

Inclusive Education



The Framework of Bottom up Strategic Planning to Support Visual Digital Dashboard of Vice Chancellors towards Disability Inclusive Education at Tertiary Educational institutions

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1. Introduction

Education gives knowledge and skills to learners. Inclusive education ensures that all students have equal opportunities to receive knowledge and skills in a teaching and learning environment. It stresses treating each student without isolating them based on their abilities or challenges, based on physical, intellectual, social, or emotional development.

The General Assembly of United Nations member states had declared the 17 Sustainable Development Goals (SDGs) for 2030 that aims to include everyone, focusing on “leaving no one behind”. These SDGs specially mention disabilities and individuals with disabilities. Overall, it is a holistic approach where all 17 goals are linked to disability. However, SDG specially marks goals 4, 8, 10, 11, and 17 for disable individuals.

Goals 4 and 8 are directly linked to individuals with disabilities aiming towards quality education and decent work. Any organization can apply top-down and bottom-up approaches because integrating these two approaches develop better inclusive and collaborative atmosphere. Using the top-down approach Vice Chancellors/presidents/heads of educational institutions can work towards these two goals and support individuals with disabilities through delivering clear regulations and directions using policies and procedures from the top management, and bottom-up approach involves all the personnel at all the hierarchies from bottom to top.

1. Introduction.... Continued

The researcher has published a paper on disability inclusive education [39] that focuses on top-down approach to implement and revise the policies and procedures. This paper has adopted bottom-up approach that works towards the development of vision, mission and objectives by each college/school or teaching and non-teaching unit of a Higher Education Institution (HEI) in accordance with the vision, mission and objectives of the HEI that moves upwards to meet the goals of disability-inclusive education declared by the educational institution. This approach starts with promoting awareness among the teachers, peers, stakeholders and community towards understanding the needs of disable students, such as through stimulating empathy towards disability. Moreover, colour blindness is one a major invisible disability that is mostly ignored. Therefore, this paper provides the framework of bottom up strategic planning to support visual digital dashboard of vice chancellors towards disability inclusive education at tertiary educational institutions.

This framework is based on top-down and bottom up approaches to enhance the outcomes of overall Key Performance Indicators (KPIs) and support the effective decision making of vice chancellors/presidents/head of institutions through visual digital dashboard of decision making, used by them. Institutional policies and procedures are used for top-down approach; however, implementation of policies, procedures and development of strategies, recommending the revision of procedures or policies and revision of strategies at the colleges/schools/teaching and non-teaching units of the Higher Education Institution (HEI) are used from bottom-up approach. This framework has identified dependent, independent and moderating variables those impact the process of decision making of vice chancellors, linked to the KPIs.

2. LITERATURE REVIEW

2.1. United Nations Charter and General Assembly of United Nations Member States

The United Nations General Assembly was founded in 1945 according to the United Nations Charter. It plays an important role in policymaking, including all member states. The General Assembly serves as an exclusive platform for multidimensional discussions and debates, addressing a wide range of global issues [5].

2.2. Agenda for 2030 and 17 Sustainable Development Goals

The United Nations Member States have embraced the 2030 Agenda for Sustainable Development, which outlines a roadmap for achieving peace and prosperity for all people on the earth. This agenda takes into account the existing worldwide condition and future needs. All countries around the world are called upon to participate actively and implement effective plans and policies to get rid of poverty, improve healthcare and education, and reduce inequalities. [6].

Recognizing the importance of inclusivity, the United Nations General Assembly, comprised of Member States, has acknowledged the 17 Sustainable Development Goals (SDGs) for 2030. These goals are centred on the principle of “leaving no one behind” and explicitly address disability and persons with disabilities. The SDGs that prominently mention disability are 4, 8, 10, 11, and 17 [7].

2.3. Sustainable Development Goals Four (4) and Eight (8)

Goal 4 is related to creating inclusive and effective learning environments that promote inclusive education for everyone, including people with disabilities. It emphasizes the importance of removing gender inequalities and fostering lifelong learning opportunities. [7].

Goal 8 is associated with achieving inclusive and sustainable economic growth. It aims to provide equal and decent employment opportunities for all, including people with disabilities, while striving to eliminate gender disparities in the personnel. [7].

