AMERICAN UNIVERSITY OF BEIRUT

A COGNITIVE ANALYTICS MANAGEMENT FRAMEWORK FOR DEVELOPING AN INTERNATIONAL SOCIAL INCLUSION INDEX FOR ENHANCING THE SUSTAINABLE DEVELOPMENT OF EQUAL OPPORTUNITIES IN SOCIETY

by
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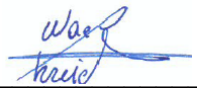

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ABSTRACT
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Social inclusion is regarded as a goal and process of enhancing the participation of all individuals, especially disadvantaged ones, in societal issues and decision-making processes. It has a positive and beneficial influence on several areas of a person's life, such as his/her economic participation and mental health. Hence, to identify its influence, it is important to accurately gauge the various parts that constitute this concept. After reviewing a large amount of literature that has tried to measure social inclusion, we discovered that no efforts had been made yet to develop a comprehensive social inclusion index that applies to all countries. Therefore, the main value of this research lies in building a gold social inclusion standard measure that can be used across different countries. The index consists of eight dimensions, including quality education, innovation and technology, governmental policies and laws, transportation and infrastructure, employment and organizations, poverty and economic, medical and health, and communities and culture. After fulfilling the main mission of this paper, we analyzed the data of 16 OECD countries to identify the top five countries as well as the least-performing country in terms of achieving an inclusive society. This task was accomplished using Shannon Entropy for weight determination, along with one of the MCDM methodologies, namely WASPAS, for countries ranking. Regarding ranking, results indicate that the top five countries that correctly employed the concept of social inclusion in their societies in the period of 2014 and 2015 are Norway, followed by Ireland, France, Spain, and Sweden. However, the least-performing nation is Latvia in both studied years. Additionally, concerning weight determination, findings show that the most impactful dimension on the development of inclusive society is the "transportation and infrastructure" dimension in 2014, and the "quality education" dimension in 2015. Also, they emphasize that enrolling children in school, accessing broadband connection, fighting corruption in the public sector, being employed, attaining high GDP growth, decreasing homicide rate, and managing non-made imperfections that may lead to injuries or mortalities (like unsafe roads) are vital elements for the creation of a more inclusive society.

Keywords: social inclusion, multi-criteria decision-making methods, Weighted Aggregated Sum Product Assessment, WASPAS, Shannon Entropy, OECD countries, comprehensive social inclusion index, weight determination, countries ranking.

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CHAPTER I

INTRODUCTION

In the United States, Black people, just due to their skin color, are still suffering from discrimination, lack of quality education, high poverty, high unemployment, and poor health, compared to White citizens (The editorial board, 2020). In China, Uighur Muslims, just because of their religion, are forcefully kept in camps where they are tortured and required to change their beliefs, and to eat and drink "El Moharram," such as pork and alcohol (The Logical Indian, 2019). Thus, even with globalization and the high level of development that the world has reached, many people still base the way they treat others on factors, such as gender, age, religion, race, language, and color. Although the 2nd article of the Universal Declaration of the Human Rights reinforced the concept of non-discrimination by any reason, including ethnicity, religion, and sex (UN General Assembly, 1948), facts indicate that this article is not fully applied and not guaranteed in the real world (Machado et al., 2019). In other words, many groups of people still experience exclusion in their society, and even in the world. Deepening the feeling of social exclusion in the community is seen as an extremely real threat to people's wellbeing, as excluded parties feel invisible and voiceless in society, lack access to jobs and services, have poor social participation, and suffer from poverty (Tangcharoensathien et al., 2018). For example, for youth, the sense of social exclusion can lead to alcoholism and drugs, suicide and criminal tracks, and feelings of being worthless (Rinta Tettey, 2019). Hence, social exclusion is an actual and rampant risk in society and must urgently be mitigated, if not completely removed.

Exclusion is not a new concept, as its discourse started in France in the 1960s (Hilary Silver, 2010). The French Secretary of State, René Lenoir, then developed this terminology in the 1970s by describing the states in which people feel excluded; including having a disability, suffering from mental health issues, experiencing poverty, and misusing substances (Hilary Silver, 2010). However, the discussion of social exclusion did not become popular until the 1900s economic crisis (H. Silver, 1994). In the 1980s', due to the consecutive political and social crises that blew up in France, the concept of social exclusion spread widely and became employed to more types of socially disadvantaged groups (H. Silver, 1994). As a result, detecting and tackling social exclusion became the main focus of social policy across Europe, the United Kingdom, and Australia in the 1980s, 1990s, and 2000s, respectively (Cordier et al., 2017).

Social exclusion can be defined "as a condition, or an outcome, where excluded individuals or groups are unable to participate fully in society because of their social identity or social location" (Briggs & Harris, 2017). In other words, the problem of exclusion happens when a person does not participate in the main activities and events in his/her community that he/she wants to participate in, for causes that go beyond his/her control. This notion is regarded as a multi-dimensional process that indicates the unequal access to resources, capabilities, and rights as well as the inequitable power relationships across four fields, including economic, political, social and cultural (Tangcharoensathien et al., 2018). Hence, it establishes and shows inequality that must be tackled and grasped in all its transcendence and magnitude (Mundet et al., 2017). As a result, facing social exclusion challenges and eliminating disparities in society play an

important role in reaching social sustainability (J. H. Wang & Wang, 2019), and are seen as vital aims of economic policy and social life.

The solution and treatment for the social exclusion problem is the inclusion of individuals into society, which is referred to as social inclusion (Spandler, 2007). In other words, social inclusion and social exclusion are two complex concepts (N. Wright & Stickley, 2013) that are considered "two sides of the same coin, with one being the problem and the other being the solution," (Zhu & Walker, 2019) and employed as opposite poles in policymaking (N. Wright & Stickley, 2013). Accordingly, most policies, countries, and researchers shifted their focus from examining social factors that lead to social exclusion to studying the social inclusion of excluded individuals. For instance, in 1997, in Britain, when the New Labor party was selected, social inclusion was its main social policy platform (Cordier et al., 2017). Also, between the years 2008 and 2013, Australia appointed a Social Inclusion Board to report regularly on whether the government is committed to promoting social inclusion (Australian Social Inclusion Board, 2012). The concept of social inclusion has gradually become a desirable and prime aim in most international organizations, including the United Nations (UN), the European Community, and the Organization for Economic Co-operation and Development (OECD) (Bresson & Labit, 2020). For example, during the period 1970-1990, the European Union supported the idea of social inclusion by funding local projects and research relating to it (Giarè et al., 2020). However, studying and discussing such concepts is mainly absent in developing countries, including China (Zhu & Walker, 2019) and other Asian nations(Tan et al., 2019).

Indeed, the 2030 agenda for sustainable development and the sustainable development goals significantly highlight the importance of social inclusion in the

development of individuals (Chinyama et al., 2018). As an example, goal 16 says "to promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels" (United Nations, 2012). Thus, social inclusion is deemed as a nationally desired objective (Lisha Ye & Yang, 2020), a key component of quality of life (Šiška et al., 2018), as well as an essential indicator for social sustainability (J. H. Wang & Wang, 2019). The development of an inclusive and discrimination-free society depends on the existence of basic values, including social justice, equity, human rights and freedoms, and equality, along with fundamental principles, such as the support of diversity and tolerance (Briggs & Harris, 2017). It is necessary to achieve such a society since social inclusion has positive and beneficial effects on several areas of a person's life, such as his/her economic participation and mental health (Constantinescu-Sharpe et al., 2017). For this purpose, nations and institutes must include marginalized and vulnerable parties into policy processes (Chinyama et al., 2018), and must change people's life position and attitudes (Rubtsova & Sidorov, 2017). However, such a goal and actions remain a challenge for almost all nations around the world (Chinyama et al., 2018).

The word "inclusion" comes from the Latin verb "includerer" and, in a broader sense, it "means to belong and to enclose" (Felder, 2018). Initially, social inclusion was considered as a concept that focused only on including individuals in economic activities (Ontario Women's Health Network, 2009). Its narrow focus has been utilized to diminish the dependence of people on social assistance provided by the government (Frisby & Ponic, 2013). In Canada, this term was originally attributed to the "disability movement and social accommodation notions," which embrace public policies aiming to decrease cultural, economic, and social discrepancies (Frisby & Ponic, 2013).

However, social inclusion cannot be linked to only one variable since it is a complex collection of many interconnected components (Cordier et al., 2017). Later, it has become a more pragmatic concept for the multidimensional social problems faced by the European Union and has extended beyond mere poverty to encompass aspects including housing, education, and health (Rogge & Self, 2019). Nevertheless, the definition of this concept is debatable (Cordier et al., 2017) since it is a complex (Frisby & Ponic, 2013) and a multifaced notion (Bresson & Labit, 2020) that "can mean different things to different people" (Frisby & Ponic, 2013). In other words, there is a lack of consensus between researchers about what defines social inclusion. For Collins (2003), social inclusion means assuring a minimum level of well-being for every person by rendering them material goods, like food and shelter, and non-material ones, including getting a job, achieving a certain level of education, as well as by enabling them to take part in political and cultural activities. Tua and Banerjee (2019) define this notion as the degree to which people are participating in the community and the level of interpersonal relationships experienced by people. On the other hand, Wang and Naveed (2019) interpret it as a process that aims to achieve equality and to close and narrow the gaps between the components that are considered the key sources of inequity such as labor segmentation, education, and productivity. Some scholars consider it a basic social justice concern (Young, 2002), whereas others regard it as a human rights issue (Hall et al., 2019). Even though there is a difference in scholars' opinions regarding the meaning of social inclusion, most of them place in their definition a greater emphasis on the idea of social participation (Briggs & Harris, 2017).

Although there is no universally agreed-upon definition for social inclusion (Çetin, 2019), this paper will follow the World Bank Group definition, which is "the

process of improving the terms for individuals and groups and enhancing the ability, opportunity, and dignity of people, disadvantaged on the basis of their identity, to take part in society." Therefore, social inclusion is considered as the aim and process of involving all people in societal issues and decision-making processes, for embracing better equality and tolerance. It is aimed to help disadvantaged people in terms of age, sex, disability, race, ethnicity, origin, economic or other attributes. Even though any person may be at risk of being socially excluded, some people with specific characteristics are at higher risk (United Nations, 2016). These characteristics are usually related to the identity of the group. According to Kabeer (2006), there are two types of identities: the first one refers to a group of people who have shared beliefs and values, act collectively, and confess their common membership to aspects such as ethnicity and religion; while the second one is a group of people who have shared characteristics and way of life, for example, undocumented migrants and street children. The members of the latter group of people may not know each other, but they share the same kind of discrimination (Kabeer, 2006).

Social inclusion is a multi-faceted notion (Rogge & Self, 2019) that is poorly measured (Merrells et al., 2019) since quantifying it is extremely complex (Rogge & Self, 2019). In fact, to be able to develop proofs and evaluate how social inclusion can affect the wellbeing of a person, it is vital to reliably gauge its components (Cordier et al., 2017). Such effective and accurate social inclusion measures are absent, and this absence can lead to difficulty in determining the groups that are at risk of social exclusion, identifying targets for interventions, and assessing the efficacy of those interventions (Filia et al., 2019).

Therefore, the main objective of this paper is to construct a standard measure of social inclusion that can be used worldwide. Using this gauge, we will analyze the data of 16 OECD countries by employing one of the multi-criteria decision-making (MCDM) methods, which is the weighted aggregated sum product assessment (WASPAS) technique, to determine countries' performance evaluation scores and track their progress throughout 2014 and 2015. Accordingly, this study will follow the cognitive analytics management processes that involve three procedures. The *cognitiv*e procedure involves the identifications of challenges, barriers, risks, and opportunities in the social inclusion domain and the sources of information and proposed shared value objectives to achieve. To accomplish this process an extensive literature review will be conducted for the identification of the various key performance indicators of social inclusion. The *analytics* procedure will utilize the appropriate methodologies – the WASPAS method – to achieve the desired objective. The *management* procedure provides guidelines and policy recommendations to decision-makers on how to improve the performance of their countries with reference to the best country to enhance the social inclusion concept worldwide (Osman et al., 2014, 2019).

The rest of the paper is structured into six sections: following the introduction, section 2 introduces a systematic review of the literature on the current measures of social inclusion from different perspectives to construct conceptual and quantitative frameworks; section 3 presents the methodology employed in this study, including the procedure used for finding the chosen indicators, the 16 OECD countries, and the WASPAS technique along with the Shannon Entropy (SE) method; section 4 highlights the data collection process of different indicators; section 5 explains the results obtained from the SE and WASPAS methods and suggests useful recommendations for the

studied countries; section 6 concludes with the research's implications, limitations, and suggestions for future research.

