

Occupational Biosecurity Derived from the SDGs in the Context of the Pandemic

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Abstract

Job security has worried organizations in recent years. Different substrata of society have different perceptions about job security. This document explores the reliability and validity of an instrument that measures job security in a public institution in central Mexico by reviewing seven dimensions: territorial, national, public, human, public (self-protection), private and internet. Consequently, fit and residual values [$\chi^2 = 135.34$ (32df) $p = 0.054$; GFI = 0.995; CFI = 0.990; RMSEA = 0.003] allowed us to accept the null hypothesis of a significant relationship between the theoretical dimensions with respect to the weighted factors.

Key words: reliability of the instrument; factor structure; reflective model; occupational safety; validity of the instrument

Introduction

The history of occupational biosafety has evolved significantly, especially in the context of the COVID-19 pandemic, influenced by the UN Sustainable Development Goals (SDGs), particularly those related to health and well-being (SDG 3) and decent work and economic growth (SDG 8). Before the adoption of the SDGs in 2015, occupational biosafety was primarily focused on preventing occupational accidents and diseases, with a focus on national and international regulations and legislation. Organizations followed standards such as those of the International Labour Organization (ILO) and the World Health Organization (WHO) to protect workers.

The implementation of the SDGs introduced a more holistic perspective on occupational biosafety. SDG 3, which promotes good health and well-being, and SDG 8, which advocates for decent work and economic growth, boosted greater awareness of the importance of safe and healthy working conditions. This goal reinforces the need to ensure that all workers have access to health services and safe conditions in their workplaces, with an emphasis on the prevention of occupational diseases. The goal highlights the importance of a safe working environment as an essential component of decent employment, promoting labour standards that ensure the protection of workers.

The COVID-19 pandemic brought with it unprecedented challenges in the field of occupational biosafety. The need to protect workers from the virus led to a rapid adaptation of biosafety policies and the creation of new protocols, such as the mandatory use of personal protective equipment (PPE), social distancing, teleworking, and the implementation of strict health controls in the workplace. During the pandemic, the principles of the SDGs served as a guide for many organizations and governments in developing responses to the crisis.

The physical and mental health of workers was prioritized, with public health measures implemented to prevent the spread of the virus in workplaces. The pandemic exacerbated inequalities at work, and organizations with poor labor practices were more vulnerable. The SDGs called for ensuring fair working conditions even in times of crisis. The experience of the pandemic has accelerated the adoption of stricter biosecurity measures, which are aligned with the SDGs. Occupational biosecurity has evolved towards greater integration with public health and sustainability, recognizing that workers' health is fundamental to sustainable economic and social development.

Aspecto	Bioseguridad Laboral	ODS	Impacto de la Pandemia de COVID-19
Objetivo principal	Protección de la salud y seguridad de los trabajadores	Salud y bienestar (ODS 3), Trabajo decente (ODS 8)	La pandemia impulsó la implementación de medidas estrictas para prevenir contagios en el trabajo.
Normativa estándares y	Cumplimiento de normativas de salud ocupacional (OIT, OMS)	ODS 3: Promover la salud para todos, ODS 8: Fomentar el trabajo decente	Se crearon y adaptaron nuevas normativas de bioseguridad específicas para mitigar el riesgo de COVID-19.
Medidas preventivas	Uso de EPP, higiene, distanciamiento, ventilación	ODS 3: Prevenir enfermedades; ODS 8: Condiciones de trabajo seguras	Se generalizó el uso obligatorio de EPP, protocolos de higiene y distanciamiento social.
Salud mental	Gestión del estrés laboral, apoyo psicológico	ODS 3: Salud mental y bienestar	Aumento de problemas de salud mental debido al confinamiento y miedo al contagio, con mayor énfasis en su gestión.
Modalidad de trabajo	Trabajo presencial con medidas de bioseguridad	ODS 8: Trabajo decente	Fuerte impulso al teletrabajo y modelos híbridos para reducir el riesgo de contagio.
Flexibilidad adaptación y	Ajustes en protocolos según el riesgo de exposición	ODS 8: Adaptación a cambios en el mercado laboral	Se aceleró la necesidad de adaptabilidad en las políticas laborales, integrando bioseguridad como un factor clave.
Responsabilidad empresarial	Cumplimiento de normativas y cuidado del personal	ODS 8: Promover entornos de trabajo responsables	Las empresas debieron adoptar un rol más activo en la protección de la salud de sus empleados.
Igualdad y equidad	Acceso equitativo a medidas de bioseguridad para todos los empleados	ODS 8: No dejar a nadie atrás en el trabajo decente	Desigualdades en la aplicación de medidas; trabajadores en sectores informales más vulnerables.
Monitoreo y seguimiento	Evaluación constante de riesgos y cumplimiento de normas	ODS 3: Vigilancia de la salud pública	Incremento en la vigilancia y seguimiento de casos en el entorno laboral.