2.4. Data, Information, Knowledge, Decision Support System and Business Intelligence

Data refers to facts collected for the purpose of evaluation and extracting conclusions [8]. When data is well-ordered, it becomes information [9]. Knowledge is information that is appropriately ordered and retained by an individual. It consists of known facts learnt through experience, participation, workout, or practice [10, 11].

The concept of business intelligence initiated from a technology called decision support in the 1950s [12]. It supports organizations in examining, comparing and estimating commercial data, leading to effective decision-making [13, 14]. It allows the storage of large amounts of information, treat and manage structured and unstructured data, and provides enriched outcomes for making decisions [1].

However, implementing and executing a business intelligence system can be costly that requires a huge amount of time, needs training of personnel in data mining, understanding new system, reports generation, practical applications and other technological skills. There may also be a need to contract out the parts of projects to third-party experts. According to the technological research firm Gartner, the success rate of business intelligence software is estimated to be between 20% to 30% [2].

2.5. Business Intelligence Data Dashboard, Report, Machine Learning, Educational System and its Stakeholders

A business intelligence software data dashboard is utilized by executives and administrators of an institution to analyse, evaluate, and track key performance indicators, providing valuable insights for decision-making. Power BI dashboard, for example, presents significant details for effective decision-making [15]. Popular tools like Crystal Reports, Tableau, Power BI, and Jasper Reports are used for data visualization and report generation in institutions, offering charts, graphs, flowcharts, and other visual options through digital dashboards [16].

A data silo refers to an isolated set of data that is difficult to access, integrate, and utilize with other data sources within an institution [17]. These computer-based tools can interact with data silos and restructure the data to connect with various data sources. For instance, Tableau can be linked to different sources such as MS Excel, comma-separated value files, relational databases (SQL Server, DB2, Oracle), Google Cloud Sheets, and more [18].

A computer-generated report presents comprehensive information in various formats, such as graphs, charts, or tables [19].

Machine learning is a method that uses algorithms to examine and evaluate existing information to make estimates and predictions for the future [20].

Key stakeholders in an educational system include staff (teachers and administration), learners, policy makers, top management, parents, researchers, graduates, relevant industries, and professionals associated with the respective industries [16].

2.6. Policies, Procedures, Strategies and Inclusive Education

Policies outline regulations and principles for authorized actions by stakeholders, addressing inquiries and guiding what and why actions should be taken [21]. Procedures detail the step-by-step implementation of policies, ensuring comprehensive adherence [21]. Together, policies and procedures provide guidance, steps, and approaches to complete operations, promoting compliance, decision-making, and internal restructuring [21].

When policies fail to achieve expected progress, a review of the policy or associated procedure(s) becomes necessary, leading to improved outcomes and supporting effective decision-making [22].

Inclusive education involves inclusive activities in formal educational settings, bringing together students with and without special needs for collaborative learning [23]. It enables students with disabilities or special needs to receive education in regular classrooms with extra support [24].

A strategy refers to a carefully crafted plan or method aimed at accomplishing a particular objective [38].

2.7. Stakeholders of an Educational System

According to [16], the primary stakeholders in an educational system include teachers, administrators, students, policy makers, educational institution leaders, parents, researchers, alumni, and experts from related industries.

2.8. Key Performance Indicators

Key performance indicators (KPIs) are essential for decision-making and evaluating university performance. Important KPIs for performance evaluations include student achievement, discipline referrals, classroom attendance, graduation rates, and teacher satisfaction [25]. The Times Higher Education (THE) and QS world university rankings use various KPIs related to teaching, research, industry connections, citations, and program rankings [26][29]. These KPIs play a significant role in assessing university performance and rankings, with a focus on inclusive education [27][28].

2.9. Top-down and Bottom-up Approaches and Benefits

The top-down approach involves the flow of information and decisions from higher-level authorities to lower-level employees, with decision-making power concentrated at the top [30]. In contrast, the bottom-up approach encourages input and ideas from lower-level employees, with decision-making power distributed across different levels of the organization [31].

The top-down strategy offers the benefits of clear direction, efficient decision-making, consistent policies, effective resource allocation, and accountability in one sentence [30].