CHAPTER II

LITERATURE REVIEW

Promoting social inclusion has been regarded as a key policy and aim in most international organizations (Bresson & Labit, 2020). For instance, it is immersed in the United Nations Convention on the Rights of Persons with Disabilities (Soldatic et al., 2019), and it is one of the five priorities of the European Commission (Carrino, 2016). Nevertheless, there is no agreed-upon definition of social inclusion, as it is seen as a broad and multifaceted concept (Bresson & Labit, 2020; Cocquyt et al., 2017). It has been used and appeared across a wide array of domains (Bresson & Labit, 2020; Cocquyt et al., 2017), including housing, online education, and disability and migrant studies. Therefore, constructing a reliable social inclusion framework is essential to have a comprehensive definition and understanding of the concept's magnitude and transcendence across diverse fields. Accordingly, this literature provides two frameworks: one is conceptual (see Figure 1), and the other is quantitative.

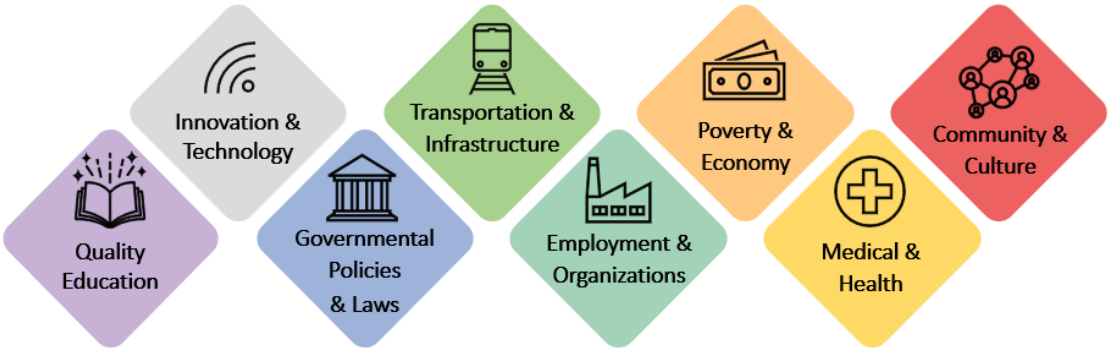


Figure 1 The eight dimensions of the social inclusion conceptual framework

A. Conceptual Framework

1. Quality Education

Education is a basic need, a human right (Edwards et al., 2019), a key determinant of well-being, and a critical contributor to having a better life (Eklund Karlsson et al., 2019). It plays a pivotal role in preventing long-term unemployment and promoting social inclusion (Di Cataldo & Rodríguez-Pose, 2017). Providing equitable access to quality education to all students without discrimination (Sucharita & Sujatha, 2019), and creating an educational environment that contains the values of "respect, equal opportunity, and social inclusion" (Lleixà & Nieva, 2020), are seen as powerful means for reducing the risk of students' social exclusion (Mathias et al., 2019).

The aim of every school is to enable all students to have equal and successful access to education since they are going to use their knowledge as a basis for their future participation in the wider society (Welch et al., 2018). As a result, the concept of social inclusion has become a crucial concept and policy in educational settings (Welch et al., 2018). These days, "inclusive education" is becoming more common and vital (Grigore et al., 2019), and is being used broadly and vaguely in academic literature as its definition is imprecise and differs from one person to another (King & Ryan, 2019). For Grigore et al. (2019), this notion means providing equal education for all children regardless of their "religion, ethnicity or the environmental conditions in which they live, and social or cultural background." According to Jovanović (2019), in a wide sense, it is "when children from different cultural and linguistic backgrounds are included in classrooms"; while, in a narrow sense, it is "when children with physical, cognitive, emotional, or behavioral disorders are included in school classrooms and when individual education plan is practiced, in order to help them to overcome the

difficulties" (Jovanović, 2019). However, an "inclusive education" system does not only mean accepting pupils of different types of abilities into mainstream education but also integrating them successfully into daily school life (King & Ryan, 2019), promoting social acceptance between peers and helping them create caring relationships (Juvonen et al., 2019). In other words, it refers to belonging (Koutsouris et al., 2020), equitable quality education, breaking any learning barriers (Schwab & Alnahdi, 2020), and fair participation to all students without discrimination, so that the marginalized and disadvantaged groups of students become equal members of society (Sucharita & Sujatha, 2019). Thus, inclusive education promotes social inclusion and is associated with social values, including equality, respect, acceptance, and recognition (Koutsouris et al., 2020).

Inclusive education could benefit students socially and academically (Hymel & Katz, 2019) as it leads to three key outcomes: social inclusion, academic achievements, and emotional well-being of students (Schwab & Alnahdi, 2020). For example, students with general learning difficulties who are included in the mainstream education system are observed to achieve a high level of social development (King & Ryan, 2019). Also, academic achievements and social inclusion are inextricably related, whereby if a student experiences social inclusion in school, his/her academic outcomes are more expected to improve (Benstead, 2019; Hymel & Katz, 2019; Juvonen et al., 2019). Thus, exclusion can impede academic success and lead to critical educational costs as pupils who experience it are more likely to drop out of school, be more frequently absent, and receive lower grades (Juvonen et al., 2019). A study revealed that the main contributor to educational poverty and exclusion is student dropouts (Balenzano et al.,

2019). Consequently, it is essential to understand the reasons behind the isolation and marginalization of students in the school system (Juvonen et al., 2019).

Even though "inclusive education" has become a "global practice" (Edwards et al., 2019), and a part of almost every country's policy (Sucharita & Sujatha, 2019), some groups of students still suffer from social exclusion (Edwards et al., 2019), especially pupils living in developing (Sucharita & Sujatha, 2019) and low-income (Tefera et al., 2018) countries, and having disabilities, like physical impairments (Edwards et al., 2019). Although there is an important need to apply this type of teaching in educational institutions (Koutsouris et al., 2020), the diversity of students - in terms of gender, cultural background, race, sexual orientation, physical looks, and, more importantly, capabilities and educational needs - makes it challenging for schools to foster social inclusion (Juvonen, 2019).

Classrooms are not only physical arenas but also crucial settings where students spend most of their time (Sucharita & Sujatha, 2019). Hence, it is necessary to develop a school environment that supports diverse learners by stimulating "peer acceptance, respect, cooperation, and interdependence", and opening up opportunities for pupils to work and interact with their peers to improve their social awareness (Hymel & Katz, 2019). There are many strategies and contributors that play a key role in facilitating the design of such an "inclusive learning environment" as described below.

First, one of the main contributors is teachers (Hymel & Katz, 2019; Juvonen et al., 2019). They can support marginalized pupils by allowing them to participate in social roles that can, in return, enable them to discover their strengths and capabilities, as well as enhance their social inclusion, by letting their peers change attitudes towards them (Hymel & Katz, 2019). For instance, physical education teachers can create and

implement “inclusive physical activities” or girls-only sports activities that are supported by the presence of female coaches to encourage girls to participate in, so that their social inclusion will increase (Ekholm et al., 2019; Lleixà & Nieva, 2020). Additionally, they can rearrange the students’ classroom seats in a way that one student with “externalizing behavior” is placed next to a “socially accepted” peer (van den Berg & Stoltz, 2018). This could be beneficial as it has the potential to stimulate “peer acceptance” (van den Berg & Stoltz, 2018). Also, teachers must offer help to students with disabilities without being attached to them as this will lead to the prevention of stigmatizing as well as the enhancement of their social inclusion (Landor & Perepa, 2017). Last of all, while designing their classroom environment, teachers can follow the guidelines of universal design for learning (UDL) that support the creation of socially and academically inclusive classrooms (Hymel & Katz, 2019). As a consequence of “inclusive education” and of increasing diversity in a classroom, teachers are facing new challenges in terms of creating a “supporting environment” for pupils with special education needs within the typical and normal classes (van den Berg & Stoltz, 2018) and of building “conditions that are safe and accepting for all students” (Juvonen et al., 2019). To illustrate, treating all pupils in similar ways is problematic for teachers since this will impede them from responding effectively to differences among students (Koutsouris et al., 2020). So, as students have different capacities and conditions, these differences create various requirements and needs. Consequently, it is the responsibility of teachers and schools to meet those requirements “in ways that are not stigmatizing” (Koutsouris et al., 2020). Thus, this is the challenge. However, training teachers on how to prepare such classes (Hymel & Katz, 2019) and increasing their awareness about

inclusive strategies (Juvonen et al., 2019) is key for overcoming such a challenge in the 21st century classrooms.

Second, the school curriculum acts as a vital facilitating factor for fostering social inclusion in schools. Such a curriculum must include courses and activities that facilitate the promotion of inclusion. To begin with, introducing a course about worldviews education, meaning educating students about religious and non-religious worldviews, is seen as an important mode for inclusive education (Halafoff et al., 2020; Lipiäinen et al., 2020). Such a course includes three different approaches, which are the "development of student's own worldview", "knowledge about other's worldview", and "acceptance and respect towards different worldviews" (Lipiäinen et al., 2020). Consequently, this type of courses will increase religious literacy, reduce negative stereotypes and discrimination against religious minorities (Halafoff et al., 2020), and educate pupils to live peacefully and harmoniously in a society full of diversity, and to have "positive attitudes" towards "religious minorities" (Lipiäinen et al., 2020). Other courses that pave the ways towards an inclusive school system could be about languages (Edmondson & Howe, 2019; Jessner & Mayr-Keiler, 2017), such as French, Spanish, Portuguese (Jessner & Mayr-Keiler, 2017), and communication (Edmondson & Howe, 2019; Edwards et al., 2019) and social (Landor & Perepa, 2017) skills. Additionally, participating in some activities, including sports (Block & Gibbs, 2017; Ekholm et al., 2019; Grigore et al., 2019; Louw et al., 2020), art and culture activities (Mundet et al., 2017; Marsh, 2019; Robinson et al., 2019; Tefera et al., 2018; Welch et al., 2018), and joining clubs (Juvonen et al., 2019), has the potential to pave the way towards better school experience (Siperstein et al., 2019) and improve social interactions between students (Juvonen et al., 2019; Marsh, 2019; Robinson et al., 2019;

Tefera et al., 2018). It does the latter by opening opportunities to communicate and build friendships with their dissimilar colleagues within schools (Juvonen et al., 2019), and, most importantly, to achieve a more inclusive school culture (Juvonen et al., 2019; Marsh, 2019; Mundet et al., 2017; Robinson et al., 2019; Siperstein et al., 2019; Welch et al., 2018). For example, a recent study documents that the participation in Special Olympics Unified Champion Schools has a positive impact on improving social interactions, promoting acceptance, and changing the attitude and the perception of high school pupils towards their colleagues with intellectual disability (Siperstein et al., 2019). However, those activities may not promote social inclusion if various groups of pupils do not have equal access to register and participate in them, especially students with low-income, of different ethnic backgrounds, with special needs, and overweight pupils (Juvonen et al., 2019).

Third, lack of peer awareness could result in reinforcing the stereotypes about pupils with different types of disabilities (Landor & Perepa, 2017). Thus, raising awareness (Landor & Perepa, 2017) and educating students about various kinds of disabilities (Edwards et al., 2019) can help in preventing bullying and isolation of students with incapacities (Landor & Perepa, 2017). Fourth, schools that are equipped with the adequate resources needed to support students with disabilities (Landor & Perepa, 2017; Tefera et al., 2018) are perceived as having more inclusive environment as well as the ability to ensure positive social experiences for students (Landor & Perepa, 2017). Fifth, two types of education act as a contributor to students' self-led social inclusion and a catalyst for empowering them, including work integrated-learning - "the combination of formal and informal education"- (Eklund Karlsson et al., 2019) and technical and vocational education and training (Ali Asadullah, 2019). A study

demonstrates that increasing spending on the latter type will have a positive impact on the indicators of social inclusion, including employment, wages, poverty ratings, and eventually, ensure a high level of social inclusion in the country (Ali Asadullah, 2019).

In concrete terms, designing a proactive and effective school policy that encompasses the factors and strategies above-mentioned is not enough. The implementation of such a policy should be monitored via regulatory bodies, such as quality assurance regulators, organization boards, community stakeholders, or partners, to influence the direction that schools should take in terms of reaching inclusion.

2. Innovation & Technology

The whole world is linked through digital devices. So, any person who stays disconnected from digital technologies, such as mobile devices and the Internet of Things, misses valuable and vital opportunities for development (Rico et al., 2019). Digitalization is regarded as a salient factor that has the potential of fostering the sense of social inclusion for all people, especially the marginalized ones, by supporting them in multiple aspects of their lives (Cocquyt et al., 2017; K. W. Fisher et al., 2020; Fogli et al., 2020; ten Bensel & Sample, 2019). In other words, the level of social inclusion depends on the use of information and communication technology (ICT), including computers, laptops, Internet, and mobile phones, as ICT increases the person's ability to take part in society regardless of his/her status (Ramsten et al., 2019).

