



Journal of Applied Sciences

ISSN 1812-5654

science
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Migrant Contract Workers and Occupational Accidents in the Furniture Industry

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Abstract: Studies on the rate of occupational accidents among migrant contract workers is sparse, although they are increasingly used in the furniture manufacturing industry in Malaysia. Therefore, the rate of occupational accidents among migrant contract workers in the Malaysian wooden furniture industry were studied in sixty furniture manufacturing factories, using a structured questionnaire. The two-part questionnaire were aimed at collecting data on comparative accidents rates among the foreign workers and local workers, while identifying the main factors that lead to occupational accidents. The findings of the study show conclusively that the migrant contract workers are less prone to occupational accidents compared to their local counterparts and hence, are more productive. Further, the results also revealed that the migrant contract workers have a more positive attitude towards the work and hence, pick up the essentials of safe working quickly. It must therefore be recognized that the “production oriented mentality” prevalent in the industry which has been argued to compromise occupational safety and health standards in the industry may be debatable. In this context, it is essential for the policy makers to re-examine the employment of migrant contract workers for the furniture manufacturing industry, as changing the psycho-economic parameters of the industry may be warranted before the industry is deemed attractive to the local workforce.

Key words: Foreign workers, occupational accidents, labour intensive, policy

INTRODUCTION

Although, the nature of occupational accidents in the woodworking industry has been extensively reviewed (Holcroft and Punnett, 2009), most of the reports are focused on the nature of processing rather than the characteristics of the workforce. A case for concern is the increasing use of migrant contract workers in the value-added wood products sector, especially furniture manufacturing, in countries such as Malaysia, Thailand and Vietnam (Ratnasingam and Bennet, 2009). Although workforce characteristics have been shown to contribute to occupational accidents in the wood products sector (Rampal and Nizam, 2006), the role of the migratory workforce in occupational accidents have attracted little research interests.

Furniture manufacturing has evolved from being a cottage based, skill-dependent industry to a highly mechanized and labour intensive industry operating in high-volume production environments in countries such as Malaysia, Thailand and Vietnam (Rampal and

Nizam, 2006). On this account, there is a growing need to ascertain the effects of using migrant contract workers on occupational accidents in the furniture industry which is an important socioeconomic sector in many South East Asian countries (Ratnasingam and Bennet, 2009).

The furniture manufacturing industry has emerged as one of the fastest growing industrial sectors in Malaysia and its socioeconomic importance, both in terms of workforce employment and foreign exchange earnings has increased significantly over the years. In 2009, the sector contributed US\$ 2.1 billion in export earnings, while employing almost 79,000 workers (Ratnasingam *et al.*, 2011). Nevertheless, the prevailing risky work environment in the furniture industry which is regarded as dirty, dangerous and degenerative, i.e., “3D environment”, is not deemed attractive to the local workforce. Hence, migrant contract workers, from Bangladesh, Myanmar, Nepal and Indonesia are increasingly employed within the furniture manufacturing industry in Malaysia (Ratnasingam *et al.*, 2010a). Whether the use of migrant contract workers’ increases occupational accidents is

highly debatable (Ratnasingam *et al.*, 2010b) but published statistics on accidents in the manufacturing sector by the National Institute of Occupational Safety and Health (NIOSH), suggest that occupational accidents in the furniture industry is above the national average of the manufacturing sector and often resulted in huge compensation payouts, emphasizing that studies into this subject is warranted (NIOSH, 2009). Further, the impact of accident on workers on the overall industrial productivity is a matter of national and international interests, especially when industrial productivity dictates the competitiveness of the wooden furniture industry (Guldenmund, 2000; Clarke, 2006a; Pousette *et al.*, 2008; Wu *et al.*, 2008; Gyekye and Salminen, 2009).

Previous studies have shown that industrial accidents are closely related to the prevailing work environment and tasks carried out (Cooper, 2000; Clarke, 2006b; Das *et al.*, 2008) and factors such as: (i) prevailing environment, (ii) nature of work, (iii) handling, (iv) ergonomic, (v) machine, (vi) training, (vii) maintenance, (viii) plant layout, (ix) workers characteristics and (x) safety climate and the risk posed by each of these factors may vary from factory to factory (Ratnasingam *et al.*, 2011).

