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Challenges In Regulation Of Occupational Risk Management In Brazil

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Abstract

The aims this study is to investigate whether the strategy adopted by Brazil to promote occupational health and safety has been complied with by companies. This study is original because there is lack of scientific research on Brazilian occupational risk management regulations to improve work environments. 5,547 notices of violation associated with occupational risk management were analysed. Occupational risk management regulation is not enough. Regulatory bodies should be strengthened to carry out inspections in work environments. It is imperative to increase fines associated with non-compliance of occupational risk regulations. Public policy that encourages MSEs to comply with occupational risk management should be built. In theoretical terms, this paper contributes to knowledge dissemination on strategies to ensure appropriate risk management in Brazil. From a practical perspective, additional measures are proposed to the strategy adopted by Brazil to promote health and safety at work.

Keywords: accident at work, health, safety

1. Introduction

Occupational accidents and illnesses are a serious public health problem in Brazil. There were more than 571,786 occupational accidents (work-related illnesses and occupational injuries) in 2021. On average, 573,427 occupational accidents have occurred in the last two decades. In this same period, there were 2,592 deaths on average per year, which means that seven workers died every day as a result of accidents at work (ILO, 2023). In addition, the sectors with the highest incidence are construction, mining, transport, and agriculture (Brazil, 2022a).

Given this huge number of occupational accidents and illnesses, Brazilian government authorities understand that some measures should be implemented to improve environmental work conditions, equipment control and to promote occupational safety and health and they decided to regulate occupational risk management in 2022. Criticisms, however, have arisen from this decision. First, from those who are against government regulation of any type and second, from those who understand that the occupational risk management regulation was necessary, but who consider that it is not enough because of gaps and failures in this regulation, which may cause it not to be implemented by companies.

2. The aims of this study

The main aim this study was to investigate whether the strategy that has been adopted by Brazil to regulate occupational risk management since 2022 to promote health and safety at work has been complied with by companies. From this investigation, the authors intend to propose additional measures to this strategy to ensure appropriate risk management and consequently to improve work environments and to reduce the incidence of occupational accidents and illnesses.

3. Occupational safety and health regulations

3.1. Arguments in favour and against regulations

The arguments in favour of occupational safety and health regulations are that without state intervention workers may not have adequate protection from health and safety hazards in the workplace (Guasch and Hahn, 1999). Legislation forces employers to manage occupational risk and through this, the employees' health and safety are adequately protected, preventing occupational accidents and illnesses (Rikhotso et al., 2022). In addition, an undesired event can be prevented and controlled or even diminished by the correct application of legislation in companies (Jacinto et al., 2010). From this point of view, legislation plays important role in occupational health and safety management (Ncube & Kanda, 2018; Salguero-Caparrós et al., 2020). Additionally, (Ashby and Diacon,1996) argue that "labour market forces are largely ineffective in motivating occupational risk reduction by companies, so that government regulations are necessary in order to protect employees against excessive levels of workplace risk".

However, according to (Hale et al., 2015), in some countries there is agreement that occupational health and safety regulations are suffocating industrial innovation and the development of new products and processes. In addition, there are complaints, particularly from medium and small companies that additional costs are caused by compliance with detailed and prescriptive regulations and carry the burden of record keeping. These costs may reduce competition among companies and raise prices for products and services (Hale et al., 2015; Salguero-Caparrós et al., 2020). In addition, (Hale et al., 2015) state that when every company is obliged to adopt the same strategy in detail, it makes it difficult to see whether another strategy would be more effective.

3.2. Brazilian context

The alarming number of occupational accidents and illnesses in the 1970s in Brazil led to a demand for action from the Brazilian Federal Government (BFG) to improve safety and health at work. In 1971, 1,325,410 occupational accidents were reported. This number reached 1,916,187 in 1975 (Veloso, 2017). In this context, the BFG issued twenty-eight Regulatory Norms (RNs) concerning occupational health and safety in 1978. The norms are enforced and have to be followed by all companies that have employees, regardless of their nature or size.

Since 1978, RNs have been updated and others issued. Nowadays there are thirty-six RNs, which cover a wide range of subjects concerning occupational health and safety, for example, RN 6 concerning Personal Protective Equipment, RN 7 concerning Occupational Health Control Program and RN 9 Environmental Risk Prevention Program. Table 3 shows ten out of the thirty-six RN. They are of a detailed and prescriptive nature. The updating and development of RNs is carried out by a Tripartite Commission, of which representatives of employees, employers and government are members.