Although young people with disabilities receive support from various services to facilitate their inclusion in the community, such as disability support programs, they are still feeling isolated, excluded, and having few friendships (Merrells et al., 2019). Digital inclusion represents a way to achieve social inclusion for this group of people

(Ferri & Favalli, 2018; Louw et al., 2020). For instance, many recent studies demonstrate that digital platforms (Kim & Zhu, 2020; Merrells et al., 2019), including social media applications, assistive technologies (Mji & Edusei, 2019), and ICT (Ramsten et al., 2019) play an essential role in terms of building and maintaining more meaningful friendships (Kim & Zhu, 2020; Merrells et al., 2019), enabling them to access employment, education, and earn independent living (Mji & Edusei, 2019), improving their well-being (Kim & Zhu, 2020), increasing their sense of having a normal life (Ramsten et al., 2019), and enhancing their social participation and inclusion in all domains in life (Kim & Zhu, 2020; Mji & Edusei, 2019; Ramsten et al., 2019).

Even though being a member of the technological society is a key to be socially included, sometimes ICT can act as a mean for social exclusion for people with disabilities, as social exposure could expose them to various risks, such as downloading viruses unintentionally, that are unmanageable (Ramsten et al., 2019) to them since they have poor technological guidance (M. H. Fisher et al., 2020). Additionally, some barriers impede them from accessing online platforms, including safeguarding concerns, having little e-literacy, poor communication skills (Merrells et al., 2019), and web accessibility issues (Ferri & Favalli, 2018).

Moreover, older adults are one of the most vulnerable social groups that are at a high risk of social exclusion (Goumopoulos et al., 2017). As an example, during a pandemic crisis, such as Covid19, older adults are more likely to suffer from social isolation and exclusion due to the “Stay At Home” order (Xie et al., 2020). Digital technologies have the potential to mitigate their risk of exclusion. For instance, designing an online application or building informatics tools that help older adults

perform a continuous contribution to society and that foster their social interaction with others, such as intelligent voice assistants, can be beneficial for reducing such a risk (Goumopoulos et al., 2017; Kurian et al., 2019; Xie et al., 2020). In fact, older adults' access to and acquiring of digital media has grown (Ezeh & Mboso, 2019). Nevertheless, most of them do not take active roles in digital activities because they lack skills and digital literacy (Ezeh & Mboso, 2019). Accordingly, government, young family members, and for-profit and nonprofit organizations must support, train and initiate innovative solutions for less e-literate senior citizens to facilitate their access to and usage of information technology (Ezeh & Mboso, 2019; Goumopoulos et al., 2017; Xie et al., 2020).

In the context of education, the use of technology is regarded as a potent tool to promote more equitable learning opportunities among students regardless of their living situations (Meri-Yilan, 2020) or their vulnerability conditions (Cocquyt et al., 2017). In other words, online university education is known for its inclusiveness and equitability since it provides easy access to life-long learning opportunities for all students (Jarillo et al., 2019). For example, students with disabilities find this type of education as a more accessible learning experience since it removes all mobility barriers and requires all assignments and activities to be submitted online using a discussion forum, email, or any other online media (Jarillo et al., 2019). Similarly, a study reveals that online and blended learning environments resulted in more benefits in terms of social inclusion for non-native online learners compared to native ones (Cocquyt et al., 2017). Also, internet-based online courses, such as Massive Open Online Courses (MOOC), provide greater access to knowledge and education for all learners worldwide, and, eventually, boost the digital, educational, and social inclusion for all disadvantaged pupils (Meri-

Yilan, 2020). Although online education has a significant impact in favor of sustainable development goals (Jarillo et al., 2019), some factors may lead to the exclusion of students in a digitalized classroom learning environment, including the language of the children, technology, knowledge, or interests, the engagement and relationship of children, the knowledge and skills of teachers, the interest and knowledge of parents, and the interest of principals and schools (Iivari et al., 2018).

In short, digitalization does not promote social inclusion only for the groups mentioned above, but also for other marginalized ones, including migrants (Lindström & Hashemi, 2019; Rico et al., 2019) and people living in rural areas (L Ye & Yang, 2020). At last, training the groups who are illiterate in ICT is essential to bridge the digital divide and mitigate the risk of social exclusion (Rico et al., 2019).

3. Governmental Policies & Laws

In general, to achieve inclusion and ensure the full participation of citizens in political life, there must be fair political opportunities as well as equal distribution of agency, power, and voice between citizens in a country (Draper, 2019). Also, all citizens must have the ability to access public services, such as legal representation and social protection (Hall et al., 2019).

Indeed, the quality of government plays a pivotal role in preventing or deepening the exclusion of its citizens. In other words, a country with low corruption, an accountable government, and an efficient rule of law can initiate actions and measurements to prevent social exclusion as well as long-term unemployment of their people (Di Cataldo & Rodríguez-Pose, 2017; Tangcharoensathien et al., 2018). Such initiatives include passing laws and regulations to protect and give Lesbian, Gay,

Bisexual, and Transgender (LGBT) people the right to be treated as equals to their Heterosexual counterparts (Bansal & John, 2020). Additionally, e-government is regarded as a tool to foster the participation of citizens within the government as it allows them to keep track of decisions being made by their representatives (Cunningham, 2019). At last, democracy is a potent mean to achieve a more inclusive nation. For instance, democratic countries create and fund places, including public libraries and museums, law courts for justice, and emergency departments, that are accessible to all citizens without discrimination, meet their needs, and positively contribute to the functioning of communities (A. L. Wright et al., 2020). Through such places, the government seeks to boost community belonging and achieve values of social inclusion by enabling its citizens to have universal access to services for essential human needs (A. L. Wright et al., 2020).

4. Transportation & Infrastructure

There is a universal consensus on the importance of cities to involve universal accessibility and to include people with disabilities in their planning process (Orellana et al., 2020) as accessibility is considered an essential component to guarantee equal access to services and goods (O. H. da Silva et al., 2020). Accordingly, transit accessibility plays a notable role in improving the rate of participation and the level of social inclusion of people (Allen & Farber, 2020), especially those with disabilities (Fernandes et al., 2018). For example, developing transportation infrastructure for isolated region leads to its integration with the outside world and the promotion of the social inclusion of its citizens by facilitating their physical mobility, enabling them to

access opportunities, such as employment and education, and increasing their knowledge of other surrounding cultures and regions (Hussain et al., 2017).

Some transport plans strive to minimize transport-related social exclusion by introducing new transporter services (Lucas et al., 2016). However, individuals experiencing social exclusion are unable to afford the full cost of these new transport facilities (Lucas et al., 2016). Thus, before designing transit policies at the neighborhood or municipality level, the planners must first identify socially excluded people as well as their needs so that the country can deliver the transport amenities in an accessible way, interact with society, and increase their social inclusion (Battista & Manaugh, 2019). Some of the groups that are more likely to experience social exclusion due to lack of mobility opportunities include citizens with disabilities (Fernandes et al., 2018) and people not owning a car (Allen & Farber, 2020).

5. Employment & Organizations

Employment is deemed as a key determinant of wellbeing, a critical element for having a better life (Eklund Karlsson et al., 2019), and a vital factor for increasing the social inclusion of a person (Apasieva et al., 2020; Block & Gibbs, 2017; Gustafsson et al., 2018); as it enables individuals to build and extend their relationships with others in the workplace and society (Briggs & Harris, 2017) and to have a livelihood (Ali Asadullah, 2019). In concrete terms, a high number of unemployed indicates a higher number of excluded individuals, as these people are unable to contribute to their community due to their low level of income and productivity (Ali Asadullah, 2019).

A company with a more inclusive and diverse recruitment approach has higher satisfaction of employees, superior capabilities to attract talent, better decision-making,

and improved customer orientation (Heath & Babu, 2017). For instance, in the context of people with disabilities, the recruitment decision of managers is usually influenced by disability stereotypes rather than an objective assessment of the candidate's capabilities (Heath & Babu, 2017). However, educating and making managers aware of the abilities of technology in assisting this group of people in the workplace play a notable role in decreasing the negative stereotypes held by managers and make them perceive individuals with disabilities as more functionally independent workers (Heath & Babu, 2017). As a result, the recruitment process will be more inclusive. Additionally, some strategies must be followed by recruiters to make employees with disabilities sense social belonging and feel valued in the workplace (Gustafsson et al., 2018). First, develop practices and policies that create an inclusive workplace environment, such as providing natural support (Gustafsson et al., 2018; Meacham et al., 2017) and training (Meacham et al., 2017), and implementing programs, such as "Operational program Employment and social inclusion" (Kováčik & Imrovič, 2019), and peer mentoring programs (M. H. Fisher et al., 2020). Second, provide them with reasonable working conditions, including a high salary, justice and fairness, and safe work practices (Gustafsson et al., 2018). Finally, disclose at early stages their disabilities in the workplace so that their co-workers can recognize and accept them as colleagues beyond their disabilities (Gustafsson et al., 2018).

In general, for a company to be perceived as an inclusive organization and to promote social inclusion to all its employees in the workplace, it must employ some inclusive tools and follow some steps. To begin with, employers must assign reasonable work time for each employee so that the latter can be productive, enjoy his/her rest time, and have a sense of social inclusion (Y. Chen et al., 2020). For instance, when

employees work long hours, their work and life balance will be harmed, their health and well-being will be damaged, and their sense of social inclusion will be decreased (Y. Chen et al., 2020). Also, the company's marketing strategy must be multi-ethnic marketing communication as it enhances customers' well-being and inclusion, ensures equal representation of diverse ethnic clients, and increases marketing effectiveness (Licsandru & Cui, 2018). Furthermore, the organization must create a positive and diverse workplace climate by including diversity in its mission statement, performing awareness sessions about diversity in the workplace, and assigning group-work to workers from different backgrounds or gender (Jansen et al., 2017). Last, the development and implementation of competence recognition systems, both formal and non-formal qualifications, that are friendly to all users, including migrants (Lodigiani & Sarli, 2017), is regarded as a powerful tool for accelerating and facilitating the process of inclusion of any group of the vulnerable population into the labor market (Lodigiani & Sarli, 2017).

In 1970, the problems of social exclusion and unemployment led to the creation of social enterprises, also known as social entrepreneurship, which aim not only to maximize profit but also to solve social problems (Machado et al., 2019). Such type of organization is positively linked to social inclusion (Apasieva et al., 2020; Kucerova, 2018). It promotes inclusion by enhancing the quality of life, minimizing social vulnerability, creating job opportunities, achieving income growth, and being beneficial economically, socially, and environmentally for the city where it is established (Apasieva et al., 2020; Machado et al., 2019). Accordingly, the education system must develop an optimal learning environment that seeks to shape students' way of thinking towards more entrepreneurial intentions (Apasieva et al., 2020). Another type of work

that can pave the way towards social inclusion is social farming (Husák & Hudečková, 2018), which is the engagement of individuals in long or short-term farming activities, including animal care and food processing (Borgi et al., 2019). Social farming has the potential to promote the social inclusion of disadvantaged groups by boosting their social and work skills, opening valuable opportunities, such as employment, and improving their integration into the labor market and community (Borgi et al., 2020). It mainly targets groups suffering from social exclusion, including long-term unemployed (Borgi et al., 2019), people with disabilities (Marta Borgi et al., 2019; Husák & Hudečková, 2018), and citizens of rural areas (Husák & Hudečková, 2018).

Finally, authorities must take actions and implement plans to increase the inclusion in the labor market and society, not only of the unemployed but also of informal workers, such as waste pickers, that do not have access to social benefits, including pensions and health and unemployment insurance (Marello & Helwege, 2018). For example, they can organize waste pickers into cooperatives (C. L. da Silva & Bolson, 2018) or include them in the municipal collection system (Marello & Helwege, 2018).

6. Medical & Health

When exploring social inclusion, one of its most crucial facets is health care systems (Briggs & Harris, 2017). The health sector is responsible for protecting the health of sidelined and vulnerable groups in society (Tangcharoensathien et al., 2018). Nonetheless, there are still huge disparities in terms of health and well-being, especially when it comes to older people (Precupetu et al., 2019), and LGBT (Bansal & John, 2020). This inequality, which can lead to social exclusion (Lopes et al., 2019), is the

result of the unfair distribution of social and medical resources and goods between citizens (Briggs & Harris, 2017). As an example, hospitals represent a crucial part of health-care systems, but its presence at fixed locations can result in inequality in terms of their access (Lopes et al., 2019). Likewise, individuals who are living in poor economic and social conditions are at a bigger risk of experiencing poor health status compared to those living in better circumstances (Briggs & Harris, 2017).

There are many solutions to overcome such inequality. First of all, there must be an appropriate distribution of health amenities over the country to improve its accessibility by individuals that are most vulnerable (Lopes et al., 2019). Second, universal health coverage and other health-related means are regarded as key policies in the sustainable development goals to achieve equitable distribution of health among citizens, and to support the social inclusion of marginalized groups (Tangcharoensathien et al., 2018). Third, inventing a health application for older adults that would enable them to have physical face-to-face meetings with their doctors, and provide them with medical information, is an important way to enhance the quality and efficiency of medical services provided to them and to embrace their social inclusion (Kurian et al., 2019). Finally, in the context of people with disabilities, social inclusion must be part of the professional role of group home staff (Overmars-Marx et al., 2017). In other words, service providers must train home staff members to shift their role from care to support, and the educational institutions must adjust their curriculum by including and developing modules that focus on social inclusion(Overmars-Marx et al., 2017). Evidently, to implement these policies and initiatives and to address the health needs of excluded groups requires the presence of an accountable and responsive

government that is willing to increase its investment in enhancing primary health care to embrace equitable access to all its citizens (Tangcharoensathien et al., 2018).

