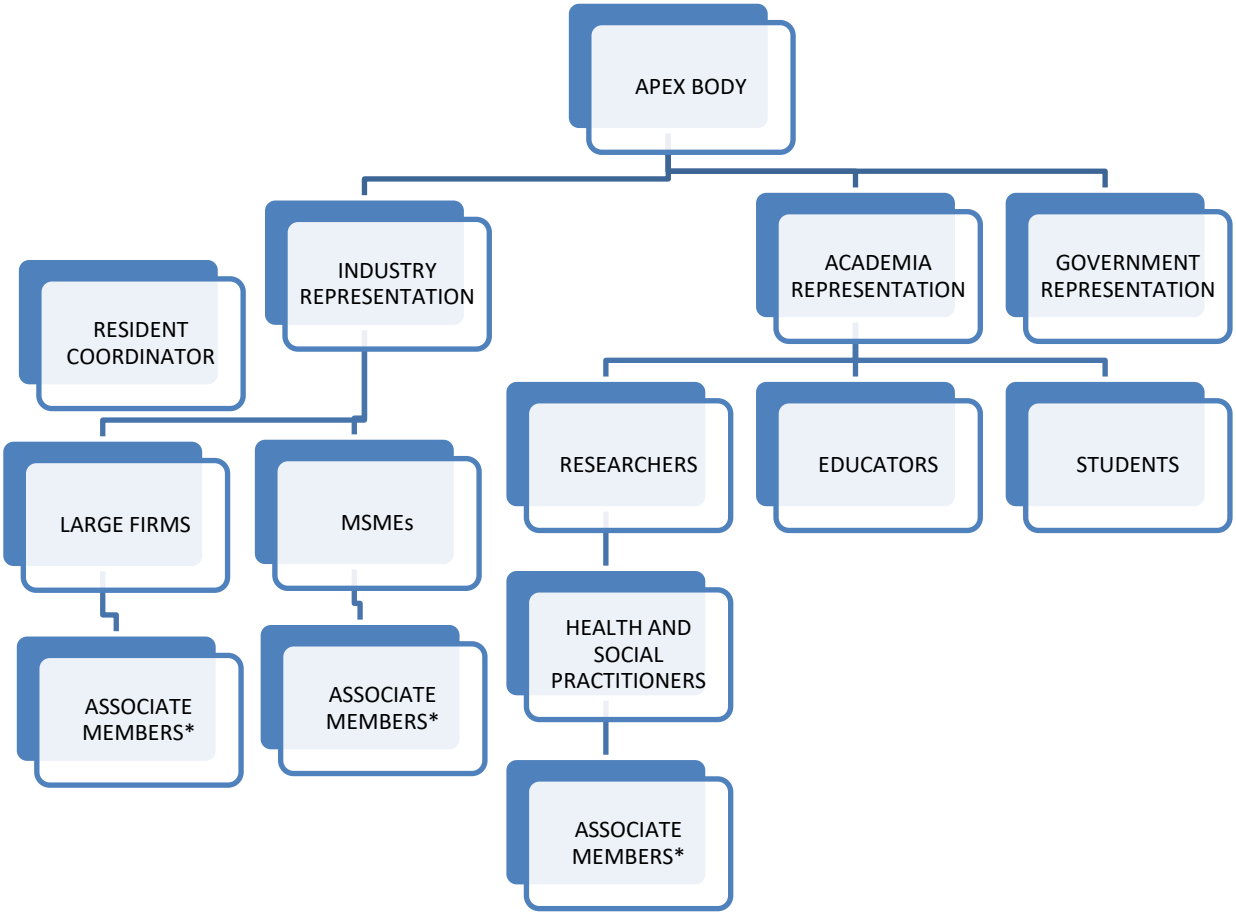

Figure 3: Example of a Proposed Structure

*Represents membership gained by association with the ones they join through. These could include service providers and other players in the value chain that are not directly involved in the actual textile and apparel processing and manufacturing within the industry. Examples include but are not limited to:
Transport service providers, Beauty and make-up artists, Journalists and news reporters, Consumer activists and watch-dogs, Workers' unions.

In the case of industry representation, coordination at district level is recommended for ease of governance which can then build up to national level. Direct membership is however advocated while governance is recommended to start at lower manageable levels. The proposed structure also attempts to avoid members operating in silos with a high likelihood for duplication of efforts. It is worth noting however, that the

proposed structure is for activation and ordinary functionality. Crisis management has not been taken into consideration separately.

IV. RECOMEMNDATIONS

In most developed countries, research is driven and often commissioned by the various industries existing in those countries forming the private sector. Innovations are birthed from such research as the industries find lasting solutions to the problems and answers to their questions. Industries in such countries use their financial muscle to awards some scholarships which will benefit them research results. To prevent the textile clusters in Lesotho from becoming overly process driven and for their success, it is hereby recommended that all efforts be directed towards ensuring that the collaborative approach is followed and the manner in which the project started is appreciated because it gives the MSMEs a sense of ownership that is essential for them to drive the purpose. It is therefore recommended specifically that:

To ensure sustainability and impact, the following recommendations are advanced:

1. **Academic Integration**: Embed researchers and students in cluster activities to drive innovation and documentation.
2. **Governance Mechanisms**: Establish an apex body with tiered membership and clear mandates for coordination and accountability.
3. **Monitoring Systems:** Implement regular reporting and evaluation frameworks to track progress and inform decision-making.
4. **Market Development**: Conduct market research, explore local raw material production, and support product diversification.
5. **Annual Events**: Host exhibitions, fundraising activities, and knowledge-sharing platforms to build visibility and networks.

V. CONCLUSION

In conclusion, this study demonstrates that clustering, when contextually grounded and participatory, can serve as a powerful lever for sectoral transformation. The Lesotho Cluster Model offers a replicable yet adaptable framework for organizing MSMEs, fostering innovation, and enhancing competitiveness. Its coordination structure ensures inclusive governance and strategic alignment across stakeholders. For policymakers, the model provides a blueprint for industrial revitalization—though its success hinges on institutional capacity and sustained stakeholder engagement. For researchers, it opens avenues for longitudinal inquiry into cluster evolution, innovation dynamics, and socio-economic impact. While promising, the model's scalability and resilience require ongoing evaluation and contextual sensitivity. Ultimately, clustering represents not just a technical intervention, but a strategic pathway toward inclusive growth and industrial resilience in Lesotho's textile ecosystem.

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