To ensure compliance with RNs, a dedicated Secretariat of Labour and Inspection (SLI) was established which is subordinate to the Ministry of Labour. The SLI is the Brazilian Federal Labour Inspection Authority. It is made up of labour inspectors, who ascertain compliance with RNs by companies. In case of non-compliance, the companies are fined. Furthermore, when occupational accidents occur, labour inspectors have to investigate them and report all non-compliance identified during the investigation. Inspectors have to decide whether any cause associated with the accident can be deemed as legal noncompliance or omission.

4. Brazilian strategy for occupational risk management

As described in Section 3.2, despite having occupational health and safety regulations since 1978, and thirty-six RNs, the number of occupational accidents remains high in Brazil. One reason for this is that employers do not undertake occupational risk management. Therefore, the BFG decided to update RN 1 and include a legal obligation for companies to implement occupational risk management (Brazil, 2023a). The new RN 1 is prescriptive, detailed and bureaucratic, as described below.

4.1. Scope of coverage

All companies are now obliged to implement Occupational Risk Management (ORM). However, there are some exceptions. For example, small businesses that are classified as risk degree 1 and 2, according to Brazilian legislation, are not obliged to implement the ORM, as long as they declare that they do not identify any chemical (e.g., dust, chemical product exposure), physical (e.g., noise, hand-arm vibration, high pressure, hot or cold

climate), and biological (e.g., viruses, parasites, bacteria) hazards at the workplace where they carry out their activities.

Furthermore, when many companies carry out their activities in the same place, where each one of them generate a different kind of occupational hazard, all of them have to implement occupational risk management together. Additionally, companies have to communicate existing occupational hazards in the work environment under their responsibility to outsourced companies. On the other hand, the hired companies have to report the occupational hazards generated by them to the hiring companies. Equally, companies that have employees who work on the premises of other companies, for example, as maintenance contractors from staffing agencies, have to guarantee the health and safety of their workers while they are at that workplace.

4.2. Steps for occupational risks management

Companies are obliged to carry out a preliminary raising of occupational hazards before their activities or new installations start to operate. Furthermore, when there is a process change or a new process is introduced, preliminary raising of occupational hazards also has to be carried out. First, companies have to avoid occupational hazards in the work environment. If this is not possible, they have to follow the steps to implement occupational risk management.

The first step is occupational hazard identification. RN 1 defines hazard as "source that has the potential to cause harm or ill-health. This is an element that alone or in combination with another has the intrinsic potential to give rise to harm or ill-health". Here, companies have to identify all kinds of hazard that exist in the work environment, including accidents (e.g., slippery surface, moving parts machine, electrical installations), concerning ergonomics (e.g., work involving poor posture, lifting or carry loads), psychological (e.g., stress, violence, and harassment), and environmental (chemical, physical and biological) hazards. Furthermore, companies have to identify the source of a hazard, the group of employees exposed to the hazard, as well as the harm and health problems that the identified occupational hazards may cause.

The second step is to assess the occupational risk arising from each identified occupational hazards in step 1 and then to indicate the occupational risk level. The following step is to classify the occupational risk according to the occupation risk level in order to decide whether the risk is tolerable and is in need of prevention measures. If this is the case, the fourth step is to implement prevention measures for the occupational hazard, following the classification order of the occupation risk level. For example, an occupational risk classified as high level has priority over one classified as medium level. Occupational risk assessment (step 2) is described in greater detail in the following section.

4.3 Occupational risk assessment

As mentioned in section 4.2, companies have to undertake the risk assessment arising from each occupational hazard identified in the work environment. The risk assessment is determined by a combination of severity of an injury or illness with probability of this injury or illness occurring as a result of the exposure to a hazard.

In order to establish the severity, companies have to consider the magnitude of the consequence of an injury or illness as well as the number of workers that could be affected. In turn, in order to determine the probability, they have to consider if preventive measures have already been implemented, which may reduce the probability of an injury or illness occurring.

4.4 Preventive measures and action plan

If the risk is assessed as one that is in need of a preventive measure, for example, the risk is assessed and a preventive measure is required to reduce its level, RN 1 determines that these preventive measures have to meet the following order of priority: i) eliminate hazard; ii) minimise hazard and hazard control, through collective protective measures; iii) minimise and hazard control, through organisational measures; iv) reduce risk, through appropriate personal protective equipment. In addition, companies have to develop an action plan presenting the preventive measures that will be implemented and an execution schedule.

4.5 Risk management program

The identification of occupational hazards and the risk assessment process, including the criteria that were adopted in the risk assessment and making decisions on the need for preventive measures, have to be recorded by companies in a document called the occupational risk inventory. Additionally, both the occupational risk inventory and action plan make up the Risk Management Program (RMP) of companies. RMP is the way

occupational risk management is concretized and should be available at all times for workers, their representatives and labour inspectors.