Against this background, a study was undertaken to evaluate: (1) the susceptibility of migrant contract workers to occupational accidents in the furniture industry and (2) the relationship between the migrant contract workers and industrial productivity in the Malaysian furniture industry. The results of this study will provide useful information to policy makers to formulate necessary guidelines to minimize occupational accidents in the furniture industry, as well as re-examine the policy on migrant contract workers for labour intensive sectors.

MATERIALS AND METHODS

The study was conducted in 60 large (employing more than 100 workers, with an annual turnover in excess of US\$ 10 million) furniture-manufacturing companies in Malaysia, using a two-part structured questionnaire. A total of 5340 workers were involved in this study, with migrant contract workers making up 59% of the total sample size. The characteristics of the workforce involved in the study are as shown in Table 1. The companies were selected from the databases of the Malaysian Furniture Industry Council (MFIC). These companies were chosen on the basis of the number of occupational accidents reported to the respective National Institute of Occupational Health and Safety (NIOSH). In this study, accident rate refers to number of accidents at the workplace per million work hours and the accident leads

Table 1: Characteristics of the workforce in the furniture industry

Factors	Bangladesh	Myanmar	Nepal	Indonesia	Local worker
Total	1348	843	742	217	2190
Age-class	23 - 27	21 -25	21-25	23-27	18-30
Educational Level	Secondary Diploma	Secondary	Diploma	Secondary	Secondary
Sex	Male	Male	Male	Male /Female	Male /Female
Marital status	Single /Married	Single /Single	Single /Single	Single /Married	Single /Married

Table 2: Occupational accidents' risk

Factor	Variable involved	Average score for factor
Workers characteristics	(1) Gender	4.69
	(2) Age-class	
	(3) Education level	
	(4) Experience at work	
	(5) Nationality	
Workers attitude	(1) Careful and attentive	4.81
	(2) Hard working	
	(3) Pay attention to safety	
	(4) Disciplined	
Workers training	(1) Safety training	3.49
	(2) Accident prevention training	
	(3) Exposing employees to safety and accident	
Prevention rules		

to at least an hour of production loss. The questionnaire-based study was implemented with the assistance of the MFIC from January 2010 to November 2010.

Part I of the questionnaire examined the occupational accidents' records at the respective furniture companies for the period, from 2005 to 2009. The occupational accidents data were segregated based on (i) nationality, (ii) gender, (iii) age-class, (iv) educational level, (v) experience at work, (vi) work station, (vii) shift/time of injury, (viii) type of injury/accident, (ix) period of continuous work prior to accident, (x) time when food last consumed, (xi) recent sleep disturbances, (xii) presence of any family tension/stress, (xiii) presence of any acute illness, (xiv) on medication/treatment and (xv) period of absence from work after injury/accident. These fourteen criteria were selected based on the previous study on occupational accidents by Bazroy *et al.* (2003) and after consulting industrial experts, to ensure that it represented the entire spectrum of workforce-related factors that could possibly cause accident.

Part II of the questionnaire was related to the measurement of occupational accident risks due in the companies, where 12 variables were evaluated based on the Likert's five-point rating scale (Table 2). The senior managers at the respective factories were interviewed to determine the ratings for the variables. These variables were then grouped into groups, namely: (1) workers characteristics, (2) workers attitude and (3) workers training.

Analysis of data: The data compiled were primarily analysed with the Foxbase program which provided time series analysis for the day of the week and month. Further, the data was analyzed using standard error of proportions was used to determine the difference between the number of accidents in the 1st half and 2nd half of shifts. Chi square test was employed to identify the occupational accidents risk factors, whereas the strength of the association was determined using the correlation analysis (Bazroy *et al.*, 2003; Holcroft and Punnett, 2009).