Table 1: Comparison of occupational biosafety derived from the SDGs in the face of the pandemic

Aspect Occupational Biosafety SDG Impact of the COVID-19 Pandemic

Main objective Protection of workers' health and safety good health and well-being (SDG 3), Decent work (SDG 8)

The pandemic prompted the implementation of strict measures to prevent infections at work.

Regulations and standards Compliance with occupational health regulations (ILO, WHO)

SDG 3: Promote health for all, SDG 8: Promote decent work New specific biosafety regulations were created and adapted to mitigate the risk of COVID-19.

Preventive measures Use of PPE, hygiene, distancing, ventilation SDG 3: Prevent diseases; SDG 8: Safe working conditions The mandatory use of PPE, hygiene protocols and social distancing became widespread.

Mental health Workplace stress management, psychological support SDG 3: Mental health and well-being Increase in mental health problems due to confinement and fear of contagion, with greater emphasis on their management.

Working mode Face-to-face work with biosecurity measures SDG 8: Decent work Strong push for teleworking and hybrid models to reduce the risk of contagion.

Flexibility and adaptation Adjustments in protocols according to the risk of exposure SDG 8: Adaptation to changes in the labour market The need for adaptability in labor policies has accelerated, integrating biosecurity as a key factor.

Corporate Responsibility Compliance and staff care SDG 8: Promote responsible work environments Companies have had to take a more active role in protecting the health of their employees.

Equality and equity Equal access to biosecurity measures for all employees SDG 8: Leave no one behind in decent work

Inequalities in the application of measures; workers in informal sectors more vulnerable.

Monitoring and follow-up Constant risk assessment and compliance with standards SDG 3: Public health surveillance

Increased surveillance and monitoring of cases in the workplace. The COVID-19 pandemic acted as a catalyst that reinforced the importance of occupational biosafety, highlighting the relevance of the SDGs in creating safe and sustainable work environments.

Job security, in several countries, has suffered from a lack of absence, particularly when it comes to government participation. As mentioned by Molina-Ruiz, García-Mungía, Rojano-Chávez & Moreno-Gutiérrez (2017), public security can be understood as the work of the State to protect and safeguard its population from internal dangers or threats. In Latin American countries, public security is perceived as absent, due to the large amount of journalistic coverage that exposes this lack.

In the case of Mexico, a greater amount of red notice coverage appears in the news every day, which shows a violent face of the country (Molina-Ruiz et al., 2017). The objective of this work is to establish the reliability and validity of an instrument that measures the perception of security in: Territorial security; National security; Public security (State as attorney general); human security; Public security (Self-protection); Private security; and, Internet perception of security, scope.

Public safety protection events occur around the world that pose a threat to personal and property safety and national security (Wu et al., 2016). Mexico's security problems are similar in many ways to the general context of Latin America (Romero, Magaloni and Díaz-Cayeros, 2016). However, Mexico has a particular influence from organized crime due to the levels of consumption of illegal things in the US market (Molina-Ruiz et al., 2017).

As mentioned by Aguilera-García & Uribe-Arzate (2014), it has traditionally been understood as the function of the State that consists of protecting its citizens from illegal attacks (or crimes against) their property, their physical integrity, their sexual freedom and their sexual freedom. soon. In Chianca-Dantas (2015), the meaning of public custody is inferred as the safety of people. Khalili-Dehdezi & Qaleh-Sardi (2016) present 4 specific characteristics of public custody: inherence, inseparability, comprehensiveness and focus on justice.