The bottom-up strategy provides the benefits of inclusive perspectives, employee engagement, enhanced problem-solving, innovation, and adaptability in one sentence [31].

2.10. Vision, Mission and Objectives

Vision is a statement that defines the desired future state and ambitions of a company, unit or organization [32]. Mission outlines the purpose and activities, collaborating its fundamental values or steps or actions required to achieve the vision [33]. Objectives are specific and measurable goals that guide through the actions and help achieve its mission and vision [34].

2.11. Disable Learner Profile and IEP

A disabled learner profile is very important because it delivers a detailed description of a person with disabilities, including his/her needs, abilities, and the way of learning. It helps teachers and support professionals create modified and personalized strategies and interventions to support the education and way of inclusion for that student [37].

An IEP stands for Individualized Education Plan that is a personalized document to support an individual with disability by outlining his/her specific educational goals, accommodations, and support services to make sure that he/she has equal opportunities in the learning environment [36].

2.12. Windows Speech Recognition in Windows 10 and Enabling the Feature

Windows Speech Recognition enables users to operate their personal computers exclusively through voice commands, excluding the necessity for a keyboard or mouse [35].

2.13. Listening and speaking to ChatGPT through Voice Control for ChatGPT Google Chrome Extension for Blind and Visually Impaired Students, an Example of Available Assistive Technology

According to West (2023), ChatGPT is a variant of GPT (Generative Pre-trained Transformer). It was created for Chabot solutions and offers responses that are similar to those of a human being based on a sizable dataset of humanoid chats and dialogues.

2.14. Key Performance Indicators

The foundation of decision-making lies in key performance indicators (KPIs), which are essential for evaluating the performance of a university. Some important KPIs for performance evaluations include student achievement, discipline referrals, classroom attendance percentage, graduation rate, and teacher satisfaction [25]. The Times Higher Education (THE) and QS world university rankings use various KPIs such as staff-to-student ratio, research productivity, citations per paper, academic reputation, and international research network to rank universities globally and regionally [26, 29]. These KPIs play a crucial role in assessing university performance and promoting inclusive education [16].

2.15. Colour Blindness

Colour blindness, macular degeneration, complete blindness in one or both eyes, and near-sightedness/farsightedness are the most prevalent types of visual impairments (Hazzan et al., 2023). Visual impairment is significantly connected to colour impairment (Wale, 2018).

2.15. Web Accessibility Rules for Blind Learners

WebAIM (n.d) stated web accessibility rules based on *Unperceivable, Operable, Understandable and Robust*.

3. Independent, Dependent and Moderating Variables of the Framework for Bottom Up Strategic Planning to Support Visual Digital Dashboard of Vice Chancellors at Tertiary Educational Institutions

Following figure 1 shows independent, dependent and moderating variables of the Framework for Bottom-Up Strategic Planning to Support Visual Digital Dashboard of Vice Chancellors at Tertiary Education Institutions.