7. Poverty & Economy

Poverty has a direct effect on the rate of participation of a person, whereby reducing poverty and increasing an individual's level of income are seen as powerful contributors to fostering social inclusion (Allen & Farber, 2020; C. Wang & Naveed, 2019; Welch et al., 2018). For decades, many international organizations have worked on reducing poverty and improving prosperity in the world. Nevertheless, there is still a large part of the developing countries' population that is poor and struggles to reach a minimum standard of living due to the presence of extreme income inequality that is regarded as a potent threat to economic growth (Omar & Inaba, 2020). Accordingly, many groups of the population are involuntarily excluded from the community as well as from the financial systems (Omar & Inaba, 2020).

There are many key solutions that can be implemented by any country to fight poverty, and eventually, achieve a high level of social inclusion. The first one is financial inclusion. To elaborate, it plays an important role in curtailing poverty and income inequality through creating job opportunities, granting marginalized and disadvantaged people greater access to advanced financial opportunities, especially formal financial services, and achieving an inclusive and equitable economic growth (Omar & Inaba, 2020). The second one is the social economy that encompasses three key sectors: the community sector, the voluntary sector, and the social enterprise sector (Kucerova, 2018). In fact, a social economy respects the right of businesses to generate profit, but this profit should be used to help marginalized groups to establish social

inclusion (Kucerova, 2018). For instance, social enterprises, such as foundations, which are considered the main form of companies in the social economy, help vulnerable individuals by offering them the necessary education, support, personal services - including care for elders and children -, and local development, such as the development of their remote villages (Kucerova, 2018). Another solution is the pension system that is regarded as a crucial social policy used by developed countries to reduce poverty and boost the integration of older people in society (Zhu & Walker, 2019). Finally, microfinance and microenterprise are feasible means for promoting economic inclusion, especially for marginalized women (Kemp & Berkovitch, 2020).

In short, the inclusion of all population groups, especially marginalized ones, in society and economy will benefit the country by boosting shared prosperity and economic development (Badgett et al., 2019)

8. Community & Culture

Living in an inclusive community that is free from discriminatory practices will positively impact the well-being of an individual as well as their social and economic status (Briggs & Harris, 2017). As a result, the person's participation rate and sense of social inclusion in his community will be improved (Briggs & Harris, 2017). Nevertheless, some groups of the world's population still face discrimination and inequalities in terms of food (Mura et al., 2019), education (Juvonen et al., 2019; Meri-Yilan, 2020; Tefera et al., 2018), and health (M Borgi et al., 2020). As an example, in Taiwan, indigenous people, who are ethnic minority citizens, are suffering from discrimination, and marginalization compared to the majority in the country (J. H. Wang & Wang, 2019).

To build a community with a more inclusive and discrimination-free culture, many actions and initiatives can be taken. First of all, language proficiency is regarded as a cultural asset (Gingrich & Lightman, 2015) that must be acquired for a person to feel more included in society. For instance, most of the refugees face many social obstacles when starting a new life in a foreign region (Çetin, 2019), including the challenge of adapting to a new culture and a different type of society (Beißert et al., 2020; Çetin, 2019), the difficulty of communicating and integrating with citizens, which enhance the risk of social exclusion (Beißert et al., 2020). Accordingly, knowing and being able to speak the language of the host country is considered a key factor for a migrant to feel included in the new community (Beißert et al., 2020; Çetin, 2019; Gustafson & Laksfoss Cardozo, 2017). Thus, the authorities of the host society must support migrants in various ways (Lindström & Hashemi, 2019), such as providing them with educational opportunities to learn the language (Beißert et al., 2020), and with assistance and information to help them exercise their rights and fulfill their obligations (Gustafson & Laksfoss Cardozo, 2017). Second, community-based activities, that is designed for all types of citizens, serve as useful interventions for vulnerable people in terms of facilitating their social inclusion (Kwan, 2020; Mathias et al., 2019), enabling them to build new friendships, improving their well-being and mental health (Mathias et al., 2019), and making them feel more valuable in society (Kruithof et al., 2020). Those activities include the human library approach (Kwan, 2020), voluntary work (Kruithof et al., 2020), special theatre (Rubtsova & Sidorov, 2017), sports (Almeida et al., 2019; Block & Gibbs, 2017; Bustad & Andrews, 2017; Corthouts et al., 2020; Dukic et al., 2017; Montesano & Mazzeo, 2019; Morgan et al., 2019; Morgan & Parker, 2017; Overmars-Marx et al., 2019; Van Der Veken et al.,

2020), awareness sessions about disabilities, such as social point program (Mazzi et al., 2018), art-based workshops (Boydell et al., 2017; Marsh, 2019; Ronzi et al., 2018; Saavedra et al., 2018; Skinner et al., 2018; C. Wilson et al., 2017), religious ceremonies and practices (Çetin, 2019; Hall et al., 2019), and music (Marsh, 2019; Ronzi et al., 2018; Skinner et al., 2018). Third, building public places, such as shopping centers, public parks (Overmars-Marx et al., 2019), community gardens (Mmako et al., 2019), and men's sheds (N. J. Wilson et al., 2019), that can lead to the occurrence of convivial encounters, the interaction between individuals who are strangers to each other, is seen as a significant contributor to the inclusion of vulnerable groups, especially individuals with disabilities (Bigby & Wiesel, 2019; Bredewold et al., 2020). For instance, a study highlights the importance of having dogs in those public spaces, especially for people with disabilities, as it will increase their self-confidence and break down social norms about not speaking to strangers (Bould et al., 2018). Finally, accessing and living in a suitable house in the community where a person lives is regarded as one of the main contributors to social inclusion (Block & Gibbs, 2017; Correa-Montoya, 2018; Maloutas et al., 2020). Accordingly, initiating collaborative housing projects is essential since one of their main objectives is promoting social inclusion (Bresson & Labit, 2020).

In short, all these aforementioned factors and actions must be available in each community, so that any person can build and maintain valuable social contacts and feel public familiarity which are two important facets leading to greater social inclusion (Overmars-Marx et al., 2019).

B. Quantitative Framework

Over the past two decades, scholars have started quantifying social inclusion/exclusion (Gingrich & Lightman, 2015). As a result, most of the existing studies on social inclusion/exclusion are conceptual in nature (Gingrich & Lightman, 2015). An extensive review of the existing quantitative literature on social inclusion shows that there is no commonly acknowledged method of measuring social inclusion, since "this concept is multidimensional and context-dependent" (United Nations, 2016). In other words, "translating it into a limited set of measurable indicators applicable across countries constitutes an imposing challenge" (United Nations, 2016). It is worth mentioning that efforts to create an agreed-upon social inclusion index are still in the developing stage (World Bank, 2013). However, there are a few initiatives that broadly address this concept, including better life index, multidimensional poverty index, human development index, and social progress index (World Bank, 2013).

Indeed, the general aim of the 17 sustainable development goals (SDG) of the United Nations is to free all countries from poverty and hunger, and ensure that all people have healthy lives and access to education, modern energy, and information (United Nations, 2016). Each one of those SDGs has a set of indicators that facilitate the process of measuring and monitoring its application in any country (United Nations, 2016). When these targets are "effectively translated into action and properly benchmarked," they represent critical components of social inclusion (United Nations, 2016). For instance, the economic, political, and social inclusion of all society's members is endorsed and emphasized by the United Nations in the SDG 10, target 2 (United Nations, 2016); i.e., "by 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin,

religion, economic or other status" (*Goal 10 Targets | UNDP*, n.d.). However, social inclusion includes a broader set of concerns than those reflected in the SDGs (United Nations, 2016).

There are several methods of perceiving and quantifying inclusion (Martinez Virto & Perez Eransus, 2020) that were used by prior research. Early attempts to measure social inclusion relied heavily on well-used and familiar measurements, such as the four sub-indicators from Eurostat definition (e.g., C. Wang & Naveed, 2019), the At Risk of Poverty or Social Exclusion rate (AROPE) (e.g., Rogge & Self, 2019), social inclusion dimension of the City Prosperity Index (Arbab, 2017; Wijaya, 2019). Additionally, a few studies focused solely on the financial aspect of the social inclusion phenomenon, as they considered financial indicators, such as poverty and unemployment rate, as the best representable measures for this concept (e.g., Ali Asadullah, 2019; Kováčik & Imrovič, 2019). Indeed, those indicators are crucial to examine the level of social inclusion of a country. That is the case, in the instance of poverty and its robust association with social exclusion (United Nations, 2016). However, individuals' social inclusion is not only the result of being employed or having money, but also of other important factors, such as being educated (McIntosh et al., 2019), having an accountable government (Tangcharoensathien et al., 2018), and accessing the internet (Cunningham, 2019). As a result, several researchers tried to measure social inclusion in terms of all its magnitudes and dimensions (e.g., Martinez Virto & Perez Eransus, 2020; Tua & Banerjee, 2019; J. H. Wang & Wang, 2019). Also, some studies focus on measuring social inclusion by using its outcomes as indicators, including social participation, social connectedness (Cocquyt et al., 2017), positive peer

interaction, peer acceptance, friendship (Edwards et al., 2019), social support, resilience, sense of community, and satisfaction with life (Millán-Franco et al., 2019).

Furthermore, on the one hand, some scholars designed a questionnaire to gauge social inclusion. For instance, Filia et al. (2019) have built a reliable measurement for social inclusion that is called the Filia Social Inclusion Measure (F-SIM). This measure is tailored for individuals with mental illness and includes 126 different items, most of which were measured on a dichotomous scale with yes/no answers (Filia et al., 2019). On the other hand, other researchers used existing validated and reliable questionnaires, including the Perception of Inclusion Questionnaire (Jocelyn Fawcett et al., 2019; Schwab & Alnahdi, 2020), the Mini-SCOPE (Tan et al., 2019), The Community Integration Measure (Shioda et al., 2017), the Social Inclusion Questionnaire User Experience (Killaspy et al., 2014; Mezey et al., 2020), and the Social Inclusion Scale (Çetin, 2019; Ilgaz et al., 2019).

As an example, in a study aimed to analyze the disparities between youth with serious mental illness and their normal peers in the community in terms of social inclusion, Gardner et al. (2019) used some relevant psychometric variables from Filia Social Inclusion Measure. Another example, Van Bergen et al. (2019) developed the Social Exclusion Index for Health Surveys that consists of 17 items that were derived from different validated questionnaires, such as the SCP Social Exclusion Index.

Moreover, some researchers built and used analytical frameworks to assess and quantify social inclusion. For example, in a study aimed to analyze the variation in the level of social inclusion between rural, regional, peri-urban and metropolitan areas, McIntosh et al. (2019) employed the Australian Social Inclusion Board (ASIB) framework that is established in 2008. The framework encompasses 25 indicators that

are categorized into 11 domains (McIntosh et al., 2019). As another example, Battista and Manaugh (2019) examined the level of social inclusion in Canadian pedestrian plans by building social inclusion framework which consists of many indicators, such as retrofitting sidewalks, improving sidewalk snow removal, and reconciling schools with walkable spaces. Finally, some efforts succeeded in creating an index that is tailored for a specific continent, such as the Americas Quarterly's 2016 social inclusion index (Americas Society, 2016).

In general, it is commonly agreed that social inclusion is multidimensional, dynamic, relative to a given society, and can be addressed at various levels, including individual, local community, government, local employer (Huxley et al., 2012). In this paper, social inclusion is examined at the country level by addressing various domains of life, such as quality education and innovation and technology. Thus, frameworks, questionnaires, and measurements that are subjective or designed for a specific vulnerable group (e.g., Battista & Manaugh, 2019; Du Mont et al., 2020) were excluded from the indicators collection process.

C. Objective

Even though there is consensus on the advantages of promoting social inclusion in societies (Constantinescu-Sharpe et al., 2017) and an increasing understanding of this concept (Filia et al., 2019), a common approach of measurement is lacking (Constantinescu-Sharpe et al., 2017). Social inclusion is measured using different techniques across various domains, including health, education, and economics (Constantinescu-Sharpe et al., 2017). To the best of our knowledge, there is no comprehensive social inclusion index that applies to all countries. Hence, the evidence

presented in this literature suggests that analytical efforts on what constitutes inclusion are still needed (United Nations, 2016). Drawing on prior works, this paper aims to make a unique contribution by building a gold standard measure of social inclusion that can be used across countries. Table 1 summarizes all the current social inclusion indicators that are used by the examined prior studies in this systematic review of the literature.

