

County Business Environment for Micro and Small Enterprises (CBEM) Index Manual

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ABBREVIATIONS AND ACRONYMS

AGPO	Access to Government Procurement Opportunities
ATIP	African Technology and Innovation Partnerships
CBEM	County Business Environment for MSEs
CEDOs	County Enterprise Development Officers
CRB	Credit Reference Bureau
DTF	Distance to Frontier
FCDO	Foreign Commonwealth and Development Office (UK)
KIRDI	Kenya Industrial Research and Development Institute
KIPI	Kenya Industrial Property Institute
KIPPRA	Kenya Institute for Public Policy Research and Analysis
KNBS	Kenya National Bureau of Statistics
KRA	Kenya Revenue Authority
MSE	Micro and Small Enterprise
MSEA	Micro and Small Enterprises Authority
NGOs	Non-Governmental Organizations
RISA	Research and Innovation Systems for Africa
SRIA	Strengthening Research Institutions in Africa

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1. INTRODUCTION

Globally, indices are often used to measure, benchmark and track the performance of economic activity (for example, business and economic performance) in a standardized way to help identify existing gaps and guide in prioritization of policy action. To improve Kenya's business environment, the Government in 2014 established a multi-institutional Business Environment Delivery Unit, which draws membership from various ministries, departments and agencies. The Delivery Unit is mandated to champion the implementation of various business reforms in partnership with the private sector. This approach was strengthened in 2018 by establishing the Department of Business Reforms and Transformation; a dedicated and resourced Government organ to implement initiatives that make Kenya more competitive both locally and internationally. This has enabled the Government to identify and implement cross-cutting reforms, which are designed to improve the business regulatory environment on the platform of the Ease of Doing Business Reforms Agenda. These reforms are extended to the 47 counties to improve the counties' competitiveness as investment destinations.

The County Business Environment for MSEs (CBEM) Index developed by KIPPRA serves to support the formulation and implementation of holistic, coherent and evidence-based policy making on business environments for MSEs by County Governments. In this context, the development of the CBEM index supports the government's efforts to improve the quality of doing business by MSEs at county levels as designated investment destinations.

The CBEM Index comprehensively measures business environment capacities in each of the 47 counties and provide county-specific scores, insights and diagnostics of conducive business environment creation. In constructing the CBEM framework, KIPPRA identified six thematic areas which include, *inter alia*, worksite infrastructure, technical capacity, governance and regulatory framework, market environment, financial inclusion, risk preparedness and management. This set of CBEM themes and their specific combinations are mapped across 30 indicators selected carefully from authoritative sources to ensure comparability across all the 47 counties.

The project that has generated work on the CBEM Index demonstrates the role of KIPPRA, as a think tank and research intermediary, in strengthening frameworks and tools for coordinating key stakeholders in the research ecosystem in Kenya to dialogue, network and enhance research uptake to inform the improvement of the business environment for growth and survival of MSEs in Kenya. The work has established an exemplar for interconnectivity where researchers (on the supply side of research and knowledge) create the CBEM Index for uptake by policy makers and practitioners (on the demand side of the research ecosystem), where this is all made possible by KIPPRA (as a research intermediary). Therefore, through the project, five ecosystem strengthening goals have been achieved, as part of the RISA Fund, namely the building of human capital for the research stakeholders

involved, enhancing research uptake into policies and regulations at the national platform and county level, equitable and inclusive participation of devolved units to each of the 47 counties, the networking of assets to drive collaboration between research actors and policy makers, and providing incentives for high quality research and improvement in the business environment for growth and survival of MSEs.

1.1 Objectives of the CBEM Index Manual

This Index manual is intended to:

- (i) Provide policy makers, practitioners, experts, and researchers in industry or academia, with a simplified version or snapshot of some interpretations of the values and trends regarding the index.
- (ii) Create public awareness and appreciation of CBEM Index by a diverse audience.
- (iii) Guide policy makers in their day-to-day work, including the formulation and implementation of county-specific business policies and strategies.
- (iv) Provide a methodological guide on how to compute CBEM Index and/or to update CBEM Index scores as new input data and approaches become available.

1.2 Concept and Scope of CBEM Index

The index is a valuable tool in identifying key binding constraints on county business environments and in realigning policy actions and interventions, and incentives to address such constraints. The index also serves as a consistent and comprehensive tool in tracking progress towards county and national targets and goals, including the Sustainable Development Goals (SDGs).

1.3 KIPPRA CBEM Index

KIPPRA developed the first County Business Environment for MSEs (CBEM) framework in 2019. The framework covered four areas, which were then considered critical for smooth operations of MSEs, including: worksites and adequacy of their infrastructure; market environment; financial and technical capacity; and governance and regulatory framework. A total of 20 indicators were considered and using the Distance to Frontier approach (DTF), various sub-indicators were constructed and used to rank the counties. The 2022 CBEM framework included two additional themes: Financial inclusion and Risk preparedness and management. Additionally, ten (10) new indicators have been included, raising the number of indicators considered to 30. The additional indicators are on the themes of worksites, market environment and governance and regulatory framework. These additional themes and indicators were rationalized based on sustainability and continuity of businesses during economic shocks and pandemics such as the COVID-19, expansion of market for MSEs and their overall business growth.

The 2022 CBEM is constructed using the following six (6) themes of an enabling business environment for micro and small enterprises:

- (i) Worksite and related infrastructure
- (ii) Technical capacity
- (iii) Governance and regulatory framework
- (iv) Market environment
- (v) Financial inclusion
- (vi) Risk preparedness and management

1.4 Target Users of the CBEM Index Manual

This manual is intended to provide a comprehensive understanding of the CBEM index. Such understanding is useful to policy makers, practitioners, experts, researchers and academia in identifying county-specific issues that contribute to a conducive and enabling business environment for MSEs in Kenya.

Improving the business environment for MSEs is a catalyst to leveraging fully on their potential to contribute to the development agenda of the country. Further, the devolved governance system in Kenya identifies counties as investment destinations towards the the country's industrialization agenda. The CBEM Index is therefore a multidimensional tool to measure and benchmark counties' business environments and reveal significant performance gaps between and among the counties.

