



Economic cost of occupational accidents: Evidence from a small island economy

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ABSTRACT

Though a number of occupational accidents have occurred amongst the working population in Mauritius, no study has been carried out to measure the costs associated with such accidents to the best of our knowledge. This study bridges this gap by measuring the economic costs of occupational accidents by using both quantitative and qualitative approaches. The results show that occupational accidents result in costs amounting to nearly Rs. 168 mn of which a major part is accounted for, by loss in productivity. Alongside the highest rate of accidents took place within small enterprises and younger workers are the one taking higher risks mainly due to lack of knowledge and risk awareness. The findings also reveal that only 4% employers believe that investment in safety and health is important for maintaining good business partly because most of the costs are borne by the state. Such a situation therefore requires the need for awareness on practical health and safety systems and procedures among both employees and employers with a view to prevent accident and injuries.

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1. Introduction

Most of the world's population (58%) spend one-third of their adult life at work and their work sustains the economic and material basis of society. Yet according to Leigh et al. (1997), approximately hundred million occupational injuries (100,000 deaths) occur worldwide each year. Such occupational accidents are associated with high economic and social costs, though the latter is beyond the scope of this study as the main focus here is on the former.

Economic costs are not only borne by those injured but also by the enterprises concerned and the government and can be in the form of both direct (such as material damage and down-time, and financial losses through experience-related insurance premium and a share of the medical expenses) as well as indirect/hidden costs (such as overtime work made necessary by accidents, retraining expenses and intangible factors such as loss of company prestige and deteriorating industrial relations, may have a substantial impact on the quality and profitability of production). Some authors estimate these hidden costs for enterprises at several times the direct costs (Andreoni, 1986; Heinrich, 1959; Boden et al., 1999).

Various studies have estimated the economic (in some cases inclusive of social costs) of occupational accidents and some have used quantitative approaches (Miller et al., 1995; ILO, 2002; Leigh et al., 1997 among others) while others have had recourse to qualitative approaches (Andreoni, 1986; Larsson et al., 1995; Boden

et al., 1999; Dembe, 2001) and most of them came up with the conclusion that indeed the economic costs are quite significant thereby stressing on the importance of accident prevention.

This study uses both quantitative and qualitative approaches to estimate the economic costs of occupational accidents in the context of a small island economy, Mauritius. The rationale behind the choice of this case study is that statistics from the Ministry of Social Security and National Solidarity and those compiled by Labour Information Centre, and the Ministry of Labour, Industrial Relations and Employment show that though there is a downward trend in non-fatal occupational accidents in the island, there has been an upward trend in the case of fatal accidents as from 2001, with the agriculture, hunting, forestry sectors ranking first in the former type of accidents and the construction sector topping in the latter type of occupational accidents. Such accidents obviously have an impact on the productivity of workers and given the country is already at a disadvantage in terms of high labour costs in some sectors, lower productivity will in turn cause higher damage to the economy and as such there is a need to gauge into the economic costs associated with such accidents, be it minor, serious or fatal.

The paper is structured as follows: Section 2 overviews the literature and empirical review, the next section highlights the methodology followed by the analysis of the research findings and the associated policy implications. The paper ends with a conclusion.

2. Literature and empirical review

The International Labour Organisation defines an occupational accident as an unexpected and unplanned occurrence, including acts of violence, arising out of or in connection with work which

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results in one or more workers incurring a personal injury, disease or death. The economic costs associated with occupational accidents can be defined as the direct, indirect and opportunity costs borne by employers, employees and government (via the social security system). While on the other hand Keller (2001, p. 438) describes the social costs as “losses or limitations in a person’s ability to engage in major social roles and activities. These include working, parenting, or sharing leisure activities with or caring for friends and family.”

While there have been studies quantifying the economic costs of occupational injury using data on workers’ compensation insurance payments, provision of medical services, time needed to return to work, and other direct insurance and employment data, very few research have tried to estimate the social costs (e.g., changes in future work activity, impact on family members of injured worker, impact on quality of life) and as such much of such costs remain unknown leading employers to underestimate the cost of occupational injury (Brody, 1990; Boden et al., 1999; Dembe, 2001; Weil, 2001).