Sub-dimension	Indicator (s)	Reference (s)	N*
Quality Education**			
Technical and vocational education and training (TVET)	Percentage of public spending on short-term tertiary education	(Ali Asadullah, 2019)	1
Human capital	Enrollment in primary school	(Americas, 2016; Arbab, 2017; Aslam et al., 2020; Biltagy & Nassar, 2020; Di Cataldo & Rodríguez-Pose, 2017; McIntosh et al., 2019; World Bank, 2013)	7
	Enrollment in secondary school by gender		
	Enrollment in higher education by gender		
	Enrollment in non-formal education		
Literacy and Numeracy	Adult literacy rate	(Americas, 2016; Martinez Virto & Perez Eransus, 2020; McIntosh et al., 2019)	3
	Adult numeracy rate		
Dropout from school	School drop-out rate	(Balenzano et al., 2019; Carrino, 2016; Lefebvre et al., 2010; Martinez Virto & Perez Eransus, 2020; Omar & Inaba, 2020; Tua & Banerjee, 2019)	6
	Children out of school		
Innovation & Technology			
Access to technology and internet (information and communication)	Number of internet users per capita	(Aslam et al., 2020; Biltagy & Nassar, 2020; Cunningham, 2019; Ferri & Favalli, 2018; K. W. Fisher et al., 2020; McIntosh et al., 2019; Omar & Inaba, 2020; ten Bensel & Sample, 2019)	9
	Number of mobile phone users per capita		
	Number of broadband connections		
Governmental Policies & Laws			
Democracy	Political Rights	(Americas, 2016; Arbab, 2017; Aslam et al., 2020; Biltagy & Nassar, 2020; Cunningham, 2019; Draper, 2019; Wright et al., 2020; World Bank, 2013)	8
	Civil Rights		
	Equal distribution of agency, power, and voice between citizens		
	Voter turnout		
	Women in local government		
Quality of government institutions	Government responsiveness (efficacy) by gender and race	(Americas, 2016; Aslam et al., 2020; Di Cataldo & Rodríguez-Pose, 2017; Tangcharoensathien et al., 2018)	5
	Corruption		
	Government stability		
E-government		(Cunningham, 2019)	1
Transportation & Infrastructure			
Access to public or private transport	Access transportation for people with disability	(Allen & Farber, 2020; Biltagy & Nassar, 2020; Correa-Montoya, 2018; McIntosh et al., 2019; Mji & Edusei, 2019; Stanley & Stanley, 2017)	6
	Car ownership		
Investment in transport infrastructure		(Hussain et al., 2017; Stanley & Stanley, 2017)	2

Employment & Organizations			
Access to employment	Employment /or unemployment rate	(Ali Asadullah, 2019; Americas, 2016; Apasieva et al., 2020; Biltagy & Nassar, 2020; Block & Gibbs, 2017; Briggs & Harris, 2017; Carrino, 2016; Cefalo et al., 2020; Di Cataldo & Rodríguez-Pose, 2017; Eklund Karlsson et al., 2019; Kováčik & Imrovič, 2019; Lefebvre et al., 2010; Martinez Virto & Perez Eransus, 2020; McIntosh et al., 2019; Rogge & Self, 2019; Wijaya, 2019; World Bank, 2013)	17
Work Conditions – Decent Work	level of income Reasonable work time Work risk	(Ali Asadullah, 2019; Allen & Farber, 2020; Y. Chen et al., 2020; Gingrich & Lightman, 2015; C. Wang & Naveed, 2019)	5
Social farming		(M Borgi et al., 2020; Marta Borgi et al., 2019; Giarè et al., 2020; Husák & Hudečková, 2018)	4
Social entrepreneurship	The Global Entrepreneurship Index	(Apasieva et al., 2020; Kucerova, 2018; Machado et al., 2019)	3
Discriminatory practice	Gender equality – Women in workplace Hiring people with disability	(Arbab, 2017; Heath & Babu, 2017; Jansen et al., 2017; Meacham et al., 2017; World Bank, 2013)	5
Poverty & Economy			
Poverty	Poverty rate	(Ali Asadullah, 2019; Americas, 2016; Carrino, 2016; Kováčik & Imrovič, 2019; Lefebvre et al., 2010; Martinez Virto & Perez Eransus, 2020; Rogge & Self, 2019; United Nations, 2016; Van Bergen et al., 2019; C. Wang & Naveed, 2019; Welch et al., 2018; Wijaya, 2019; Zhu & Walker, 2019)	13
Gross domestic product (GDP)	GDP growth GDP spent on social program	(Americas, 2016; Aslam et al., 2020; World Bank, 2013)	3
Pension	The amount of pension benefits per month	(J. H. Wang & Wang, 2019; Zhu & Walker, 2019)	2
Financial inclusion	Foreign direct investment Inequality of income distribution Number of depositors with financial institutions per 1000 adults Number of financial institution's branches per 100,000 adults Number of automated teller machines (ATMs) per 100,000 adults Number of borrowers from financial institutions per 1000 adults	(Americas, 2016; Biltagy & Nassar, 2020; Carrino, 2016; Lefebvre et al., 2010; Omar & Inaba, 2020)	5
Medical & Health			
Access health care services/ providers	Access universal health coverage and other health related ends in the SDG Life expectancy at birth Mortality rate by gender	(Aslam et al., 2020; Biltagy & Nassar, 2020; Block & Gibbs, 2017; Carrino, 2016; Lefebvre et al., 2010; Lopes et al., 2019; Martinez Virto & Perez Eransus, 2020; McIntosh et al., 2019; Tangcharoensathien et al., 2018; J. H. Wang & Wang, 2019; World Bank, 2013)	11
Appropriate distribution of health facilities		(Lopes et al., 2019)	1

Community & Culture				
Housing	Access housing /or number of homelessness		(Americas, 2016; Block & Gibbs, 2017; Correa-Montoya, 2018; Gingrich & Lightman, 2015; Maloutas et al., 2020; Martinez Virto & Perez Eransus, 2020; McIntosh et al., 2019; Van Bergen et al., 2019; C. Wang & Naveed, 2019; Wijaya, 2019)	10
	Housing affordability /or housing cost overburden rate			
	Overcrowding rate			
	Slums Household			
Access to community services and resources	Civil society participation by gender and race	Access and the utilization of public sports facilities	(Americas, 2016; Q. Chen & Liu, 2020; McIntosh et al., 2019; World Bank, 2013)	4
		Participation in community sport		
		Participation in citizens engagement activities		
		Participation in community groups		
	Access to living standard: access to electricity, water, and fuel			
Discrimination and violence	Gender equality		(Americas, 2016; Badgett et al., 2019; Biltagy & Nassar, 2020; Briggs & Harris, 2017; Fernandes et al., 2018; McIntosh et al., 2019; Morán et al., 2019; Pitukhina et al., 2019; Tua & Banerjee, 2019; World Bank, 2013)	10
	Domestic violence			
	Level of violent crime - Homicide rate			
	Tolerance for homosexuality			
	Ethno-Racial Inclusion			
	Tolerance for migrants			
	Discriminatory family code- prevalence of early marriage			

Table 1 Social inclusion indicators used by the examined prior studies

CHAPTER II

METHOD

A. Procedure

A systematic literature search was conducted for English-only studies using three online databases: *Scopus*, *Web of Science*, and *Academic Search Ultimate*. We accessed these electronic databases from the library of the *American University of Beirut*. The following research questions directed our review: *What are the potential indicators of social inclusion? What are the factors that significantly influence the level thereof?*

The option of "advanced search" was used to further identify studies focusing on the concept of social inclusion. First, we screened titles in all three abovementioned datasets two times using the keyword: social inclusion. The time range search differed from one electronic database to another. For Scopus and Web of Science, the database searches were conducted from 2017 to 2020, whereas for Academic Search Ultimate, we checked the studies published in the past two years (2019 till 2020 inclusive). Second, using only the first two datasets specified above -Scopus and Web of Science- we examined titles and their corresponding abstracts two times using the following keywords: "social inclusion" AND "index". In the second case, we did not apply any restrictions on the time search. Then, we narrowed down the search in both cases to focus on articles that:

- were published in journals
- qualitatively examined, or quantitatively gauged social inclusion

A total of 492 articles was yielded in the preliminary search; 232 studies were from Web of Science, 155 from Scopus, and 105 from the Academic Search Ultimate. After removing duplicates, 327 articles remained, out of which 145 were relevant and met the inclusion criteria specified above.

B. Indicators

After identifying relevant studies through a structured search, we extracted the indicators and the factors that influence social inclusion. To capture a more complete picture of social inclusion, we then created table 1, where we listed the measurements under their corresponding dimension.

C. Countries

The sample to be studied consists of 16 OECD countries, namely Austria, Czech Republic, Denmark, Estonia, Finland, France, Hungary, Iceland, Ireland, Latvia, Lithuania, Norway, Slovakia, Slovenia, Spain, and Sweden.

D. Approaches

Multi-criteria decision making (MCDM) methods are considered potent tools for examining and solving complex problems. In other words, they possess an intrinsic ability to assess various alternatives with respect to multiple criteria aiming to identify the best alternative (Chakraborty et al., 2015). In our analysis, we will employ one type of MCDM, namely the weighted aggregated sum product assessment (WASPAS). Also, we will conduct a time series analysis for the years 2014 and 2015, whereby we will compare the performance of the 16 countries in terms of achieving the social inclusion

concept in their societies. It is worth noting that all the computation part will be done using Excel.

1. Shannon Entropy (SE)

Sometimes decision-makers are subjective when it comes to identifying the weights of indicators in accordance with their significance. Consequently, in 1948, Shannon developed the "entropy of information loss" to evaluate the accuracy of the amount of message information transformed in a system. The concept of entropy can be effectively used in the decision-making process. To elaborate, scholars have been employing SE as a data-driven weighting technique to identify the weights of indicators of an index according to the total variation among the index values. Accordingly, the main advantage of SE is avoiding the subjectivity of experts in the process of decision making.

Assume there are (a) countries and (b) indicators with a decision matrix D = [X_{ij}], where i = 1, … , a, and where j = 1, … , b.

The steps for implementing SE technique are the following:

Step #1: Constructing a table that encompasses the indicators (KPI) and the countries.

Step #2: Gauging the probability of surprise in the data and removing the influence of dimensions through the implementation of linear normalization.

$$p_{ij} = \frac{x_{ij}}{\sum_{i=1}^{a} x_{ij}} \quad \text{where i = 1, … , a, and where j = 1, … , b} \qquad (1)$$

Step #3: Computing the entropy for each indicator

$$e_j = -\frac{1}{\ln(a)} \times \sum_{i=1}^{a} p_{ij} \times Ln\,(p_{ij}) \quad \text{where j = 1, … , b} \qquad (2)$$

When $p_{ij} = 0,\ then\ p_{ij} \times Ln\left(p_{ij}\right) = 0$

Step #4: Computing the scatter of dispersion

$$d_j = 1 - e_j \quad \text{where j = 1, … , b} \tag{3}$$

Step #5: Determining each indicator's weight

$$w_j = \frac{d_j}{\sum_{j=1}^{b} d_j} \quad \text{where j = 1, … , b} \tag{4}$$

It is worth noting that the dispersion (d_j) signifies the difference among the values of a given index. d_j and the entropy (e_j) are inversely related; so, when d_j is high, this means that there is a considerable difference between the values and that the e_j would be low. Accordingly, the weight plays a key role in revealing the degree of importance of the index's indicators.

2. WASPAS Method

Although the weighted sum model (WSM) and the weighted product model (WPM) are two famous MCDM methods, they have some downsides, such as being highly sensitive to unit ranges (Gupta et al., 2021). Consequently, in 2012, the WASPAS technique was proposed by four scholars, namely Zavadskas, Turskis, Antucheviciene, and Zakarevicius, as a combination of the two abovementioned approaches (Alinezhad & Khalili, 2019). The researchers realized that this method performed better than WSM and WPM in terms of reliability and accuracy (Chauhan et al., 2021). For instance, it results in more accurate outcomes and enhances the accuracy of WSM and WPM by 60% and 30%, respectively (Gupta et al., 2021). Also, it is considered to be an effective decision-making tool as it has the inherent ability to deal with various types of decision-making problems, like the sustainability assessment of *Organization of the Petroleum Exporting Countries* (OPEC) countries (Chauhan et al., 2021).

Assume there are (a) countries and (b) indicators with a decision matrix M = [X_{ij}], where i = 1, … , a, and where j = 1, … , b.

Executing the WASPAS technique requires the following steps:

Step #1: Constructing a normalized decision matrix D = [d_{ij}]

For beneficial indicator:

$$d_{ij} = \frac{x_{ij}}{max_i\, x_{ij}} \quad \text{where i = 1, … , a, and where j = 1, … , b} \qquad (5)$$

For non-beneficial indicator:

$$d_{ij} = \frac{min_i\, x_{ij}}{x_{ij}} \quad \text{where i = 1, … , a, and where j = 1, … , b} \qquad (6)$$

Beneficial indicators are those for which the highest value is desired, whereas non-beneficial indicators are those for which the lowest value is favored. Note that in our study the non-beneficial indicators are the following: the number of children out of school, political right index, civil liberties index, unemployment rate, income inequality, mortality rate, housing cost overburden rate, housing overcrowding rate, and homicide rate.