1.5 Choice of Indicators

The indicators chosen to measure the KIPPRA CBEM Index are selected based on their universality as identified in the Sustainable Development Goals (SDGs) and the Kenya economic development blueprint, the Kenya Vision 2030. The indicators are also chosen to reflect the key functions of the county governments as spelt out in Kenya Constitution Schedule Four. Cronbach's Alpha was applied to validate the selected variable to ensure compliance with statistical requirement for index computation. Cronbach's alpha measures the reliability or internal consistency of a set of scale or test items by predicting the strength of that consistency. It is computed by correlating the score of each scale item with the total score for each observation, and then comparing it to the variance for all individual item scores. The Cronbach alpha results range from 0 to 1 in providing the overall assessment of a measure's reliability.

(i) Relevance to CBEM objectives

The identified indicators for computation of the CBEM index should be reflective, relevant and cover all the six themes critical for smooth operations of MSEs, including worksite and related infrastructure, technical capacity, governance and regulatory framework, market environment, financial inclusion, risk preparedness and management.

(ii) Clarity

The six themes mirrored by the CBEM Index, and their specific sub-themes are mapped across 30 indicators. These indicators are identified from authoritative sources such as KIPPRA, KNBS, Government Ministries, Agencies and Departments (MDAs) and expressed plainly and unambiguously to ensure clarity and comparability across all the 47 counties.

(iii) Feasibility of future data collection

Scores for the selected indicators are obtained from data collection instruments that are thoroughly tested for both reliability and validity. These tests ensure consistency and feasibility of data collection over time. In the computation of the CBEM Index, reliability tests are conducted using the Cronbach's alpha test to ensure that the indicators included in the computation conforms to the reliability and consistency statistical requirements.

(iv) Action focused

Indicators for the CBEM index indicators gauge County Governments' actions and responsibilities in creating enabling business environments for the MSE sector against set national targets. The indicators chosen, therefore, enable the measuring of county delivery of public services to support MSEs.

1.6 Organization of the manual

The rest of the manual is organized as follows. Section 2 discusses the construction of the index and Section 3 presents the overall methodology for constructing the Index, while Section 4 concludes with examples of the general output on the CBEM Index computed using 2022 data

2. CHARACTERIZING THE COUNTY BUSINESS ENVIRONMENT FOR MSEs

2.1 Worksite and Related Infrastructure

One of Kenya's development goals is to provide an enabling environment for both local and foreign investors. An important element of such an environment is an effective and functional physical infrastructure. A dysfunctional infrastructure acts as a disincentive to investments and lowers the productivity and competitiveness of firms by imposing both direct and indirect costs to business (Moyi and Njiraini, 2005). Workspace access is an important location factor for an MSE as it affects its income (Pratt, 2002; Annabel, 2002). In Kenya, MSE workspaces range from Jua Kali sheds, Kenya Industrial Estate sheds, council markets, open-air markets, open spaces, and so on.

The key indicators considered in relation to worksite for the 2019 CBEM framework included: access to worksite, access to common manufacturing facilities, and adequacy on infrastructure services such as electricity connection, water connection, public toilets, and waste management. The 2022 CBEM framework included Internet connectivity as an additional indicator for worksite and related infrastructure. Rationalization for this additional indicator is that Internet connection to MSEs worksites and workplaces is critical for accessing national, regional, and international markets, through digitalization and adoption of e-commerce for business continuity and resilience in the face of economic and related shocks.

2.1.1 Rationale and guidance for the indicators chosen

Studies have shown a direct link between infrastructure upgrading and improvement in the living and working environment of the informal enterprises (ILO, 1998). An ideal MSE worksite requires various physical infrastructure, some of which include water, sewerage and sanitation, solid waste management services, access roads and drainage, and power supply.

The intensity of infrastructure has a direct bearing on the competitiveness of a country and its investment attraction. In addition, investment in setting up and sustaining infrastructural facilities such as roads, ports and other forms for business activity has economic multiplier effects. Workspace access is therefore an important location factor for an MSE as it affects its income (Pratt, 2002; Annabel, 2002). The impact of an enabling worksite infrastructure includes but not limited to reduced vulnerability to demolition, increased business growth due to accessibility to worksite, high productivity, and increased market niche due to stable electricity and Internet connectivity, improved public health (water connection, waste management, public toilets).

2.1.2 Key indicators

(i) Access to worksite

The index on access to worksite encompasses the procedures taken to access a worksite, time taken to complete acquiring a worksite, official cost needed to acquire a worksite, the number of legal worksites available, the nature of the worksites, distance to the worksite, and the average time taken to access a worksite by respective MSEs.

Inability to access worksites is attributed to lack of land allocation to set up worksites, limited financing available to develop the worksites or a “no need” for worksites due to the nature of their business. Other significant challenges include limited land for worksite development, long procedures involved in obtaining a worksite political interference and proximity of worksites being away from markets. The least reported limitations include grabbing of association land by private developers, inadequate power supply to the worksite, unavailability of utilities such as water, sewer and drainage, corruption involved in obtaining workspaces and expensive rates charged for the worksite.

Notably, not all worksites are legally allocated. Illegal worksites face imminent threat of demolition without prior notifications. Such demolition contributes to a huge loss of MSEs investment.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

(Worst-A)/(Worst-Frontier)

Where variable Worst is the worst response for the indicator, variable A is the unit score for the indicator, while variable Frontier is the best score among the scores from the respondents.

The overall Access to Worksite (ATW) index score is given by

$$\text{Overall ATW index} = \sum_{i=1}^6 X_i / 6 \quad \text{for } i = 1, 2, 3, 4, 5, 6$$

Where X_i represents computed scores for each of the six sub-indicators of access to worksite (Procedures undertaken to access worksites; official costs involved; time taken to fulfill procedures; permanency of worksite structures; distance to worksites, and legality of worksites.

(ii) Access to common manufacturing facilities

Common manufacturing facilities are facilities that MSEs use to process their products. They are provided in the worksites by various stakeholders, including the government and development partners and are vital in providing economies of scale for MSEs to process their products.

Common manufacturing facility is one of the key interventions that has enhanced the way MSEs do business and improving the quality and competitiveness of their products. The common manufacturing facilities provide modern production technology at affordable costs to technology driven MSEs and this in turn improves

their competitive edge. The index on access to common manufacturing facilities calibrates access to common manufacturing facility by assessing the number of procedures undertaken to benefit from common manufacturing facilities, the distance between the manufacturing facilities and the common market, the time taken from manufacturing facility to the common market, types of common manufacturing facilities available and the total official cost involved to obtain a common manufacturing facility.