5. Materials and methods

When labour inspectors carry out inspections in a company in Brazil and identify non-compliance with any RN, they are obliged to issue a notice of violation to the company. In this notice of violation, the non-compliance in detailed, including when the violation occurred, as well as the type of enterprise that did not comply with RN (e.g., micro, small, medium or large enterprise). The notice of violation must be input into the Auditor System by the inspectors. Only they have access to the Auditor System and they must use a personal and not transferable password to access it. In this study, all notices of violation associated with RN 1 since it came into in force in January 2022 to June 2023 (Brazil, 2023a) were selected for analysis by the authors to investigate compliance with RN 1 by companies.

The authors read the selected notices of violation and extracted from them the following data: i) description of non-compliance with RN1; ii) type of enterprise that did not comply with RN 1; iii) the minimum and maximum value of the fine associated with non-compliance.

6. Findings and discussion

6.1. Non-compliance with occupational risk management regulation

Table 1 shows the seven most common motives for non-compliance with RN 1. In total, 5,547 notices of violation were issued by labour inspectors, which presents 22.5% of all notices of violation associated with occupational safety and health in the investigated period (from January/2022 to June/2023). As can be seen, the non-compliance associated with action plan is in first place, 1,330 notices of violation were issued due to companies not complying with an elaborate action plan. This means that the company carried out the risk assessment and classified the risk level, but the action plans to reduce the level of risk were not built. More serious is the amount of non-compliance with occupational risk management, which comes in second place. In other words, none of the steps described in Section 3.2 were carried out by 990 companies. This is a serious because these companies knew that they had to carry out occupational risk management from March 2020, when RN 1 was published, but it came into force in January 2022. Therefore, there are no excuses in term of lack of time or awareness for them not to have complied with occupational risk management. Also, it is important to point out that the number of non-compliances may even be higher, because the vast majority of companies are not visited by labour inspectors because of poor state of the labour inspection service.

Table 1. Non-compliance with RN 1 and number of notices of violation.

Violation	Number of notices of violation
The Company did not develop an action plan	1,330
The company did not implement Occupational Risk Management (ORM)	990
The company did not identify all kinds of hazard that exist in the work environment.	973
The company did not record in occupational risk inventory the identification of occupational hazards and the risk assessment process.	873
The company did not adopt preventive measure to reduce risk level.	505
The company, in order to determine the probability, did not consider if preventive measures have already been implemented.	449
The company did not undertake the risk assessment arising from each occupational hazard identified in the work environment	427
Total	5,547

Currently in Brazil, the number of labour inspectors is 1,940, only 53% of the total number prescribed in the law (3,644). This is the lowest number of inspectors in thirty years (Sinait, 2023) and is mainly due to the retirement of inspectors and the fact that the Brazilian Federal Government has not hired new ones. The last

recruitment drive was in 2013. Consequently, the labour inspectorate cannot cover the nearly 19.3 million companies registered (Brazil, 2022a), and the ratio of inspectors to companies is 0.1 inspector per 1,000 companies (ILO, 2023). The ratio of inspectors to employees is 0.3 inspectors per 10,000 employees, when the ILO recommend 1 inspector per 10,000 employees (Sinait, 2023).

Furthermore, inspection of companies to verify compliance with occupational risk management regulations has been reduced. For example, in 2019 and 2022, before and after of restrictions caused by the pandemic, 67,500 and 34,286 enterprises were inspected for occupational safety and health regulations, respectively (Brazil, 2022b), which is a reduction of almost 50% in the number of inspections. It is currently estimated that companies will never receive a visit from an inspector. Therefore, measures to improve labour inspection services and recruitment of new labour inspectors are very necessary. Otherwise, compliance with occupational safety and health regulations may become less common than it currently is.

The importance of labour inspection for enforcement has been pointed out by Blanc and Pereira (2020). For them, labour inspection is a regulatory enforcement mechanism and not only part of the regulation developed with a view to protect occupational safety and health. Furthermore, our experience has also shown that labour inspections have the most important influence on a company's compliance with occupational safety and health regulations, which is in line with findings in research carried out by Levine et al. (2012) and Niskanen (2013).

6.2 Medium and large enterprises

Table 2 presents number of notices of violation by type of enterprise. As can be seen, in total, the number of notices of violation to medium and large enterprise is higher than to micro and small enterprises (MSEs), 3,644 against 1,903, 66% and 34%, respectively, of the total de notices of violation (5,547). This scenario may be explained as follows. First, we have observed, as labour inspectors, that some companies wait for the inspector to visit them and notify if non-compliance with regulations was identified in the workplace inspection. It is only then that they start to comply with regulations. These companies know that inspectors rarely if ever visit them, given their small numbers, as described in Section 6.1.