Step #2: Computing the total relative importance of each country

As stated earlier, WASPAS is a combination of two approaches, i.e. WSM and WPM.

Based on WSM, the importance is computed as follows:

$$Q_i^{WSM} = \sum_{j=1}^{b} W_j \times d_{ij} \quad \text{where i = 1, … , a, and where j = 1, … , b} \qquad (7)$$

Based on WPM, the importance is computed as follows:

$$Q_i^{WPM} = \prod_{j=1}^{b} (d_{ij})^{w_j} \quad \text{where i = 1, … , a, and where j = 1, … , b} \qquad (8)$$

Where w_j is the weight of indicator j obtained from SE part

Step #3: Determining the WASPAS score (Q_i) for each country

$$Q_i = \lambda * (Q_i)^{WSM} + (1- \lambda)* (Q_i)^{WPM} \quad (9)$$

where i = 1, … , a, and where λ= 0; 0.1; 0.2; …;1

Step #4: Ranking of countries

We will rank countries based on the descending order of the average WASPAS score which the sum of all the scores obtained at each lambda divided by 11, the total number of lambda's values. The country with the highest average WASPAS score will be assigned a value of 1 (the top-ranked), while the one with the lowest average WASPAS score will be given a value of b (the last-ranked).

It is worth to note that the ranking performance of WASPAS is impacted by λ. The better performance is achieved at a higher value of λ. For instance, when λ = 0, the WASPAS method acts like WPM, whereas when λ = 1, it behaves as WSM. Also note that we will use Excel to construct a scenario case table that includes WASPAS score using different lambdas, i.e. from 0 to 1. In other words, the WASPAS's ranking performance is studied with reference to the change in λ values.

CHAPTER IV

DATA

We fetched data from several online sources, including the World Bank (WB), the United Nations (UN), the Freedom House, the Eurostat database, the Global Health Observatory data repository, the GlobalEconomy.com, the Women, Business and the Law (WBL) and the Organisation for Economic Co-operation and Development (OECD). To study the extent to which countries are achieving inclusive societies, we constructed a panel dataset of 16 OECD countries for the years 2014 and 2015. A total of 29 indicators (see Table 2) will be analyzed using Excel. The indicators which we were unable to find data for and which lacked data for the studied countries will be excluded from our analysis. A further detailed per dimension explanation is provided below.

A. Quality Education

Out of nine indicators, we found data for seven. Four of them will be analyzed and the rest will be excluded as they did not have common data for all studied countries. The latter three mainly includes the percentage of public spending on short-term tertiary education, the adult literacy rate, and the school drop-out rate. The data of the included variables were collected from two online data repositories, the United Nations and the World Bank. The included variables are as follows:

1. The percentage of students in higher education by gender: it is gauged as the gross enrollment ratio of females and males in the tertiary education level.

2. The enrollment in secondary school by gender: it is quantified as the gross enrollment of females and males in the secondary education level.
3. The primary school enrollment: it is measured as the total of students enrolled in primary education (in thousands)
4. Children out of school: it is calculated as the percentage of children at primary school age who are out of school.

B. Innovation & Technology

We fetched data for all the three indicators. We gathered data for all the indicators from the World Bank. The three included variables are the following:

1. The number of internet users per capita: as per the World Bank, this indicator means "the percentage of individuals who have used the Internet in the last three months. The Internet can be used using a computer, or a games machine" or any other devices.
2. The number of mobile phone users per capita: according to the World Bank, this variable implies the number of individuals (per 100 people) who "are subscribed to a public mobile telephone service that provides access to the PSTN using cellular technology".
3. The number of broadband connections: as per the World Bank, this indicator is defined as the number of individuals (per 100 people) who "are subscribed to fixed broadband, such as DSL. It includes both residual and organizations subscriptions". However, it "excludes subscriptions that have access to data communications using mobile-cellular networks".

C. Governmental Policies & Laws

We were able to fetch data for five indicators from various data sources. The five indicators are the following:

1. The political rights index: This index's data were collected from the Freedom House. As per GlobalEconomy, this index "assesses three categories: electoral process, political pluralism and participation, and the functioning of government". It ranges from 1 (strong rights) to 7 (weak rights).
2. The civil liberties index: its data were taken from the Freedom House as well. According to GlobalEconomy, it "evaluates the following: freedom of expression and belief, associational and organizational rights, rule of law, and personal autonomy and individual rights". The rating ranges from 1 (strong liberties) to 7 (no liberties).
3. The control of corruption index: the data for this index were compiled from the GlobalEconomy. As per GlobalEconomy, this indicator "captures perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption". It ranges from – 2.5 (being weak) to 2.5 (being strong).
4. The index of political stability and absence of violence/terrorism: its data were collected from the GlobalEconomy. As per GlobalEconomy, this indicator "measures perceptions of the likelihood that the government will be destabilized or overthrown by unconstitutional or violent means, including politically-motivated violence and terrorism". The GlobalEconomy website claims that the index is "an average of several other indexes from the Economist Intelligence

Unit, the World Economic Forum, and the Political Risk Services, among others, and ranges from – 2.5 (weak stability) to 2.5 (strong stability)."

5. The women in local government indicator: its data were taken from the World Bank data. As per the World Bank, it is gauged as "the percentage of parliamentary seats in a single or lower chamber held by women".

D. Transportation & Infrastructure

Only data for one indicator were found, namely investment in transport infrastructure. The data for this indicator were taken from the OECD dataset. According to OECD, infrastructure investment is measured as the total spending on the construction of new transport and on the improvement of the existing network. Inland infrastructure involves road, rail, inland waterways, maritime ports, and airports. For our purpose, we will use only investment in road infrastructure due to data unavailability constraint. This indicator is quantified in Euros as a share of GDP for total inland investment (OECD).

E. Employment & Organizations

Out of eight indicators, we were able to fetch data for four variables. Two of them will be included in the analysis section, while the global entrepreneurship index and level of income will be excluded as they did not have common data for all studied countries. As for the included variables, they are the following:

1. The unemployment rate: was collected from the World Bank data and is quantified as the percentage of the labor force that is unemployed but available for and seeking work.

2. The gender equality in the workplace indicator: was gathered from WBL, which is a World Bank Group project collecting data to detect barriers to the economic participation of women and promote the change of discriminatory laws. As per the World Bank, this dataset measures gender inequality in regard to many aspects, including mobility, workplace, pension, marriage, pay, parenthood, entrepreneurship, and assets. However, for our study, we will use only two aspects: workplace and pay.

F. Medical & Health

In this dimension, we were able to gather data for three indicators.

1. The life expectancy at birth: its data were taken from the World Bank data as well. According to the World Bank, this indicator means "the number of years a newborn infant would live if normal patterns of mortality at the time of its birth were to stay the same throughout its life".
2. The mortality rate by gender: it indicates the probability of females and males dying between the ages of 15 and 60. The data for this indicator were collected from the World Bank.
3. The appropriate distribution of health facilities: it encompasses the places that offer health care, such as hospitals, care centers, and clinics. Beds are an important component of hospitals, so they are considered as one of the health facilities. Consequently, we were able to find from the Global Health Observatory data repository, the number of hospital beds available per every 10 000 inhabitants in a population.

G. Poverty & Economy

For this dimension, we succeeded in finding data sources for all the indicators. Nevertheless, three indicators - poverty rate, number of depositors with financial institutions per 1000 adults, and number of borrowers from financial institutions per 1000 adults - will be eliminated from our analysis as they had lots of missing data. The number of variables to be analyzed is seven. The data of five of them were fetched from the World Bank, while the data for the rest were taken from the OECD dataset. The included indicators are as follows:

1. Gross Domestic Product (GDP) growth: it is the percentage of the growth speed of the economy. It measures the economic output of a country, and it is composed of four components which are personal consumption, government spending, business investment, and net trade. (Amadeo, 2020)
2. GDP Spent on Social Program: it means the percentage of GDP that is allocated for social programs; it is also called social expenditure. As per OECD, it contains “cash benefits, direct in-kind provision of goods and services, and tax breaks with social purposes.” Also, elderly, disabled people, unemployed, low-income households, young people are mainly the target that benefits from social programs.
3. The amount of pension benefits: according to OECD, pension spending is defined as all cash expenditures on old-age and survivors’ pensions. Old-age cash benefits provide an income for persons retired from the labor market or guarantee incomes when a person has reached a 'standard' pensionable age or fulfilled the necessary contributory requirements.

4. Inequality of income distribution: as per OECD, income inequality among people is calculated using five indicators: the Gini coefficient, S80/S20, P90/P10, P90/P50, P50/P10, and the Palma ratios. The indicator's value ranges from 0 (being complete equality) to 1 (being complete inequality).
5. The number of financial institution's branches per 100,000 adults: as per the World Bank, the main function of the commercial bank branches is to offer clients financial services.
6. The number of automated teller machines (ATMs) per 100,000 adults: according to the World Bank, automated teller machines are computerized telecommunications means that grant financial institution's customers access to financial transactions in a public place.
7. The foreign direct investments indicator (in U.S. dollars): was gathered from the World Bank data. According to the World Bank, it is defined as "the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor, and is quantified as the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital".

H. Communities & Culture

The data for six indicators were found. Two of them, including gender equality and slums household, will be excluded as they had lots of missing data, while the rest will be included. The included variables are the following:

1. The housing affordability indicator was found as housing cost overburden rate from the Eurostat data. This indicator gauges the percentage of households that spend more than 40% of their income on the cost of the house.
2. The data for housing overcrowding were taken from the OECD dataset. According to OECD, "a household is considered as living in overcrowded conditions if less than one room is available in each household: for each couple in the household; for each single person aged 18 or more; for each pair of people of the same gender between 12 and 17; for each single person between 12 and 17 not included in the previous category; and for each pair of children under age 12. Rooms refer to bedrooms, living and dining rooms and, in non-European countries, also kitchens."
3. The access to living standard indicator involves access to electricity, water, and fuel. Using the World Bank dataset, we found the percentage of individuals who have access to electricity and who use drinking water from an accessible improved source, such as piped water, and packaged or delivered water.
4. The level of violent crime is the same as the homicide rate which means the number of unlawful homicides purposely happened as a result of violence, such as domestic disputes and interpersonal violence. The data for this indicator are collected from the World Bank.

Sub-dimension	Indicator (s)
Quality Education	
Human capital	Enrollment in primary school
	Enrollment in secondary school by gender
	Enrollment in higher education by gender
Dropout from school	Children out of school
Innovation & Technology	
	Number of internet users per capita
	Number of mobile phone users per capita

Access to technology and internet (information and communication)	Number of broadband connections
Governmental Policies & Laws	
Democracy	Political Rights
	Civil Rights
	Women in local government
Quality of government institutions	Corruption
	Government stability
Transportation & Infrastructure	
Investment in transport infrastructure	
Employment & Organizations	
Access to employment	Unemployment rate
Discriminatory practice	Gender equality – Women in workplace
Poverty & Economy	
Gross domestic product (GDP)	GDP growth
	GDP spent on social program
Pension	The amount of pension benefits per month
Financial inclusion	Foreign direct investment
	Inequality of income distribution
	Number of financial institution's branches per 100,000 adults
	Number of automated teller machines (ATMs) per 100,000 adults
Medical & Health	
Access health care services/ providers	Life expectancy at birth
	Mortality rate by gender
Appropriate distribution of health facilities	
Community & Culture	
Housing	Housing cost overburden rate
	Overcrowding rate
Access to community services and resources	Access to living standard: access to electricity and water
Discrimination and violence	Level of violent crime - Homicide rate

Table 2 Social inclusion indicators included in our study

CHAPTER V

EMPIRICAL FINDINGS AND DISCUSSION

To identify the influence of social inclusion on the well-being of different community members, it is crucial to accurately gauge the various parts that constitute its concept (Cordier et al., 2017). After reviewing a large amount of literature that has tried to measure social inclusion, we discovered that no efforts had been made yet to develop a comprehensive social inclusion index that applies to all countries. Therefore, the main value of this research lies in building a gold social inclusion standard measure that can be used across different countries. After constructing this index and using existing data, we succeeded in collecting data for a total of 29 indicators for 16 OECD countries. Also, another key contribution of this paper was to analyze the evolution of countries' performance concerning fostering social inclusion concept in their societies over time. Accordingly, we will explore the top five nations and the least-performing country in that matter for 2014, and 2015. To accomplish this step, we utilized Shannon Entropy for weight determination, along with WASPAS methodology for countries ranking.

A. Weight Interpretation

Starting with the results of SE, table 3 showcases the calculated SE weights for each dimension. The most important dimension to measure social inclusion is the one that achieved the highest weight. Hence, in 2014, it was the "transportation and infrastructure" dimension, while in 2015, it became the "quality education" dimension. The change in the important dimension throughout the studied years could be attributed

to the fact that, in 2014 and backward, some of the studied countries faced several challenges in the education field. For example, Hungary was confronted with the problem of disadvantaged students facing difficulties accessing high-quality inclusive mainstream education (Peterka et al., 2015). So, in 2015, those nations shifted their focus and efforts from achieving inclusion in the "transportation and infrastructure" dimension to the "quality education" dimension. Regarding the least important dimension, in 2014 and 2015 "innovation and technology" dimension scored the lowest weights, 0.0088 and 0.0080 respectively (see Table 3).