Some of the challenges faced by MSEs in using common manufacturing facilities include: unavailability of the common facilities, expense involved in paying for access to the facility, inadequate workshops, too many procedures to utilize the manufacturing facility, outdated machines and lack of electricity connection to the manufacturing sites, limited awareness that common manufacturing facilities, preference to use personal tools and equipment over accessing a common manufacturing facility.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$(\text{Worst}-A)/(\text{Worst}-\text{Frontier})$

Where, variable Worst is the worst response for the indicator, variable A is the unit score for the indicator, while variable Frontier is the best score among the scores from the respondents.

The overall Access to Common Manufacturing Facilities (ATMF) index score is given by

$$\text{Overall ATMF index} = \sum_{i=1}^4 X_i / 4 \quad \text{for } i = 1, 2, 3, 4$$

Where X_i represents computed scores for each of the four sub-indicators of access to common manufacturing facilities (Procedures undertaken to benefit from common manufacturing facilities; distance to facilities; time taken to access common manufacturing facilities, and official costs involved).

(iii) Electricity connection

Electricity connection is a strategic driver to MSEs performance as unreliable power supply has debilitating effects on either service provisions or manufacturing processes. This indicator assesses electricity connectivity in terms of procedures undertaken to access electricity within a worksite, official cost of connecting electricity to worksite, time taken to be connected to electricity, average electricity bill amounts payable monthly for electricity, number of power outages experienced in a month and number of times for monitoring electricity supply.

MSEs have challenges with supply and consistency of electricity, with some areas experiencing power outages on near daily basis (30 outages per month). This disrupts business operations and causes damages to equipment, inventory, and ultimately revenue. Other challenges include high cost of connecting electricity due to location of sites from high voltage lines and the need to install transformers, pending or non-paid bills when worksites were handed to the associations by contractors (causing disconnections), and vandalization of electricity wires.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where the variable *Worst* is the worst response for the indicator, variable *A* is the unit score for the indicator, while variable *Frontier* is the best score among the scores from the respondents.

The overall Electricity Connection (EC) index score is given by

$$\text{Overall EC index} = \sum_{i=1}^6 X_i / 6 \quad \text{for } i = 1, 2, 3, 4, 5, 6$$

Where X_i represents computed scores for each of the six sub-indicators of electricity connection (Procedures undertaken to access electricity within a worksite; official cost of connection; time taken to connect; average electricity bill amount payable monthly; frequency of power outages experienced in a month; and frequency of monitoring electricity supply).

(iv) Water connection

The water connection index is assessed based on procedures undertaken to connect water to worksites, time taken to connect, official cost of water connection, average water bill amounts payable monthly and the average number of times that utility company monitors water supply at the work site. Water availability to a worksite can be through piping, purchase from a borehole or from private water vendors.

The documentation needed to connect to piped water are duly filled water application form, association membership identity, national identity card, Kenya Revenue Authority (KRA) PIN certificate, and title deed or lease agreement. The common challenges that MSEs face with regard to water connection include: high connection cost, water shortage in the entire geographical area, too many procedures to apply for water connection, high water monthly bills, inflated water bills and tedious complaint resolution mechanisms.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where the variable *Worst* is the worst response for the indicator, variable *A* is the unit score for the indicator, while variable *Frontier* is the best score among the scores from the respondents The overall Water Connection (WC) index score is given by

$$\text{Overall WC index} = \sum_{i=1}^6 X_i / 6 \quad \text{for } i = 1, 2, 3, 4, 5, 6$$

Where X_i represents computed scores for each of the six sub-indicators of water connection (Procedures undertaken to connect worksites to water; official cost of connection; time taken to connect; average water bill amounts payable monthly; average number of times water shortage is experienced in a month, and frequency that the utility company monitors water supply within a worksite).

(v) Public toilets

The indicator on public toilet constituted distance taken to access the nearest public toilet, time taken to the nearest public toilet and cost involved per person. High score on this indicator is reflective of high sanitation and better public health at the worksite

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where, variable *Worst* is the worst response for the indicator, variable *A* is the unit score for the indicator, while variable *Frontier* is the best score among the scores from the respondents.

The overall Public Toilets (PT) index score is given by

$$\text{Overall PT index} = \sum_{i=1}^3 X_i / 3 \quad \text{for } i = 1, 2, 3$$

Where X_i represents computed scores for each of the three sub-indicators of public toilets (Distance taken to access the nearest public toilet; time taken; and costs involved).

(vi) Internet connectivity

Internet connection to MSEs worksites and workplaces is critical for accessing national, regional, and international markets, through digitalization and adoption of e-commerce for business continuity and resilience in the face of economic and related shocks.

The index assesses the internet connectivity in terms of proportion of MSEs accessing internet, procedures undertaken to access internet, average monthly costs of using internet, duration of internet outages, frequency of internet outage, average number of times to monitor internet supply and the official cost of electricity connection.

Generally, low broad band internet connection to the worksites across counties is attributed to high connectivity charges, limited Internet infrastructure to support the connection, poor network connection to support internet connectivity and low awareness on the importance of Internet. Use of phone/ modem for internet connectivity is widespread.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where the variable *Worst* is the worst response for the indicator, variable *A* is the unit score for the indicator, while variable *Frontier* is the best score among the scores from the respondents The overall Internet Connectivity (IC) index score is given by

$$\text{Overall IC index} = \sum_{i=1}^7 X_i / 7 \quad \text{for } i = 1, 2, 3, 4, 5, 6, 7$$

Where X_i represents computed scores for each of the seven sub-indicators of Internet connectivity (MSEs accessing Internet; procedures undertaken to access Internet; official cost of internet connection; time taken to connect; average monthly costs of using Internet; duration and frequency of internet outages; and average number of times to monitor internet supply).

(vii) Waste management

The waste management index score comprises of procedures undertaken to benefit from waste management systems, time taken to complete procedures, costs involved to complete the procedures, average monthly costs of using waste management services; average distance to the nearest waste disposal point and average number of times to monitor waste disposal related activities per month.

Overall, most MSEs' worksites do not have designated areas for waste disposal, which poses a health hazard. Most of the MSE associations have their own waste collection initiatives through companies or individuals, which is costly.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$(Worst-A)/(Worst-Frontier)$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Waste Management (WM) index score is given by

$$\text{Overall WM index} = \sum_{i=1}^6 X_i / 6 \quad \text{for } i = 1, 2, 3, 4, 5, 6$$

Where X_i represents computed scores for each of the six sub-indicators of waste management (Procedures undertaken to benefit from waste management services; time taken to complete the procedures; costs involved to fulfill the procedures; average monthly costs of using waste management services; average distance to the nearest waste disposal point; and frequency of monitoring waste disposal-related activities per month).