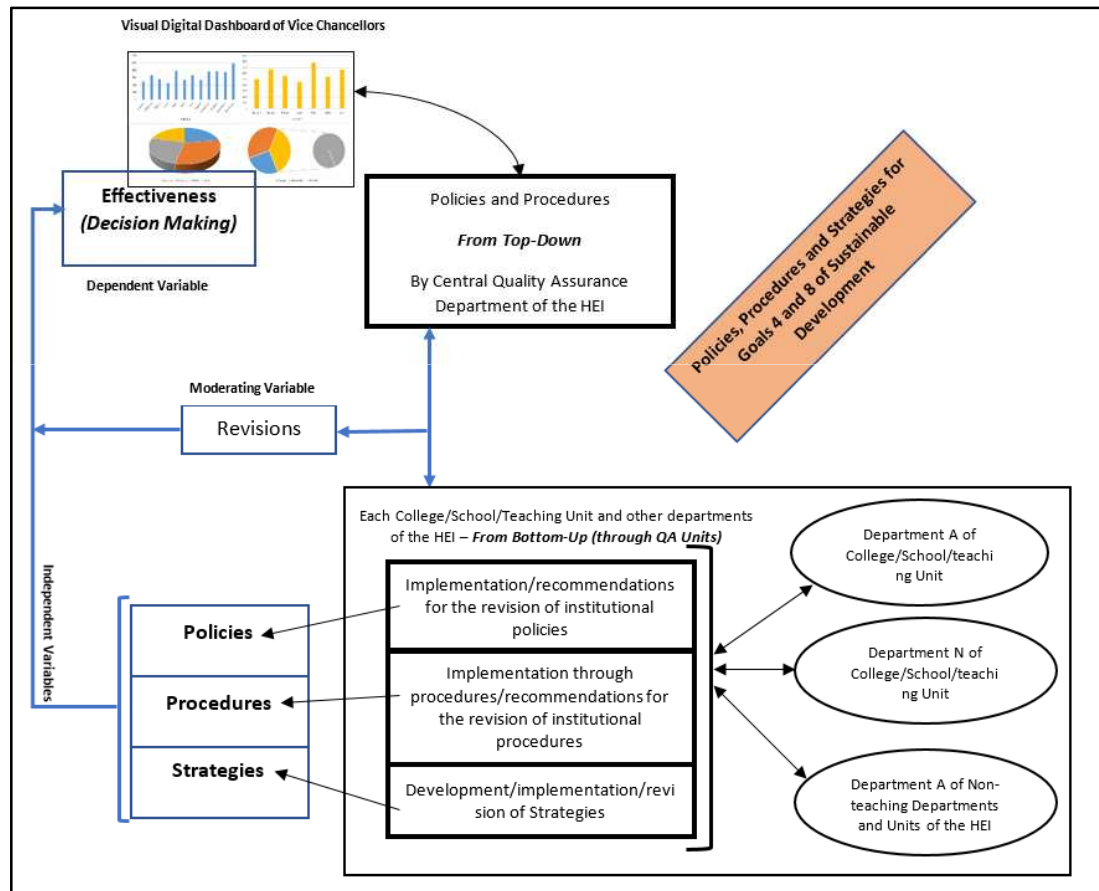


Figure 1. Independent, Dependent and Moderating Variables of the Framework – Bottom up Strategic Planning

4. Framework of Bottom Up Strategic Planning to Support Visual Digital Dashboard of Vice Chancellors at Tertiary Educational Institutions

Following figure 2 illustrates the framework of bottom-up strategies... (for the Goals 4 and 8 of UN's General Assembly for Sustainable Development).