In Hernando (1999), it is stated that the perception of our reality is subjective and that the perception of our world depends on our particular living conditions. The perception of reality operates from a higher order, from a

mesosystem that would include both (perception and reality), and in which each appears as elements and not as closed and independent units (Nescolarde-Selva, Usó-Doménech & Gash, 2014). The notion that what we see may not be what really exists, has disturbed and tormented [...] (Lotto, 2017), the entire population in each sector, class or role of our society (Molina-Ruiz et al., 2017). It is clear that different sectors of the population would have different perceptions of security.

It can also be mentioned that the cultural stigma in the country also affects and promotes the lack of public protection, due to the general way of thinking of the Mexican population, which, compared to other cultures, seems slow and with little interest. develop in academic, professional, social aspects, among others (Molina-Ruiz et al., 2017). The administration of public security is the implementation of public policies that justify the orientation of the State in the prevention of crime and the administration of justice, but only the distrust of citizens towards government action is evidenced in a growing perception of insecurity reported in Literature. in seven dimensions: territorial, national, public (government), human, public (self-protection), private and Internet.

As Molina-Ruiz (2015) mentions, Mexico can be seen from diverse areas such as economic, historical or social. In that sense, there are other sub-areas (or subscales in the social sphere) such as health, public safety, education, environmental awareness, among others. As mentioned above, different sectors of the population have different perceptions of social sub-areas (or subscales). In the case of Bachelor's students, given that their academic training provides the possibility of generating critical thinking, this sector of the population can generate a solid perception of a factor that affects the context of society.

Method

Correlational and psychometric study was conducted with a sample of 100 students selected by his affiliation to institutions committed to the SDGs in the context of the pandemic.

Instrument. The Occupational Biosafety Scale was used (see Annex A). It includes the following dimensions: 1) Implementation of Protocols and Health, 2) Access to Health Services, 3) Monitoring and Epidemiological Surveillance, 4) Safe Working Conditions, 5) Adaptability and Response to Crisis, 6) Equity and Equal Access, 7) Commitment to Health and Safety, 8) Training and Capacity Building, 9) Communication and Transparency.

Procedure. Respondents were invited via institutional email. They were informed about the objectives and responsibilities of the project. Respondents were invited to a focus group to discuss the meaning of the indicators. Respondents were invited to a Delphi study to evaluate the items. The surveys were administered at the university facilities.

The Delphi technique was used to establish the homogeneity of the concepts in the items. We examined the exhibit in the lobby of his university library. The data were processed with the Statistical Analysis Package for Social Sciences (SPSS) and Structural Analysis of Moments (AMOS). Versions 18.0. Reliability was estimated with Cronbach's alpha, Bartlett's validity test, KMO and factor weight.

Cronbach's alpha was estimated to establish the internal consistency of the general scale and the subscales. The Bootstrap parameter was calculated to establish sampling when it is not possible to fully use the data and only part of the distribution is used. Adequacy and sphericity were calculated with the Kaiser Meyer Olkin parameters and the Bartlett test. An exploratory factor analysis was performed with obliquity criteria and promax rotation of the principal axes. The hypothesis test was carried out with the estimation of the adjustment and residual parameters.

Analysis. The data were captured in Excel and processed in Google Colab (see appendix B). The coefficients of reliability, linearity, adequacy, sphericity, validity, adjustment and residuals were estimated. Values close to unity, except for the residuals, were assumed as evidence of non-rejection of the null hypothesis.

Results

Internal consistency, according to data collection and analysis, in the global scale (0.793) and the subscales (F1 = 0.792 and 22% of the total variance explained; F2 = 0.709 and 19% of the variance explained; F3 = 0.785 and 17% of the explained variance; F4 = 0.782 and 14% of the explained variance; and F7 = 0.731 and 7% of the explained variance is discrete because it shows the differences between the study contexts in which it was analyzed conceptualized security.

Conclusion

In Mexico, the interpretation or idea that the country lacks security is common. This lack of protection is influenced by the presence of organized crime, the illegal trade in drugs and weapons and the corruption available in each branch of the government, among the main aspects.

The correlations of reliability and validity when the unit shows that there are other dimensions linked to the construct. In this sense, the inclusion of self-control explains the effects of state propaganda on crime prevention, law enforcement, and peace education on the lifestyles of civilian sectors.

The contribution of this study refers to the reliability and validity of an instrument that measures seven dimensions of security: territorial, national, human, public, private and digital.

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