2.2 Technical Capacity

The indicators comprising technical capacity for MSEs are: training (capacity building), innovations, patenting, ability to cope with new technology, knowledge and skills gap, MSEs survival rate, and access to incubation services.

2.2.1 Rationale and guidance for the indicators chosen

The indicators chosen for gauging technical capacities of MSEs enable a comprehensive understanding of the positive impact of capacity building through training, innovation, patenting and embracing of technology for MSEs survival and access to technological services.

2.2.2 Key indicators

(i) Training

This indicator is assessed on the number of MSEs trained, training areas, training duration, and costs involved. Thematic training areas include: financial management market access, technical skills, climate change, post-harvest management, business advisory and technical skills.

Training providers include: Public institutions, private organizations, NGOs and religious organizations. Others include National government state departments, government parastatal such as KIRDI, KIPI, MSEA, training institutes and Kenya National Institute of Juakali, Development partners, banks, trade organizations, Universities, religious organizations, and self-training.

The reasons for not receiving training are limited trainings available, limited apprenticeship programme for enhancing already available technical skills, lack of relevant courses available, inadequateness of training needs assessments, and limited monitoring and evaluation of effectiveness of training.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Training (TR) index score is given by:

$$\text{Overall TR index} = \sum_{i=1}^4 X_i / 4 \quad \text{for } i = 1, 2, 3, 4$$

Where X_i represents the computed scores for each of the four sub-indicators of training (Number of MSEs trained, training areas, training duration, and costs involved).

(ii) Innovations

The innovation index score is computed using the proportion of MSEs to the total MSEs membership who have innovated in the last three years. Innovations include products process/service innovation and market innovation.

To mitigate effects of the Covid-19 pandemic, MSEs should undertake various innovations of doing business. These include selling goods and services online and changing business model to produce goods on demand, additional training on Covid 19 issues to understand some of the innovations that they can engage in for survival during the downtimes.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall innovations index score is given by

$$\text{Overall IN index} = \sum X$$

Where X_i represents the computed scores for the MSEs that have undertaken innovations in the last 3 years.

(iii) Patenting

The patenting index score is computed by assessing the proportion of innovated MSEs who have been able to patent their innovations. Among the reasons for MSEs not patenting include limited awareness, high costs of registering a patent, cumbersome procedures involved and inaccessibility to relevant offices.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst - A) / (Worst - Frontier)$$

Where variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Patenting (PT) index score is given by

$$\text{Overall PT index} = \sum X$$

Where X_i represents the percentage of MSEs with patented innovations in the last 3 years.

(iv) Coping with new technology

The indicator of coping with technology focuses on understanding of technological and innovation trends, and adaption of new technology. Reactions to cope with changes brought by technology are diverse and include: investing in the technology, collaborating with other stakeholders to benefit from the new technology, sticking to old and affordable technology.

Some of the challenges in coping with new technology include high cost of technology limited incentive to embrace new technology, inadequate human resource capacity, security vulnerabilities and challenges in regulation.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst - A) / (Worst - Frontier)$$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Coping with Technology (CWT) index score is given by:

$$\text{Overall TR index} = \sum_{i=1}^2 X_i / 2 \quad \text{for } i = 1, 2$$

Where X_i represents the computed scores for each of the two sub-indicators of coping with technology (Understanding of technological and innovation trends, and adaption of new technology).

(v) Knowledge and skills gap

The knowledge and skills gap indicator score assesses technical skills gap and the cost involved and required to fulfill the technical gap. Thematic areas for knowledge and skills upgrading include: business administration, financial management skills (and entrepreneurship skills. In-county and out-county trainings are also available options for skill upgrading.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Knowledge and Skills Gap (KSG) index score is given by

$$\text{Overall KSG index} = \sum_{i=1}^2 X_i / 2 \quad \text{for } i = 1, 2$$

Where X_i represents computed scores for each of the two sub-indicators of knowledge and skills gap (Technical skills gap and the costs involved in MSEs operators obtaining training in technical skills).

(vi) MSEs survival rate

The MSEs survival rate beyond their 3rd anniversary in business is low across counties. This negatively affect the efforts to realize the government industrialization agenda. The index score for survival rate is measured using the proportion of MSEs that have closed shop as a percentage of total membership of MSEs.

Some reasons for low survival rate include; limited finances to sustain the business, high cost of doing business, poor management of firms, high competition from large firms death of the entrepreneur, strict government regulations and personal reasons. Unpredicted epidemics and pandemics such as the global COVID-19 and resultant lockdowns, negatively contributes to business survival rate.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall MSEs survival rate (MSR) index score is given by

$$\text{Overall MSR index} = \sum X$$

Where X represents the computed scores of MSEs that have closed shop in the first 3 years of operation.

(vii) Access to incubation services

Incubation services are critical in technology transfer and in enhancing innovations. This indicator assesses the procedures undertaken to benefit from incubation services; time taken to be enrolled, and official costs involved.

Constraints of access to incubation services include: Being out of reach, too many procedures, lack of awareness, expensive to afford.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Access to Incubation Services (AIS) index score is given by

$$\text{Overall AIS index} = \sum_{i=1}^3 X_i / 3 \quad \text{for } i = 1, 2, 3$$

Where X_i represents the computed scores for each of the three sub-indicators of access to incubation services (Procedures undertaken to benefit from incubation; time taken to be enrolled, and official costs involved).

2.3 Governance and Regulatory Framework

Corruption, governance and security issues tend to increase cost of doing business for MSEs. These and other factors also contribute to a good number of MSEs closing shop before their third anniversary in business. However, service provision initiatives particularly licensing and issuance of permits by the national government through Huduma centres are bearing fruit.

2.3.1 Rationale and guidance for the indicators chosen

Clear understanding of indicators on Corruption, governance and security issues has a direct bearing on reducing cost of doing business for MSEs. Further, the indicators reveal factors that contribute to a good number of MSEs closing shop before their third anniversary in business. Also, an insightful understanding that service provision initiatives particularly licensing and issuance of permits by the national government through Huduma centres is important for policy formulation. The indicators also enable a better understanding of areas that the county governments should root out corruption traits including revenue collection through adoption of digitization on all platforms of revenue collection. The indicators also make a strong case for the need of counties to legislate and

harmonize the number of licenses or permits obtained by MSEs with an intent of reducing the bureaucracies involved.