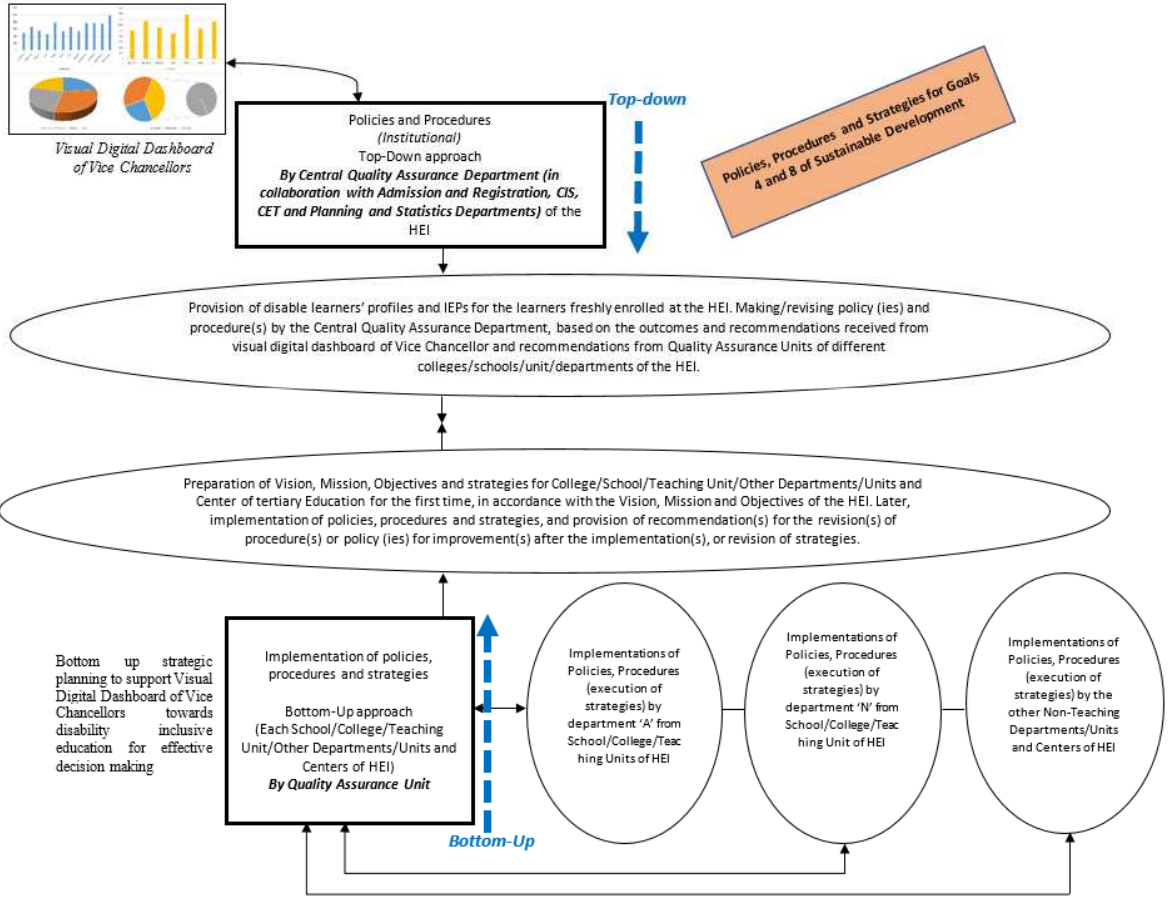


Figure 2. Framework of Bottom Up Strategic Planning to Support Inclusive Education (Goals 4 and 8 of UN's General Assembly for Sustainable Development)

5. Methodology

This research paper focuses on developing a framework for disability-inclusive education in educational institutions using a bottom-up approach aligned with the United Nations' Sustainable Development Goals. It highlights the importance of goals 4 and 8, which relate to quality education and decent work for individuals with disabilities. While the top-down approach provides regulations from institutional leaders, the bottom-up approach involves collaboration across all personnel. The methodology involves developing a vision, mission and objectives, promoting awareness towards understanding disability, addressing overlooked invisible disabilities like colour blindness, implementation of institutional policies and procedures, providing recommendations for the revisions of policies and procedures after implementation, developing and implementing strategies and revising them.

The paper presents a framework for bottom-up strategic planning, supporting decision-making processes and key performance indicators (KPIs) through the visual digital dashboard of VCs. The top-down approach focuses on policy implementation (provision of disable learners profiles and previous IEP details to the concerned colleges/schools/teaching non-teaching units through Central Quality Assurance Department, Admission and Registration Department, Centre for Information System (CIS), Centre for Educational Technology (CET), Planning and Statistics Department), while the bottom-up approach emphasizes strategy development and implementation of policies and procedures as mentioned in the pervious paragraph. For this framework, effectiveness of decision-making serves as the dependent variable, while policies, procedures, and strategies act as independent variables, and revisions of policy (ies), procedure(s), strategy (ies) work as moderating variable that impact the outcomes linked to KPIs of mentioned in [39] and the decision-making process of VCs.

Within this framework, various strategies are proposed, such as promoting empathy, integrating assistive technologies into the curriculum, and creating instructional materials to use these assistive technologies for the teachers. Involving all the stakeholders is essential for establishing a disability-inclusive environment. Ultimately, this comprehensive framework provides a roadmap for inclusive education, encompassing the development of vision, mission, objectives, awareness, empathy, and stakeholder engagement. This research contributes to understanding and implementing disability-inclusive practices in educational institutions.

6. Findings and Discussion

The findings of this research will highlight the effectiveness of the bottom-up approach in developing a framework for disability-inclusive education within educational institutions. By promoting awareness among teachers, peers, stakeholders, and the wider community, a greater understanding of the needs of disabled students and empathy towards disability will be fostered. This increased awareness will play a crucial role in creating a more inclusive and supportive learning environment.

The integration of assistive technologies into the curriculum will be identified as a key strategy in facilitating disability-inclusive education. By incorporating these technologies, teachers will be better equipped to assist disabled students and provide them with equal opportunities for learning. The development of step-by-step instructional materials will further enhance the accessibility of education for disabled students, ensuring that they can fully engage with the curriculum.