RESULTS

Part I: Occupational accidents among migrant contract workers and local workers: Table 3 provides an analysis of the rate of occupational accidents among the migrant contract workers and local workers, based on the data gathered from the 60 respondent factories. It was apparent that the local workers were more prone to occupational accidents compared to migrant contract workers. The results of the study revealed that contrary to common belief, migrant contract workers suffered less occupational accidents compared to their local counterparts, even in the risky workstations, such as the machining centres and rough-milling section. Further, the workers’ hands and wrists were the most common anatomical sites for injury, while their eyes, ankle, feet and other anatomical parts accounted for less than 12% of the injuries reported. This finding was similar to the reports by Bazroy *et al.* (2003) and Holcroft and Punnett (2009) who found that in labour intensive industries, the hands and wrists were easily injured due to the manual nature of the job. Cuts and lacerations accounted for almost 55% of the accidents/injuries reported, followed by eye injuries (20%), sprains (12%) and other types of injuries making up the rest, similar to the report borne out by Smith *et al.*, (1994). The incidence of occupational accidents was higher during the 2nd shift (3.00 pm to 11.00 pm) and among workers who continued to work beyond the normal 8 h shift. Time series analysis of the occupational accidents revealed that workers in the 2nd shift of work were more prone to accidents and higher rate of accidents were reported during the weekend as well. Further, there was a statistically significant difference ($p = 0.05$) between the higher proportion of accidents in the second half of the 2nd shift compared to first half and this is probably attributed to the fatigue and loss of concentration on the part of the workers towards the later part of the shift as the manufacturing process is monotonous and continuous (Smith *et al.*, 1994). Male workers with a year of experience were also more prone to suffer from occupational accidents, compared to female workers. This

Table 3: Summary of records of occupational accidents (2005-2009)

Factors	Migrant workers	Local workers
Experience at work	3.8 (0.3)	1.5 (0.6)
Frequency of accidents/ Injuries (per 1000 000 h)	149 (23)	441 (49)
Average loss of productive Time (Hours) per year	14 (4)	179 (19)
Work station of accident	Machine centre	Machine centre rough mill
Type of accident	Cuts/bruises/sprain	Severe cuts/ bruises/sprain
Duration of work (h) Prior to accident	8	4-8
Last meal/time of Food consumption	On time	On time
Sleep disturbances	Yes	Yes
Stress/family tension	Yes	Yes
Acute illness	No	No
On medication	No	No

Values in parentheses indicate the standard deviation

is possibly attributed to the lack of attention among male workers compared to female workers in monotonous and repetitive tasks, as frequently found in the furniture manufacturing industry (Jinadu, 1990). However, nationality and age-class had no significant ($p = 0.05$) influence on the rate of occupational accidents. Incidentally, workers with episodes of sleep disturbances, insufficient food uptake, on medication or treatment for previous accidents and under family tension/stress also more prone to accidents compared to workers free from these characteristics. The results from study are somewhat similar to the report by Bazroy *et al.* (2003), who showed that the “degree of tiredness” of the worker attributed to the lack of sleep, food consumption or even level of stress may increase the susceptibility to accidents in mechanized work environment, as in the furniture manufacturing industry. On the other hand, the higher degree of attention given by the migrant contract workers during on the job training enables them to master safe working habits faster compared to their local counterparts, hence reducing the rate of occupational accidents (Holcroft and Punnett, 2009). Perhaps, the higher average educational level among the migrant contract workers compared to the local workers, could also explain the comparatively lower rate of occupational accidents among them (Ratnasingam and Bennet, 2009; Ratnasingam *et al.*, 2011). In comparison, the study reveals that migrant contract workers were more productive compared to their local counterparts in the furniture industry, as they suffered a lower loss in productive time due to occupational accidents and the period of absence after injury was significantly shorter.