2.3.2 Key indicators

(i) Licensing and issuance of permits

The government initiatives such as establishment of Huduma centers have tremendously transformed licensing and permit acquisition processes. Licensing and permits charged to MSEs have implications on cost of doing business. The index score for this indicator is assessed by considering the cost of acquisition and renewals of licenses and the time taken in acquisition and renewal of the licenses. Some incentives on licensing and issuance of permits especially in harsh economic conditions include tax waivers and/or tax reductions. This is also applicable during pandemics and economic down-times

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$(Worst-A)/(Worst-Frontier)$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Licensing and Issuance of Permits (LIP) index score is given by

$$\text{Overall LIP index} = \sum_{i=1}^3 X_i / 3 \quad \text{for } i = 1, 2, 3$$

Where X_i represents the computed scores for each of the three sub-indicators of Licensing and issuance of permits (number of permits; costs in acquisition and renewals; and time taken for acquisitions and renewals).

(ii) Corruption and governance

Corruption and governance in/around worksites tend to increase the cost of doing business for MSEs. Generally, MSEs confront corruption issues while transacting business with county revenue (licensing) officers, and in allocation of worksites by associations' officials to MSEs who do not belong to the associations.

The services prone to corruption and ordered from highest likelihood to lowest likelihood include; workspace allocation, business licencing, illegal worksites by road, grabbing association/land, waste collection, medical certificates, accessing loans, cover up and low-quality goods/services, embezzlement of association funds, tender processing in worksites and to cover up sexual harassment.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$(Worst-A)/(Worst-Frontier)$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Corruption and Governance (CG) index score is given by:

$$\text{Overall CG index} = \sum_{i=1}^2 X_i / 2 \quad \text{for } i = 1, 2$$

Where X_i represents the computed scores for each of the two sub-indicators of Corruption and governance (Frequency of corruption within the worksites and the amount lost per person monthly).

(iii) Crime and public security

Incidences of crime in and around worksites are prevalent across counties. As a result, most MSE associations organize for private security on behalf of their members who are required to pay for the services. Crime and security concerns in and around worksites are therefore a threat to the growth of MSEs.

The index score for this indicator is calculated by assessing prevalence of crime around the worksite, average distance to the nearest police station, and time taken to the nearest police station. Institutions and offices where MSEs report crime incidences include; police stations, area chief, village elders, private guards, respective MSE officials.

The key issues brought out here include responsiveness of the police officers in tackling insecurity challenges and adoption of coping mechanisms by MSEs through hiring private security.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst - A) / (Worst - Frontier)$$

Where variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Crime and Public Security (CPS) index score is given by

$$\text{Overall CPS index} = \sum_{i=1}^3 X_i / 3 \quad \text{for } i = 1, 2, 3$$

Where X_i represents computed scores for each of the three sub-indicators of Crime and public security (Prevalence of crime; average distance and time taken to the nearest police station from the worksite).

(iv) Self-regulation

MSE associations are considered important vehicles for tapping into economies of scale. However, bureaucracies in the process of admitting new members to the associations act as hindrances to these benefits. Self-regulation is an important mechanism that brings order in the MSEs sector. This is because it reduces cost of doing business and thus enhances productivity, growth, and development of MSEs.

Further, it incentivizes support to the sector by different stakeholders like development partners. The self-regulation index score is computed using the number of procedures followed to register an association, time taken to register

an association and the official cost needed to register an association.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$(Worst-A)/(Worst-Frontier)$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Self-Regulation (SR) index score is given by

$$\text{Overall SR index} = \sum_{i=1}^3 X_i / 3 \quad \text{for } i = 1, 2, 3$$

Where X_i represents the computed scores for each of the three sub-indicators of self-regulation (Procedures followed to register into an association; average time taken; and costs involved).

(v) Participation in policy and regulatory framework

It is of necessity for MSEs to participate in making policies and laws that affect their operations. This indicator is evaluated through computation of the proportion of MSEs that have participated in the process of formulating the policies, laws or plans that support the business environment. Notably, members are aware of existing laws, policies or plans within the county that support business environment for MSEs. but very few, participate in the actual process of developing them. participation is mainly through public meetings/rallies and barazas. There is very low participation by members in planning/budgeting forums and sector working group/ committees.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$(Worst-A)/(Worst-Frontier)$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Participation in Policy and Regulatory Framework (PPRF) index score is given by

$$\text{Overall PPRF index} = \sum X$$

Where X represents the computed scores for MSEs that have participated in the process of formulating the policies, laws or plans that support the business environment.

2.4 Market Environment

Several factors are considered in defining the market environment for MSEs including access to government procurement opportunities (AGPO); ease of

access to road infrastructure; access to market; unfair competition; quality of support infrastructure and trade participation.

To improve on market environment for MSEs, the national government through the AGPO Secretariat need to promote and enhance sensitization of MSEs on the affirmative platform. Further, enhancing road infrastructure to facilitate trade, and sensitizing MSEs on how to produce goods of quality and acceptable standards will go a long way in facilitating their competitiveness to both domestic and international markets.

2.4.1 Rationale and guidance for the indicators chosen

Indicators for market environment are selected on the basis that they facilitate MSEs competitiveness to both domestic and international markets. The indicators also enable a clear understanding of the challenges by MSEs in acquiring certification that allows their access to local, national and international markets, and unhealthy competition and unfair trade practices which impact on ability of MSEs to grow their trade.

2.4.2 Key indicators

(i) Access to AGPO

Generally, the uptake of AGPO in prequalification is low amongst MSEs due to information asymmetry. The documentation needed for access to AGPO include National ID, business registration certificate, KRA pin certificate, tax compliance certificate, CR12 for a limited company and a partnership deed for a partnership business. Few MSE members are trained on accessing government tenders.

The index on uptake of AGPO take into consideration the proportion of MSEs prequalified, the procedures undertaken for prequalification into AGPO, time taken to be considered for the government contracts and total official cost involved in applying for government contracts.