Table 2. Number of violations by type of enterprise.

Violation	Micro and small enterprise	Medium and large enterprise
The Company did not develop an action plan	310	1020
The company did not implement Occupational Risk Management (ORM)	561	429
The company did not identify all kinds of hazard that exist in the work environment.	324	649
The company did not record in occupational risk inventory the identification of occupational hazards and the risk assessment process.	279	594
The company did not adopt preventive measure to reduce risk level.	185	320
The company, in order to determine the probability, did not consider if preventive measures have already been implemented.	116	333
The company did not undertake the risk assessment arising from each occupational hazard identified in the work environment	128	299
Total	1,903	3,644

In addition, as pointed out by (Hale et al., 2015), another reason which may also contribute to the non-compliance is the prescriptive and detailed nature of the regulations, as in RN 1. These regulations are hard to understand because of their legalistic phrasing and complexity and it is often difficult to determine whether a particular rule applies in a given situation. Employers wait for the labour inspector to visit, then they ask the inspector to specify exactly what should be done and how to do that. In addition, the non-compliance with RN 1 may be associated with the poor structure of the labour inspection and small fines described in Sections 6.1. and 6.4, respectively, as (Cardoso and Lage, 2009) stated "the effectiveness of labor regulations depends on the interaction between the overall sanctions (fines) and the probability of the employer getting caught breaking the law". Second, in the last decade, Brazilian entrepreneurs have complained about the burden imposed by laws and regulations on companies, particularly where occupational safety and health regulations have been of a detailed

and prescriptive nature (Picolotto et al., 2022). According to them, such regulations and laws can reduce competition and the creation of jobs, restrict innovation and development, increase prices for products and services, all fomenting an aversion to state intervention in occupational safety and health.

Consequently, the number of lobbying associations representing companies and industries against these kinds of regulations have increased (Feitosa and Carvalho, 2022). As result, proposals have been presented to repeal the regulations and thus reduce the regulatory burden where possible. This scenario has impacted non-compliance with occupational safety and health as whole and RN 1 in particular, pushing companies even further away from regulated practices.

6.3. The challenges for micro and small enterprises

As also can be seen in Table 2, the number of notices of violation associated with non-compliance with occupational risk management is higher in MSEs than medium and large enterprises, 561 against 429. This means none of the steps described in Section 3.2 were carried out by 561 MSEs. This number may be higher because by Brazilian labour legislation MSEs only have to be notified of violations when they are visited twice by a labour inspector. As such, some MSEs have may not have been visited twice by a labour inspector yet.

Micro and small enterprises (MSEs) account for nearly 99% of companies, of which there are about 18.5 million in Brazil, providing 62% of existing jobs. They are also responsible for 30% of the Gross National Product (GNP) (Brazil, 2023b). Therefore, they form the backbone of the Brazilian economy and are a key driver for economic growth and employment. However, these companies in general are in a weak economic position, they suffer from a lack of resources and are mostly concerned about economic survival, mainly in times of economic crisis, causing a substantial proportion of them to pursue 'low road' business strategies.

Consequently, MSEs have attitudes and priorities that do not favour occupational safety and health and do not tend to invest in this area. Also, there is limited knowledge, awareness, and competence on the part of owner-managers regarding this subject. As result, the MSEs have great difficulty in complying with occupational safety and health regulations. Previous studies carried out in other countries have found similar contexts (Salguero-Caparrós et al., 2020; Jensen et al., 2001; Rodrigues et al., 2020). Consequently, the health and safety of most workers employed in MSEs is poorly protected.

The influence of occupational risk management regulation on MSEs reveals a complex reality making the role of governance and regulation to improve the work environment in micro and small enterprises not straightforward. Furthermore, previous studies have suggested that these firms possess an antipathy to state intervention on occupational safety and health in the form of regulation and regulatory inspection (Nichols, 1997; Wright, 1998). An aggravating factor is the huge number of MSEs in Brazil and their diversity, which present huge challenges for both regulation and the regulatory body in charge of monitoring and promoting compliance with regulatory norms.

It is therefore widely held that additional strategies are necessary, besides occupational risk management regulation in Brazil. It is essential, for example, that there are public policies and interventions for an effective occupational safety and health management in MSEs and to guarantee the well-being of workers, as well as to ensure long-term economic survival of these enterprises. Nevertheless, in order for such public politics and interventions to reach MSEs, the following points are important: 1) the involvement of all key regulatory actors; reinforcement regulatory inspections; 2) the availability of sustainable, easily applicable, and transferable solutions; 3) the better inclusion of occupational safety and health into sector-specific education systems; 4) the involvement of worker and employer representatives in the proposal of public politics and interventions to reach MSEs; 5) better supply chain arrangements.