However, to determine whether a dimension is impactful or not, we need to examine the percentage of increase/decrease throughout 2014 and 2015. To begin with, only two dimensions, which are "poverty and economy" and "quality education", observed an increasing trend of 30% and 18% respectively (see Table 3). As a result, there is a high variation among the values of these dimensions' indicators across countries, signifying that countries differ in terms of their efforts to eliminate poverty, achieve economic growth, and promote quality education among their citizens. In fact, in 2015, many effective tactics and policies were adopted by most of the studied countries in the educational and economical areas. Starting with the "poverty and economic" dimension, in 2015, the OECD states that due to low corporation tax rates in Ireland, "some large multinational corporations have relocated their economic activities and their intellectual property to this country" (OECD, 2016). Consequently, the sale generated from the use of the intellectual property of these large-sized companies boosted Irish GDP and achieved economic growth (OECD, 2016). Regarding education, many OECD countries implemented inclusive quality education strategies in 2015. For example, in Hungary, the "participation in early childhood

education and care (ECEC) became mandatory from age 3 in 2015 as a preventive measure to reduce early school leaving, particularly for children from disadvantaged backgrounds" (Peterka et al., 2015). As another example, in 2015 Czech Republic implemented its education strategy that assures equity in education (ReferNet Czech Republic, 2015).

Additionally, the weights of transportation and infrastructure dimension decreased from 0.2419 to 0.1925 (20% decrease), indicating that most nations' efforts towards implementing inclusive transit policies have dropped and that most countries have attained almost similar levels of achievement over the studied period. In other words, this decreasing trend may be due to a low variation among the values of these dimensions' indicators across countries. The same interpretation applies for the following dimensions: "governmental policies and laws", "innovation and technology", "employment and organizations", "medical and health", and "communities and cultures" with 8%, 9%, 16%, 12%, and 5% decrease respectively. To explain this decreasing trend using real examples, we were able to find justification for the governmental policies and laws dimension. To be more specific, we will be focusing on the lens of political instability as some of the studied countries were perceived as politically unstable in 2015. For instance, in France, on 7 January 2015, two terrorists attacked Charlie Hebdo (BBC, 2015). Consequently, according to the BBC news, 12 people were killed: "eight journalists, two police officers, a caretaker, and a visitor" (BBC, 2015). Also, in Finland, on 19 April 2015, parliamentary elections were held which resulted in political instability due to tension between opposing political parties (Hämäläinen, 2015). It is worth noting that finding justifications for the decreasing

trends of other dimensions is beyond our scope of research as it requires an extensive search process.

Dimensions	Weights in 2014	Weights in 2015	Trend (%)
Quality Education	0.1988	0.2352	Increase (18.3%)
Innovation & Technology	0.0088	0.0080	Decrease (9.1%)
Governmental Policies & Laws	0.1371	0.1262	Decrease (8.0%)
Transportation & Infrastructure	0.2419	0.1925	Decrease (20.4%)
Employment & Organizations	0.0341	0.0285	Decrease (16.4%)
Poverty & Economy	0.1515	0.1967	Increase (29.8%)
Medical & Health	0.0641	0.0567	Decrease (11.5%)
Communities & Cultures	0.1636	0.1562	Decrease (4.5%)

Table 3 Shannon Entropy weights for each dimension in 2014 and 2015

To capture the whole picture of the social inclusion index, only discussing the weights of each dimension is inadequate. A further in-depth study of the weights of the most important indicators in each dimension would be necessary and valuable. Accordingly, by focusing on the indicators that got the highest weights, meaning the most significant ones, one can deduce the most vital elements for the creation of a more inclusive society. To illustrate, enrolling children in school, accessing broadband connection, fighting corruption in the public sector, being employed, attaining high GDP growth, decreasing homicide rate, and managing non-made imperfections that may lead to injuries or mortalities (like unsafe roads) are keys for paving the way towards a society that ensures equity of opportunity as well as inclusion.

However, to check whether nations are making the necessary and sufficient efforts to achieve the aforementioned effective means for a better inclusive society, we need to check their increasing/decreasing trend. Generally, an increasing trend indicates that countries are taking potent actionable steps to achieve the desired measure, while a

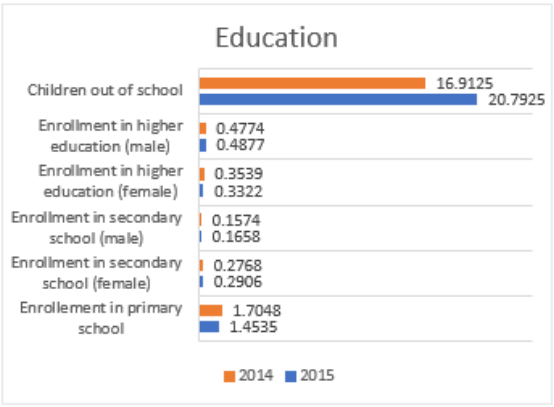
decreasing trend signifies that nations' efforts towards attaining this indicator are minimal or have reached the same level of accomplishment throughout this period. In terms of the quality education dimension, the "children out of school" indicator scored the highest weights and witnessed an increasing trend of 22.9% (see Figure 2), implying a small change in this measure could lead to a great impact on its corresponding dimension, and ultimately on promoting social inclusion in societies. This increasing trend could be explained by the nations' efforts, mentioned earlier, in building and executing inclusive quality education strategies in 2015. Also, the "GDP growth" indicator in the poverty and economy dimension, and the "homicide rate" indicator in the community and culture dimension, achieved the highest weights in their corresponding lens and observed an increasing trend of 114.3% and 0.009%, respectively (see Figure 2). Thus, one can conclude that policymakers are aware of the importance of those indicators and are implementing effective strategies to boost their nations' GDP and decrease their countries' homicide rate. For example, as mentioned previously, the enormous increase trend for the "GDP growth" indicator is due to the facilities and temptations offered by Ireland to corporations, which in return enabled the country to attain a high GDP growth.

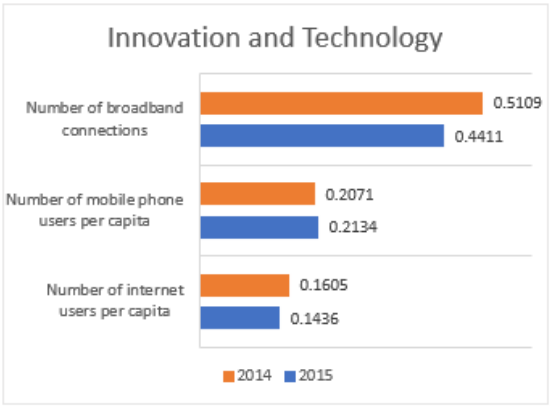
In addition, even though the "number of broadband connections" in the innovation and technology dimension, the "control of corruption index" in the governmental policies and laws dimension, the "unemployment rate" in the employment and organization dimension, and the "male mortality rate" in the medical and health dimension obtained the highest weights in 2014 and 2015 in their corresponding areas, they observed a decreasing trend of 13.7%, 12.9%,16.7%, and 11.8%, respectively (see Figure 2). Hence, despite the importance of those indicators,

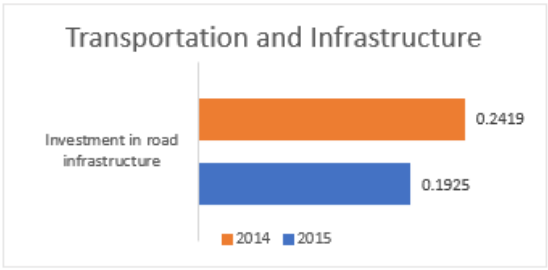
governments and policymakers are making fewer efforts to increase access to broadband connections, combat corruption, reduce unemployment, and control non-made imperfections that may lead to mortalities. To give a real-life example, according to The Local, a digital news publisher, in 2015, France faced two crucial problems, including corruption and a high unemployment rate (McPartland, 2015).To elaborate, there was a lack of confidence of the French citizens in their government as many politicians had been caught and accused of corruption (McPartland, 2015). Also, the French government's attempts to reduce the unemployment rate were inadequate (McPartland, 2015). It is worth noting that we did not mention the "transportation and infrastructure" dimension as it is composed of one indicator. Consequently, we cannot deduce the most critical indicator, so we skip it.

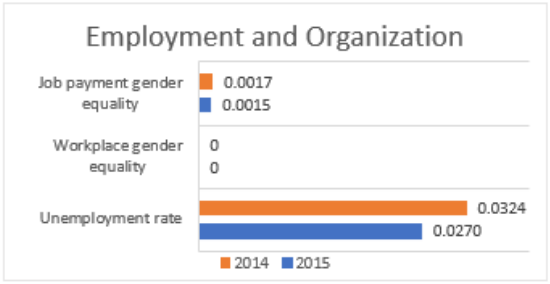
Accordingly, we will recommend for the studied countries some useful strategies to further promote social inclusion in their societies. To illustrate, policymakers must center their attention on the significant indicators that observed a decreasing trend. To begin with, anti-corruption strategies are essential to preserve public resources and assets and to grant citizens access to their rights and to decent life. Preventing corruption constitutes of two main pillars, including increasing transparency, and ensuring accountability. First, transparency plays a pivotal role in facilitating the detection of information manipulation and concealment, as it is the process of enabling the public to access government information and check the work of public authorities. Second, accountability is highly related to the degree of integrity of the judicial system. So, it is important to ensure the creation of the rule of law, the building of trusting auditing entities, and the effective execution of the principles of reward and punishment to guarantee the punishment of corrupt individuals regardless of their status. Also, it is

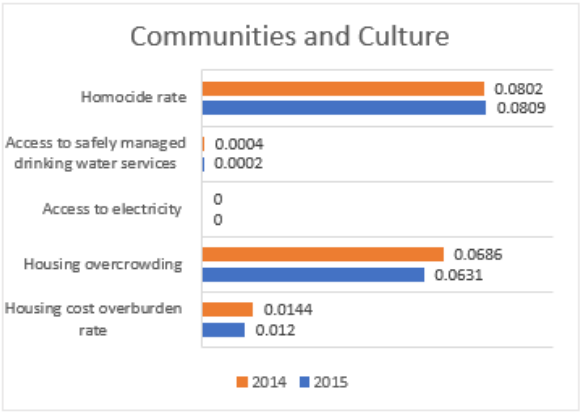
worth mentioning that empowering citizens to hold the government accountable and to demand access to governmental information is essential for fighting corruption. Moreover, the studied countries can decrease the unemployment rate by implementing effective policies. For example, they can train and equip long-term unemployed with new and in-demand skills, such as IT skills, that allow them to find jobs in developing sectors (Pettinger, 2019). Also, according to Pettinger (2019), usually jobless is concentrated in specific areas. So, governments could tempt firms by giving them tax breaks if they locate or open branches for their companies in regions with high unemployment (Pettinger, 2019). In addition, regarding the high mortality rate, each country must analyze the main causes of death and focus on managing the ones that could be preventable, like tobacco use, obesity, unsafe roads, and foodborne Illnesses. For instance, to control death happened due to obesity, policymakers can force school and university students to attend and enroll in courses related to health and diet, even if they are majoring in a field other than health, to make them aware of the negative consequences of obesity and equip them with general health knowledge. Finally, nations must fund IT units to conduct research on how to make the process of accessing high-speed broadband connection simpler, more affordable, and easier for citizens.