The challenges by MSEs to enable them to prequalify for AGPO include: high corruption, high cost involved in processing documentation, numerous and tedious procedures that are difficult to understand, limited access to finances, limited information and high bureaucracies that are hard to bypass. Other challenges include failure to proceed past prequalification stage either because of poor documentation.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$(Worst-A)/(Worst-Frontier)$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Access to AGPO (ATA) index score is given by:

$$\text{Overall ATA index} = \sum_{i=1}^4 X_i / 4 \quad \text{for } i = 1, 2, 3, 4$$

Where X_i represents the computed scores for each of the four sub-indicators of access to AGPO (MSEs prequalified, procedures undertaken for prequalification into AGPO; time taken, and official costs involved).

(ii) Ease of access to road infrastructure

There is huge disparity in distribution of road infrastructure across counties. A good road network is important in easing movement of goods, people and services to access markets. The ease of access to road infrastructure index score is composed of distance taken to access the nearest tarmac road, time taken to the nearest tarmac road and the cost involved to reach the nearest tarmac road.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Ease of Access to Road Infrastructure (RI) index score is given by

$$\text{Overall RI index} = \sum_{i=1}^4 X_i / 4 \quad \text{for } i = 1, 2, 3, 4$$

Where X_i represents the computed scores for each of the four sub-indicators of ease of access to road infrastructure (Ease of road access, distance taken to access the nearest tarmac road; time taken; and costs involved).

(iii) Access to market

Access to market for MSEs is a crucial factor in determining their performance as well as survival rate. The access to market index score consists of assessment of the average distance to the nearest market where MSEs sell products & services, time taken to nearest market and average county levies imposed on traders per month.

Challenges in accessing markets have result to MSEs using middlemen who deliver goods to the market with ease and affordability.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Access to Market (ATM) index score is given by

$$\text{Overall ATM index} = \sum_{i=1}^3 X_i / 3 \quad \text{for } i = 1, 2, 3$$

Where the X_i represents the computed scores for each of the three sub-indicators of access to market (average distance, time taken to nearest market, and the average county levies imposed on traders per month).

(iv) **Unfair competition**

MSEs across the counties face a significant level of unfair competition. The index for this indicator assesses the existence of unhealthy anti-competitive and unfair trade practices activities among MSEs in the counties. Such practices manifest through contract enforcement, counterfeiting, dumping (substandard goods) and misrepresentation (through weight, price, ingredient). Low scores imply that there exists unfair trade practices activities among MSEs across the counties.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst - A) / (Worst - Frontier)$$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Unfair Competition (UC) index score is given by

$$\text{Overall UC index} = \sum X$$

Where X represents the computed scores of practices of manifestations of unfair competition among MSEs.

(v) **Quality of support infrastructure**

The condition of physical markets relating to roads within and nearby, availability of water services and drainage, security, waste management facilities, health facilities, public toilets and sewerage, and county market officials are critical in supporting the market environment for MSEs.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst - A) / (Worst - Frontier)$$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Quality of Support Infrastructure (QSI) index score is given by:

$$\text{Overall QSI index} = \sum_{i=1}^7 X_i / 7 \quad \text{for } i = 1, 2, 3, 4, 5, 6, 7$$

Where X_i represents the computed scores for each of the seven sub-indicators of quality of support infrastructure (roads, water services and drainage, security, waste management, health facility, public toilets and sewerage, and presence of county market officials).

(vi) Trade participation

The trade participation index score included fairness of taxes permits and payable to the neighbouring counties, various approaches used to promote county trades and approaches used to promote international trade. These measures are important in facilitating for trade for MSEs.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where the variable Worst is the respondent with the highest number of counts, variable A is the unit score for the indicator, and variable Frontier is the best score among the scores from the respondents.

The overall Trade Participation (TP) index score is given by

$$\text{Overall TP index} = \sum_{i=1}^3 X_i / 3 \quad \text{for } i = 1, 2, 3$$

Where X_i represents the computed scores for each of the three sub-indicators of trade participation (Fairness of taxes, permits and licenses payable in neighboring counties, approaches used to promote cross county trade, and approaches used to promote international trade).

2.5 Financial Inclusion

Financial inclusion for MSEs is crucial in improving firm performance and growth. For example, access to credit can enhance investments, market share and product diversification. The indicators included in this broad area are access to savings and credit facilities, financial innovations and fintech, and credit guarantee scheme.

2.5.1 Rationale and guidance for the indicators chosen

Credit guarantee scheme reduces risks associated with lending to MSEs. Consequently, it promotes enterprise development through access to quality and affordable credit. It also alleviates the challenges faced by MSEs seeking credit by offsetting situations in which borrowers with an equal probability of default have an unequal probability of obtaining credit due to insufficient collateral. Financial innovations such as M-pesa and M-shwari offer alternative sources of financing to the traditional banking sector.

2.5.2 Key indicators

(i) Access to savings and credit facilities

This indicator is assessed on the basis of the number of institutions offering savings facilities and number of institutions offering credit facilities. The reasons for not

saving include lack of enough funds to save, limited interest to save, inclination to save money at home compared to a financial institution and limited of knowledge on how to open a savings account.

Possible reasons for not applying for credit include fear of the unknown, high interest rates, lack of collateral, a lot of procedures involved and limited awareness. Other reasons are religion which forbids credit borrowing and CRB listing.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Access to Savings and Credit Facilities (ASCF) index score is given by

$$\text{Overall ASCF index} = \sum_{i=1}^2 X_i / 2 \quad \text{for } i = 1, 2$$

Where X_i represents the number of institutions offering savings facilities and number of institutions offering credit facilities.

(ii) Financial innovations and fintech

Financial innovations and fintechs are important in easing access to financial services by MSEs. The indicator is assessed based on the scores of understanding of financial innovations and average use of financial innovations such as M-pesa; M-Shwari; M-akiba and Credit Reference Bureaus by MSEs.

Use of financial innovations include but not limited to: paying bills/Suppliers, growing borrowing limit, paying loans and to make daily purchase. Further a number of reasons explain increased use of mobile money. They include the increased use of Till/Pay bill numbers, Pochi La biashara, reduction in mobile money transactions, the government appeal to transact in cashless mode, the increase of online business and the demand to pay for products and services in a cashless mode.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Financial Innovations and Fintech (FI) index score is given by:

$$\text{Overall FI index} = \sum_{i=1}^2 X_i / 2 \quad \text{for } i = 1, 2$$

Where X_i represents the computed scores for understanding and use of financial innovations (M-pesa; M-Shwari; M-Akiba and CRB).