Additionally, public policies and interventions in MSEs should be part of continuous action in a complex scenario. They should be understood as part of wider societal and economic developments that both have an impact on and are influenced by national and sectoral policies and enforcement of regulation. As can be seen, MSEs constitute a special challenge for the elaboration of public policies and interventions directed at improving safety and health at the workplace in Brazil.

6.4. The value of the fines

Table 3 shows the minimum and maximum value of the fines associated with non-compliance with RN 1 in Brazilian and European currency, real and euro, respectively. The value of a fine ranges from 1,201 (229) to 5,245 reais (999 euros). The exchange rate used was one euro is equivalent to 5.25 real. The value of the fines applied depends on number of employees and if the company is a recidivist.

Table 3. Minimum and maximum value of fine associated with violation with RN 1.

Violation	Value of fine (real/euro)	
	Minimum	Maximum
The Company did not develop an action plan	1,799 (343)	5,245 (999)
The company did not implement Occupational Risk Management (ORM)	1,799 (343)	5,245 (999)
The company did not identify all kinds of hazard that exist in the work environment.	1,799 (343)	5,245 (999)
The company did not record in occupational risk inventory the identification of occupational hazards and the risk assessment process.	1,201 (229)	3,435 (624)
The company did not adopt preventive measure to reduce risk level.	1,799 (343)	5,245 (999)
The company, in order to determine the probability, did not consider if preventive measures have already been implemented.	1,799 (343)	5,245 (999)
The company did not undertake the risk assessment arising from each occupational hazard identified in the work environment	1,799 (343)	5,245 (999)
Total	1,799 (343)	5,245 (999)

Note: The exchange rate used was one euro is equivalent to 5.25 real.

The value of the fines for non-compliance with occupational safety and health regulations, in Brazil, lead companies not to comply with them, because the cost of paying the fine is usually lower than the cost of adopting preventive measures to improve the work environment, as demonstrated by (Cardoso and Lage, 2009). Therefore, there is a need for a significant increase in the size of the fines imposed for non-compliance with occupational safety and health regulations. As (Ncube and Kanda, 2018) have suggested, costly and deterrent fines should deter present and future perpetrators of unsafe and undesirable occupational safety and health practices.

7. Conclusion and future works

We have investigated whether the strategy adopted by the Brazilian Federal Government to encourage improvements in the safety and health of workers at work and to reduce the huge numbers of occupational accidents and illnesses is being implemented by companies. Our intention is to inform both science and society. We consider the strategy adopted, occupational risk management regulation, necessary because the country has a wide diversity of enterprises, with different technological levels, sizes, motivations, resources, and competences, and most of them are MSEs. Risk control solutions based on risk management process rules, without obligations, are not solutions either. As mentioned before, market forces alone are ineffective in motivating occupational risk reduction by companies, therefore government regulations are necessary in order to protect employees against excessive levels of workplace risk.

However, occupational risk management regulation strategy alone is not enough, because the high number of notices of violation associated with non-compliance with RN 1 in studied period indicates that occupational risk management has not been implemented by a considerable number of companies. Here we offer a set of measures that should come together with this strategy in order for it to reach its aims. Firstly, measures to improve the labour inspection services (e.g., human, material, and financial resources) are crucial and are urgently required to support regulation enforcement. Safety and health regulatory bodies should be strengthened to constantly and consistently carry out inspections in work environments and ascertain compliance with regulations. Second, it is imperative to increase fines associated with non-compliance of occupational safety and health regulations, aiming to prevent any abuse against safety and health at work and consequently protect workers.

Third, another essential measure is to frame public policy and intervention that encourages MSEs to comply with occupational risk management and to invest to improve the workplace. These measures could be designed for specific MSEs groups, meeting their specificities. They should come with other measures of an economic and social order implemented by the federal government. In our opinion, without these measures, the occupational risk management regulation strategy will fail.

We are conscious that this discussion only takes account of factors determining the way in which regulations work in Brazil. Other factors include the political context, the national culture, legislative traditions, and structures. Our discussion has been limited to both Brazil and Brazilian occupational risk management regulations. Furthermore, there is a need for further research into the role and influence of regulation and regulatory inspection, as well as other means of influencing occupational risk management in companies, particularly in MSEs, in the context of the structural and cultural features of the economy. The precise nature of these influences should be explored further with both qualitative and quantitative studies.

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