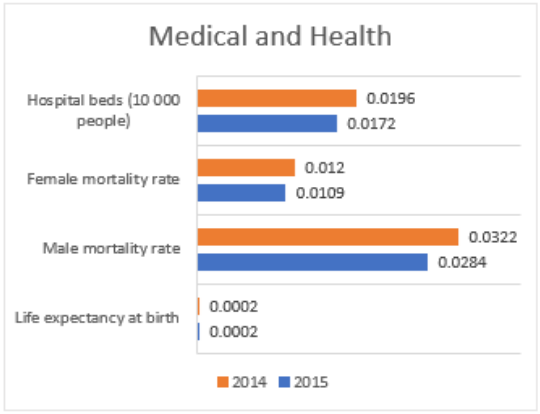

Education
Children out of school
16.9125
20.7925
Enrollment in higher education (male)
0.4774
0.4877
Enrollment in higher education (female)
0.3539
0.3322
Enrollment in secondary school (male)
0.1574
0.1658
Enrollment in secondary school (female)
0.2768
0.2906
Enrollement in primary school
1.7048
1.4535
2014
2015


Innovation and Technology
Number of broadband connections
0.5109
0.4411
Number of mobile phone users per capita
0.2071
0.2134
Number of internet users per capita
0.1605
0.1436
2014
2015


Transportation and Infrastructure
Investment in road infrastructure
0.2419
0.1925
2014
2015


Employment and Organization
Job payment gender equality
0.0017
0.0015
Workplace gender equality
0
0
Unemployment rate
0.0324
0.0270
2014
2015


Communities and Culture
Homocide rate
0.0802
0.0809
Access to safely managed drinking water services
0.0004
0.0002
Access to electricity
0
0
Housing overcrowding
0.0686
0.0631
Housing cost overburden rate
0.0144
0.012
2014
2015


Medical and Health
Hospital beds (10 000 people)
0.0196
0.0172
Female mortality rate
0.012
0.0109
Male mortality rate
0.0322
0.0284
Life expectancy at birth
0.0002
0.0002
2014
2015

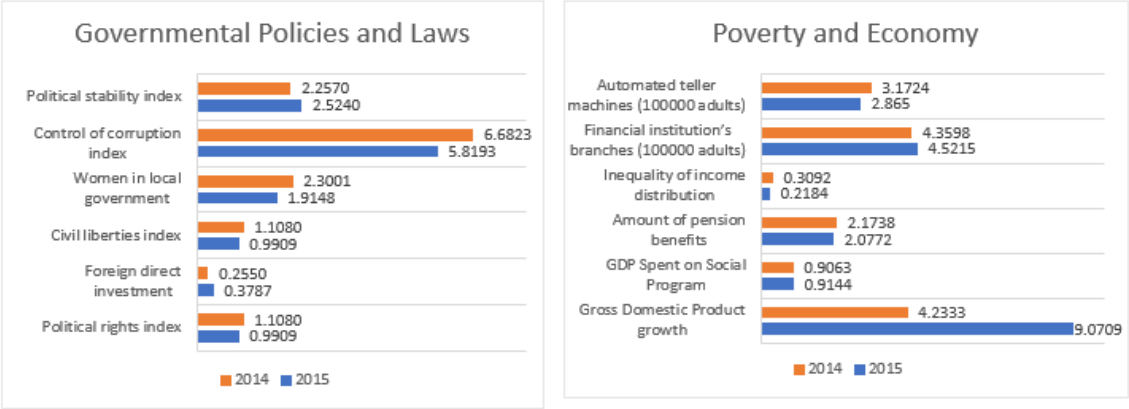


Figure 2 Weights (%) of the KPIs of Each Dimension in 2014 and 2015

B. Ranking Results

Figure 3 shows the average WASPAS score for each of the sixteenth countries in 2014 and 2015. Accordingly, one can notice that in 2014, Norway ranked the first as it had the highest average WASPAS score (see Figure 3), followed by Ireland, France, Spain, and Sweden. The top five countries that succeeded in promoting social inclusion in their societies in 2015 are the same as the ones in 2014. In addition, the least-performing country is Latvia in both years, with the lowest average WASPAS score of 0.139 in 2014 and 0.205 in 2015.

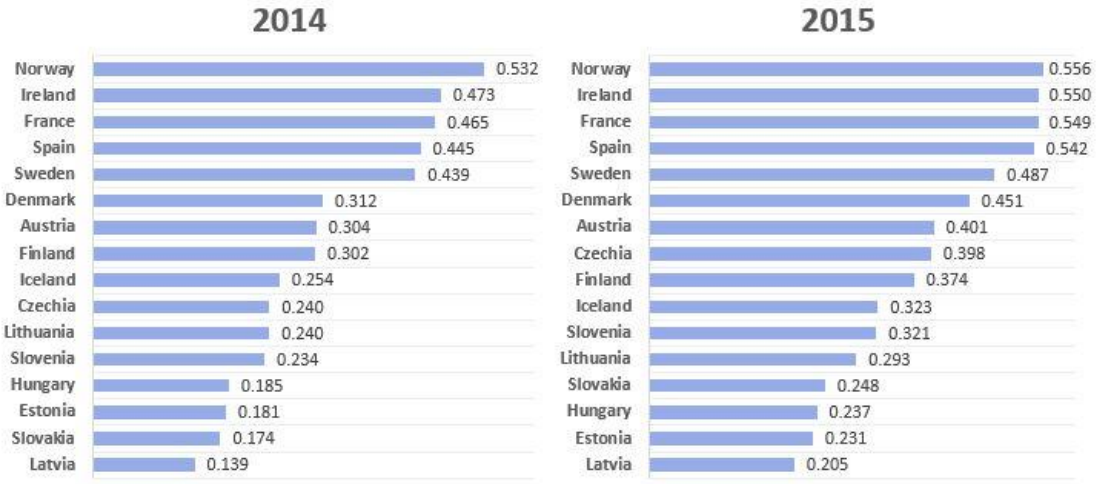


Figure 3 Average WASPAS Score per Country in 2014 and 2015

C. Approaches Evaluation

Similar to the study of Chakraborty et al. (2015), our experience emphasizes that the main advantage of WASPAS lies in the simplicity of its applications. In other words, it requires simple computation process. In fact, a key step of this methods' calculation procedure is weight determination. Accordingly, one of its main disadvantages is subjectivity as the weight finding approach used determines the degree of subjectivity of ranking in the approach. In our case, we overcome this weakness by implementing an objective technique that is called Shannon Entropy.

As noted in the previous section, when λ is equal to zero, WASPAS performed as the WPM method, and when it is equal to 1, WASPAS is transformed to WSM. Consequently, we want to examine the effect of different λ values on the nations' ranking. To be specific, we will compare the top five countries deduced when λ is equal to 0 and 1 with the five best nations obtained from the average WASPAS score. We can deduce from figure 4 that when WASPAS behaves as WPM ($\lambda = 0$), fewer similarities in terms of ranking results are observed between WPM and the average WASPAS

score. However, when WASPAS performed as WSM (λ =1), we can notice that there are more common ranking outcomes between WSM, and the average WASPAS score (see Figure 4). Besides, it is interesting to note that although the names of the top five countries are similar in the three cases, their order differs from one λ value to another.

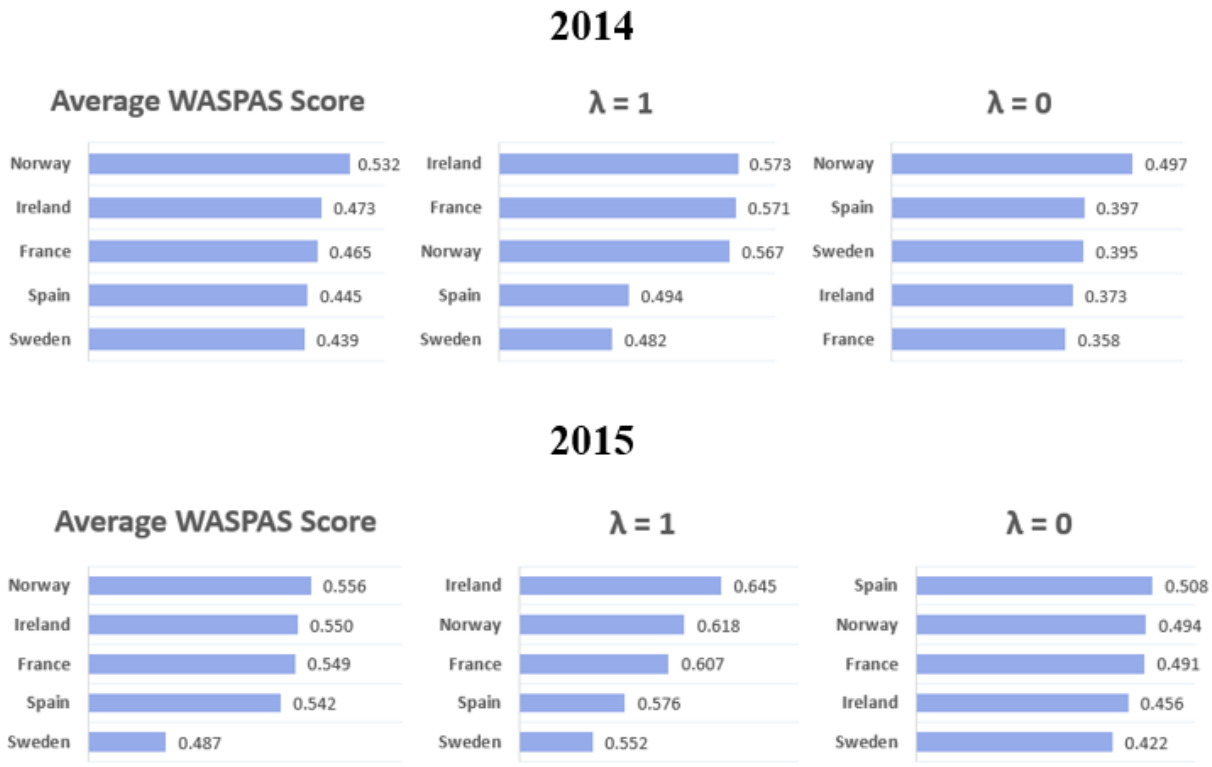


Figure 4 Top five countries in 2014 and 2015

CHAPTER VI

CONCLUSION

The world is witnessing multiple crises, such as Covid19 and recession, that are considered to deepen social inequalities and cause social exclusion (Maloutas et al., 2020). Accordingly, individuals who experience social exclusion are more likely to face the risks of poor health, low self-esteem, and loneliness. The most effective way to avoid social exclusion is through building an inclusive society that provides equal opportunities for all society's members and minimizes, if not vanishes, disparities between individuals in terms of gender, geography, disability, race, ethnicity, economic or other attributes (Biltagy & Nassar, 2020). The construction of such a society requires encouragement and support not only from the government but also from various community elements, including citizens and businesses.

Social inclusion is multidimensional, whereby, if a person is excluded from one life area, he may seek inclusion in another dimension. In fact, this concept plays a pivotal role not only in achieving the first SDG, namely ending poverty, but also in accomplishing other crucial objectives, such as empowering disadvantaged population, promoting quality education, embracing gender equality, and attaining economic growth (Biltagy & Nassar, 2020). Besides, it offers people who are at risk of exclusion the golden opportunity of greater participation in decision-making. As a result, individuals will have better access to basic rights and more control over their own life.

At the early stages, social inclusion was only linked to fighting poverty and unemployment. However, lately, this concept has been used in various life domains, such as health, education, and politics, and has been applied to several excluded society

groups, such as the elderly, women, and immigrants (Bresson & Labit, 2020). Nevertheless, there is no agreement among scholars on the definition and measurement of social inclusion (Cocquyt et al., 2017). As a result, the preliminary aim of this paper was to build a standard social inclusion measure that can be used globally.

To fulfill this mission, we took the following steps: first, we adopted the World Bank Group definition of social inclusion. Second, we conducted an extensive literature review to build conceptual and quantitative frameworks. The conceptual framework consisted of eight dimensions, including quality education, innovation and technology, governmental policies and laws, transportation and infrastructure, employment and organizations, poverty and economic, medical and health, and communities and culture. Regarding the quantitative framework, we extracted the indicators that impact social inclusion from relevant studies and listed them under their corresponding dimension.

After the execution of the paper's main task, we analyzed the data of 16 OECD countries to identify the top five countries as well as the least-performing country in terms of achieving an inclusive society. This task was accomplished using Shannon Entropy for weight determination, along with one of the MCDM methodologies, namely WASPAS, for countries ranking. Regarding ranking, results indicate that the top five countries that correctly employed the concept of social inclusion in their societies in the period of 2014 and 2015 are Norway, followed by Ireland, France, Spain, and Sweden. However, the least-performing nation is Latvia in both studied years. Additionally, concerning weight determination, findings show that the most impactful dimension on the development of inclusive society is the "transportation and infrastructure" dimension in 2014, and the "quality education" dimension in 2015. Also, they emphasize that enrolling children in school, accessing broadband connection,

fighting corruption in the public sector, being employed, attaining high GDP growth, decreasing homicide rate, and managing non-made imperfections that may lead to injuries or mortalities (like unsafe roads) are vital elements for the creation of a more inclusive society.

In conclusion, it should be noted that this research filled in the gaps of the available literatures on the need to develop a comprehensive social inclusion index to use by all UN members of states. Besides, it added a pivotal contribution to the already existing suite of developed indices in the world. In concrete terms, this paper desires to pave the way for achieving the desired sustainable development goals and building more inclusive societies with equal opportunities for all citizens.

CHAPTER VII

LIMITATIONS AND SCOPE FOR FUTURE RESEARCH

Like any research, this paper has some limitations. First, due to the lack of data, we were not able to include all the indicators of the social inclusion index in our analysis. Future research is needed to collect data for the excluded indicators in the analysis part through collaboration with national organizations, such as the United Nations and the World Bank. Second, because of the data constraint, the sample was very small as it consisted of only 16 countries. Hence, after collecting data for all indicators, further studies are suggested to examine the application of social inclusion globally and perform a comparative analysis between different country groups, such as the World Bank Group country categorization (high-income, upper middle income, lower middle income, and low-income). Finally, the proposed MCDM method – WASPAS - was found to be simple and practical. Consequently, future studies can apply more advanced and sophisticated techniques, such as machine learning, to predict and examine the evolution of countries' performances over time.

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