(iii) Credit guarantee scheme

Credit guarantee scheme is a mechanism to reduce risks associated with lending to MSEs. It is a new financial product meant to enhance credit access to MSEs. In this indicator, awareness of credit guarantee scheme and its likelihood of use is assessed.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Credit Guarantee Scheme (CGS) index score is given by:

$$\text{Overall CGS index} = \sum_{i=1}^2 X_i / 2 \quad \text{for } i = 1, 2$$

Where X_i represents the computed score of MSEs that are aware and are likely to use the scheme.

2.6 Risk Preparedness and Management

This is an additional theme to the 2019 CBEM framework. Business risk management includes the processes of conducting risk management planning, identification, analysis, response planning, and mitigating or controlling risk on a business. The objectives of risk management are to increase the likelihood and impact of positive events and decrease the likelihood and impact of negative events in the business.

Risk preparedness and management is critical for MSEs sustainability and business continuity especially during the shocks and or stressors events such as the COVID-19 pandemic.

The risk preparedness and management indicators are status of risk preparedness and management and Knowledge and uptake of social security

2.6.1 Rationale and guidance for the indicators chosen

The key benefit of these indicators is it ensures that the degree, type, and visibility of risk management are commensurate with both the risks and the importance of the business environment to the MSE. The risk management plan is vital to communicate with and obtain agreement and support from all stakeholders to ensure the risk management process is supported and performed effectively over the business life cycle.

2.6.2 Key indicators

(i) Status of risk preparedness and management

In assessing the status of risk preparedness and management two components are considered; the proportion of MSEs aware of need for risk preparedness and management, and proportion of MSEs that have taken measures to handle risk. This is important in addressing MSEs mitigation measures against shocks

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

$$(Worst-A)/(Worst-Frontier)$$

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Status of Risk Preparedness and Management (SRPM) index score is given by

$$\text{Overall SRPM index} = \sum_{i=1}^2 X_i / 2 \quad \text{for } i = 1, 2$$

Where X_i represents the computed scores of MSEs aware of need for risk preparedness and management, and MSEs that have taken measures to handle risk.

(ii) Knowledge and uptake of social security

This indicator considered the proportion of MSEs that have knowledge of importance of insurance for their business, the proportion of MSEs that have knowledge of importance of health insurance, and proportion of MSEs that have taken insurance for their business, and Proportion of MSEs that have taken health insurance. This is critical in serving as a recourse mechanism for MSEs during shock events.

Computation of the sub-indicators is derived using the Distance to Frontier (DTF) approach.

Where the variable *Worst* is the respondent with the highest number of counts, variable *A* is the unit score for the indicator, and variable *Frontier* is the best score among the scores from the respondents.

The overall Knowledge and Uptake of Social Security (KUSS) index score is given by

$$\text{Overall KUSS index} = \sum_{i=1}^4 X_i / 4 \quad \text{for } i = 1, 2, 3, 4$$

Where X_i represents the computed scores of MSEs that have knowledge on importance of insurance for their business, MSEs that have knowledge on importance of health insurance, proportion of MSEs that have taken insurance for their business, and MSEs that have taken health insurance.

3. CBEM INDEX METHODOLOGY

The construction of CBEM index is based on an original set of 30 indicators extracted from six themes of county business environment for MSEs. These themes are considered based on conceptual and analytical frameworks for creating an enabling business environment for MSEs.

3.1 Computation of the overall CBEM index

The World Bank Distance to Frontier (DTF) approach is used in the CBEM framework (World Bank, 2018). Two steps followed to compute the scores for the sub-indicators are discussed in Section 2.0 as follows:

Step 1

The indicators across the broad areas are normalized to have a common unit of either 1 or 0, where 1 represent 'Yes' and 0 represents 'No'. Additionally, the values are transformed to measure an incremental value such that an increase in an indicator implies that the indicator is approaching towards a benchmark or the best score. Each indicator is examined with a number of questions which forms the sub-indicators. Further, all the responses for each sub-indicator are examined and classified in terms of the best (here-in referred to as the Frontier) and the worst. The best performance on the indicator across the respondents constitutes the variable frontier for the indicator, while the worst performance of the indicator is taken to constitute the variable worst.

Equation 1 shows how the score (S) for the sub-indicator is calculated.

$$S=((\text{Worst}-y))/((\text{Worst}-\text{frontier}))\dots\dots\dots 1$$

where,

y is the response given for each sub-indicator

Worst indicates worst performance and

frontier shows best performance in each sub-indicator.

The score, S, ranges from zero (0) to one (1).

Further, considering the number of respondents varies across the counties, a simple arithmetic mean is computed at each sub-indicator level. The arithmetic mean addresses the issue of biasness that may be brought about by non-uniformity in the sample size of the respondents across the counties. This average score for the sub-indicator represents the score for the county at the sub-indicator level before considering the weighting. A uniform weighting of the sub-indicators is adopted such that the maximum score for each sub-indicator is one. The sum of the individual index scores are then averaged to have a score ranging between 0

and 1. This scores are then expressed as percentages.

Step 2

Data is weighted by the number of respondents per indicator per county to address biasness resulting from over-representation and under-representation of counties with higher number of respondents. The total scores per indicators are averagely weighted to provide an aggregate score for the theme. The weighting adjustments are done as a way of increasing the sampling weights of the respondents to compensate for the non-responses.

Computation of weighted averages

Weighting= $(1/((\text{Actual respondents})(\text{Target respondents}))) \times (1/((\text{Total actual respondents})(\text{Total target respondents})))$

The sampling weights are calculated as the inverse of the product of the selection probabilities. In a few cases where the sampling weights are high due to low actual respondents, an average weighting is applied. Thereafter, the weighting is multiplied by the average index scores derived to give the final index of each indicator. The theme scores are then aggregated to get the final ranking score.

Theme scores=weighting*indicator scores

3.2 Robustness of Composite Indicators

The composite indicators for the computation of the CBEM index involved a sequence of steps of computing the index using the Distance to Frontier (DTF) approach, the weighting and aggregation of the results. Testing for robustness acted as a quality assurance for the procedure and the data to ensure there is consistency in the steps followed in construction of the index and the steps available in the literatures. Further, it reduced the possibilities of conveying misleading results or missing out on some steps.

Steps used in conducting robustness: -

The first step involved the criteria for identifying the indicators and sub-indicators to be included in the index under each thematic area. The process comprised the selection of the indicators, treatment of missing data and non-responses, weighting, normalization, and aggregation of the scores. In the selection of the indicators to include in the computation of the index was informed by the literatures and theory, whereby all the selected indicators had equal importance.