The involvement of all stakeholders, including students, teachers, administrators, and community members, will be found to be essential in shaping a disability-inclusive environment within educational institutions. Collaboration and active participation from all levels of the institution's hierarchy will promote a sense of ownership and commitment towards inclusive practices. This collective effort will contribute to the successful implementation of the framework and the realization of disability-inclusive education goals.

The findings of this study will underscore the significance of implementing a bottom-up approach in promoting disability-inclusive education. By empowering individual colleges/schools or teaching and non-teaching units within educational institutions to develop their own vision, mission, objectives derived from HEIs vision, mission and objectives, and strategies, will develop a sense of self-sufficiency and ownership. This approach will not only facilitate the customization of strategies and practices to meet the specific needs of each entity of the HEI but also promote a culture of inclusivity at the grassroots level.

6. Findings and Discussion..... Continued

The integration of assistive technologies will emerge as a powerful tool in enhancing the educational experience of disabled students. By incorporating these technologies into the curriculum, barriers to learning will be reduced, and disabled students will be provided with the necessary support to actively participate in classroom activities. The development of step-by-step instructional materials will further enhance the accessibility of education by providing clear and structured guidance for both teachers and students.

The involvement of stakeholders from all levels of the institution will play a critical role in shaping a disability-inclusive environment. This collaborative approach will ensure that the opinions and perceptions of all stakeholders are taken into account when developing and implementing inclusive practices. The active participation of students, teachers, administrators, and community members will create a shared responsibility for the success of disability-inclusive education initiatives.

Overall, the findings of this research highlights the effectiveness of the bottom-up approach in developing a comprehensive framework for disability-inclusive education. The integration of assistive technologies, the implementation of institutional policies and procedures, development of new strategies or revising the existing strategies and recommending the revisions of existing institutional policies and procedures, and the active involvement of stakeholders will be identified as key factors contributing to the success of disability-inclusive education within educational institutions. By implementing these findings, institutions will be able to create a more inclusive and equitable learning environment, eventually, leaving no one behind in the quest of quality education for all.

7. Conclusions

In conclusion, this research paper has highlighted the significance of adopting a bottom-up approach to develop a framework for disability-inclusive education within educational institutions. By focusing on goals 4 and 8 of the United Nations' Sustainable Development Goals (SDGs), which emphasize quality education and decent work for individuals with disabilities, this paper has provided valuable insights into the strategies and practices necessary for promoting inclusive education.

The findings of this research underscore the importance of promoting awareness and empathy towards disability among teachers, peers, stakeholders, and the wider community. By creating a deeper understanding of the needs of disabled students, educational institutions can foster a more supportive and inclusive learning environment. The integration of assistive technologies into the curriculum and the development of step-by-step instructional materials have been identified as effective strategies to enhance the accessibility of education for disabled students.

Furthermore, this research emphasizes the crucial role of stakeholder involvement in shaping a disability-inclusive environment through the implementation of institutional policies and procedures, designing and revising strategies, recommending revisions of policies and procedures. Collaboration and active participation from students, teachers, administrators, and community members are vital in implementing inclusive practices and achieving the goals of disability-inclusive education. By involving all stakeholders and creating a sense of ownership and commitment, educational institutions can successfully implement the offered framework.

7. Conclusions....continued...

The bottom-up approach used in this paper allows individual colleges/school or teaching and non-teaching units within educational institutions to develop vision, mission and objectives keeping in view the HEI vision, mission and objectives; moreover, they can developed and revise their own strategies. This approach promotes autonomy and customization of strategies, allowing for the specific needs of each unit to be addressed. By combining top-down direction from Vice Chancellors/presidents or heads of institutions with bottom-up collaboration, a collaborative and inclusive atmosphere can be developed.

In summary, this research paper provides a comprehensive framework for disability-inclusive education based on the principles and goals outlined by the SDGs. By adopting a bottom-up approach, integrating assistive technologies, promoting awareness and empathy, and involving all stakeholders, educational institutions can create an inclusive learning environment that ensures no one is left behind. The insights and findings of this research contribute to the body of knowledge on disability-inclusive education and serve as a valuable resource for educators, policymakers, and practitioners in the field of education.

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