Turning to the methods for estimating the economic costs of occupational accidents, economists have developed two main methods namely the willingness to pay (WTP) method and the human capital (HC) method. The WTP method attempts to apply prices that are generated in market transactions unfettered by Medicaid, workers’ compensation, and other government subsidies. The WTP accounts for the value people place on the health of retirees, children and homemakers; on pain and suffering; and on variations across individuals and communities. The HC on the other hand categorise costs into direct and indirect ones. The direct costs refer to the actual money spent or anticipated to be spent on providing medical care to the injured person and administrative costs for delivering medical care and for delivering indemnity benefits. Indirect costs represent forgone opportunities for the injured person, his or her family, unpaid caregivers, employer, co-workers, and society at large. The HR method has been criticised on various grounds such as ignoring costs for non-wage earning persons, underestimating the costs to women and minorities given their wages tend to be low due to discrimination and ignoring substitution effects, for instance the economic costs of a cashier being shot may equal to the costs of locating, hiring and training a previously unemployed person (Rice, 1994). Hence the WTP method is preferred given it is more comprehensive.

Yet for this study the HC method is used since firstly all the individuals analyzed must have been working for pay before the injury. The minority and gender issue is not a problem in our case as the study does not distinguish between among races and ethnicities nor between women and men. Moreover, the criticisms regarding the substitution effects apply only to the indirect costs component of HC method and in some cases the criticism is invalid given that not all workers are easily replaced and home production is not easily replaced especially in the case of a valued family member. Finally the WTP method requires a lot more information which can be very subjective and the responses are subject to free riding problem.

3. Data analysis

Following the recommendation of Dembe (2001) who stated that quantitative approaches should be backed by the use of qualitative research approaches (including ethnographic interviews, focus groups, population-based surveys and questionnaires, and case studies) in order to calculate the true economic and or social costs of occupational accidents, this study adopts both approaches.

For quantitative approach, secondary data from the Industrial Injury Branch of the Ministry of Social Security and National Soli-

darity, the Central Statistical Office, Ministry of Public Infrastructure and the Occupational Safety and Health Inspectorate will be used to estimate the following cost elements:

- lost income through time off from work,
- Productivity lost due to disability and death,
- cost of the medical treatment which victims received,
- cost of investigation by Occupational Safety and Health Inspectors.

For the purpose of this study, occupational accidents reported to the National Pension Fund and Occupational Safety and Health Inspectorate during July 2002–June 2003 were chosen. During this period 3634 were reported including 14 fatal and 3620 non fatal accidents. Alongside, the study considers non-fatal accidents where injured workers stayed off-work up to 30 days as minor accidents and as serious accidents those where worker resumed work after more than 30 days, if ever. Table 1 shows the distribution of various types of accidents across different economic sectors.

To gather qualitative data 100 victims, 50 employers and 50 family members were surveyed. The stratified random sampling method was used and the sample frame for employees, employers and family members were drawn as per Tables 2 and 3.

Three semi-structured questionnaires were designed aimed at obtaining information on cost of work accidents from the injured employees, their families and employers through face-to-face interviews and through telephone interviews. All employers were interviewed through the phone. 75% of victims having sustained minor injuries and the family members were interviewed through

Table 1

Distribution of accidents by days of absence from work, within the various economic sectors (July 2002–June 2003).

Economic activity	<3 Days	3–7 Days	8–14 Days	14–30 Days	>30 Days	Fatal accidents
Agriculture, hunting, forestry	378	402	97	238	79	3
Manufacturing	43	150	44	384	62	1
Electricity, gas, water installation	0	0	0	2	0	0
Construction	400	352	29	172	22	4
Wholesale retail trade, rep(commerce)	14	22	8	97	14	1
Hotels and restaurants	0	2	1	54	2	1
Transport, storage, communication	56	110	26	102	37	2
Education	0	0	0	1	0	0
Community social and personal service activities	2	12	8	81	12	2
Private household with employed persons	2	0	0	98	5	0

Source: Ministry of Social Security and National Solidarity.

Table 2

Sample of injured employees/employers.

Economic activity	Number of employees		Number of employers
	Minor accident	Serious accident	
Agriculture, hunting and forestry	33	2	17
Manufacturing	18	2	10
Construction	28	1	15
Wholesale and retail trade	3	–	1
Transport, storage and communications	8	1	5
Other service activities	4	–	2
Total	94	6	50

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