The Cronbach's alpha was used to measure the reliability or internal consistency of the set of indicators by predicting the strength of that consistency. It is computed by correlating the score of each indicator with the total score for each observation, and then comparing it to the variance for all individual item scores. The Cronbach alpha results ranges from 0 to 1 in providing the overall assessment of a measure's reliability. The rule of thumb is that:

- If $\alpha=0$, implies all of the scale items are entirely independent from one

another, that is, not correlated or share no covariance.

- If $\alpha=1$, Implies as the number of items in the scale approaches infinity, that is, the higher the coefficient, the more the items have shared covariance and probably measure the same underlying concept.
- Alpha coefficients of below 0.50 are unacceptable.
- Between 0.65 and 0.80 (Or higher in many cases), presents a good coefficient (Pallant, 2020).

The results for the Cronbach are presented in Table 1 below.

Table 1 : Cronbach's Alpha results

Themes	Indicators	Cronbach's alpha	Decision
Worksite and related infrastructures	<ul style="list-style-type: none"> • Access to worksite • Access to common manufacturing facilities • Electricity connection • Water connection • Public Toilets • Waste management • Internet connection 	Scale reliability coefficient: 0.70 Average interitem covariance: 35.84 Number of items in the scale: 7.00	With the alpha coefficient of above 0.65, it reflects a good reliability. Therefore, inclusion of the 7 indicators gives a reliable and consistent index
Market Environment	<ul style="list-style-type: none"> • Access to Government Procurement Opportunities • Ease of access to road infrastructure • Access to markets • Unfair competition • Quality of market support infrastructure • Trade participation 	Scale reliability coefficient: 0.65 Average interitem covariance: 15.10 Number of items in the scale: 6.00	With the alpha coefficient of above 0.65, it reflects a good reliability. Therefore, inclusion of the 6 indicators gives a reliable and consistent index
Financial Inclusion	<ul style="list-style-type: none"> • Access to savings and credit facilities • Financial innovations and fintech • Credit guarantee scheme 	Scale reliability coefficient: 0.68 Average interitem covariance: 11.18 Number of items in the scale: 3.00	With the alpha coefficient of above 0.65, it reflects consistency and good reliability of results.

Technical Capacity	<ul style="list-style-type: none"> • Training (Capacity Building) • Innovation • Patenting • Coping with new technology • Knowledge and skills gap • MSEs Survival Rate • Access to Incubation Services 	<p>Scale reliability coefficient: 0.72</p> <p>Average interitem covariance: 4.76</p> <p>Number of items in the scale: 7.00</p>	<p>The alpha results indicate a strong and a good coefficient of 0.72 indicating a strong reliability</p>
Governance and Regulatory Framework	<ul style="list-style-type: none"> • Licensing and Issuance of Permits • Corruption and Governance • Crime and Public Security • Self-Regulation • Participation in Policy and Regulatory Framework 	<p>Scale reliability coefficient: 0.82</p> <p>Average interitem covariance: 13.60</p> <p>Number of items in the scale: 5.00</p>	<p>With the alpha coefficient of above 0.65, it reflects consistency and good reliability of the results</p>
Risk Preparedness and Management	<ul style="list-style-type: none"> • Status of risk preparedness and management • Knowledge and uptake of social security 	<p>Scale reliability coefficient: 0.67</p> <p>Average interitem covariance: 61.15</p> <p>Number of items in the scale: 2.00</p>	<p>The alpha results indicate a strong and a good coefficient of 0.67 indicating a strong reliability</p>

4. CONCLUSION

In conclusion, it is very clear that the construction of the CBEM Index follows well established scientific methods to generate a reliable index for measuring, monitoring and evaluation developments in MSE in each of the 47 countries in Kenya.

Below, we present an example of the application of the CBEM explained in this manual and report the overall score and ranking of counties. In Table 2, the 47 counties were assessed on business environment for MSEs. The average overall score for the counties for the CBEM 2022 scores was 29.37. The scores for CBEM 2019 was 20.98 as indicated in Table 2.

Table 2: The overall County Business Environment for MSEs score and rank

County	2022		2019	
	Score	Rank	Score	Rank
Nairobi	37.04	1	45.24	1
Nandi	35.60	2	21.19	16
Kiambu	34.67	3	28.12	10
Nyeri	34.01	4	25.87	13
Kirinyaga	33.80	5	13.17	33
Laikipia	33.73	6	34.64	5
Embu	33.63	7	17.28	26
Busia	32.81	8	17.15	27
Transnzoia	32.52	9	13.49	32
Elgeyo Marakwet	32.27	10	9.58	37
Kisumu	32.10	11	35.02	4
Vihiga	32.01	12	16.27	28
Isiolo	31.99	13	7.26	42
Kericho	31.76	14	12.91	34
Uasin Gishu	31.60	15	15.78	29
Baringo	31.47	16	15.77	30
Wajir	31.13	17	12.23	36

Murang'a	31.02	18	20.87	18
Kwale	30.68	19	20.99	17
Kilifi	30.64	20	19.31	21
Mombasa	30.46	21	31.80	7
Nyandarua	30.32	22	40.48	2
Bungoma	30.26	23	18.52	22
Kakamega	30.14	24	32.8	6
Taita Taveta	29.91	25	28.25	9
Bomet	29.85	26	12.51	35
West Pokot	29.64	27	8.66	40
Turkana	29.52	28	-	-
Kisii	29.48	29	31.42	8
Homabay	29.42	30	18.41	24
Nakuru	29.07	31	35.14	3
Siaya	28.82	32	19.71	20
Kajiado	28.57	33	15.66	31
Makueni	28.36	34	25.61	14
Machakos	28.21	35	26	12
Migori	28.19	36	17.30	25
Mandera	26.72	37	20.51	19
Nyamira	26.12	38	-	-
Kitui	24.64	39	9.05	39
Tana River	24.42	40	-	-
Narok	24.02	41	7.40	41
Meru	23.33	42	27.79	11
Marsabit	22.51	43	9.32	38
Lamu	22.48	44	-	-
Tharaka Nithi	22.37	45	18.52	23
Garissa	20.69	46	24.23	15
Samburu	18.45	47	-	-
Average score	29.37		20.98	

Source: Authors' calculations

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