Part II: Occupational accident risks among workers: In evaluating the risks for occupational accidents among

workers in the factories involved in the study, it was found that the workers attitude received the highest score, followed by workers characteristics and finally the workers training (Table 2). The occupational accidents were strongly correlated with the workers attitude and workers characteristics (based on the calculated values of $r = 0.941$ and $r = 0.861$ at $p = 0.05$, respectively) which describes the occupational accidents risk factors. However, workers training showed a weak correlation (based on the calculated value of $r = 0.338$ at $p = 0.05$) with the rate of occupational accidents. In this context, the workers training program may be insufficient to pre-empt the risks of occupational accidents, if the workers attitude and workers characteristics are not positively inclined to minimize occupational accidents. This finding emphasizes the fact that in labour-intensive manufacturing environments, such as in the furniture industry, the overall workforce attitude and characteristics play pivotal role in avoiding occupational accidents as well as boosting productivity (Gyekye and Salminen, 2009; Salminen *et al.*, 2009; Ratnasingam *et al.*, 2011).

DISCUSSION

The results of this study corresponds to the findings of Varonen and Mattila (2000), Smith *et al.* (2006) and Holcroft and Punnett (2009) that emphasized the fact that occupational accidents in the furniture industry is attributed to the workforce characteristics as well as the prevailing safety climate at the workplace. Nevertheless, workers training and safety regulations are not the answers to accident prevention. A study by Sheehy and Chapman (1987) has shown that occupational safety can be improved in "accident prone" areas by changing the work ergonomics and equipment safety features. Further, Holcroft and Punnett (2009) have conclusively shown that the most productive path to reducing accidents is through a greater use of techniques from industrial psychology and organizational science.

Previous study by Ratnasingam *et al.* (2011) has shown that the primary accident risk factors for the wooden furniture industry are associated with the immediate work environment (such as air-borne dusts from machining operations, noise emission, chemicals exposure and manual handling of materials). The prevailing safety climate within the furniture sector must create the "culture of safety" through the concerted efforts of the management (Clarke, 2006b). The human resource practices that ensure a workforce that can meet goals for safety, productivity and quality is valuable for increasing safety performance.

Table 4: Risk factor analysis

Risk factor	Rating	Chi-square (p-value)
Worker characteristics	4.69	6.4 (0.013)
Worker attitude	4.81	8.4 (0.004)
Worker training	3.49	5.7 (0.01)

As the workers' characteristics and training programs have been recognized to play a strong role in the prevailing safety climate in the furniture industry (Ratnasingam *et al.*, 2011), the results from this study further expounds the notion that workers' characteristics has an overriding influence on safety climate, as it determines the attitude and work habits towards safety and health (Table 4). As noted by Clarke (2006b), the characteristics of the workforce is crucial in determining the motivation training and accident prevention and as shown in this study, appears to limit the influences of training and supervision on the rate of accidents in the wooden furniture industry.

Industrial implications: This study underlines the main reason for the preference for migrant contract workers in the furniture manufacturing industry in Malaysia. The general reluctance of the local workers to work in the furniture industry due to the poor working conditions (i.e., 3D syndrome), has created a workforce inadequacy that could be readily overcome by the migrant workforce, who appear to provide a stable workforce supply, that is not only more productive but is also safety and health conscious. In this context, improving the workforce psychology rather than workers training, may prove to be a better approach to attract the local workforce to the furniture industry. Driven by the opportunity to improve their socio-economic status, these migrant contract workers have a more positive outlook towards work rather than the local workforce who appear to be pampered with many different choices of employment (Ratnasingam *et al.*, 2011). The positive work attitude, willingness to learn and hardworking attribute have been cited as the main reasons for furniture manufacturers to employ migrant workers, despite the possibility of social problems. Moreover, their lack of communication skills which often hampers their working habits at the early stages of employment, is soon overcome through their dedication to work (Bazroy *et al.*, 2003). Inevitably, the migrant contract workers have shown to be more productive and less prone to occupational accidents at the workplace which will boost the competitiveness of the furniture industry, as a whole.

The results of this study also forces policy makers to re-examine the migrant contract workers employment in

the furniture industry which is increasingly debatable. Unabated employment of migrant contract workers has been argued to lead to unemployment among local workers and increasing social maladies within the society (Ratnasingam *et al.*, 2011). Nevertheless, the reluctance among local workers to seek employment in the furniture industry leaves furniture manufacturers with little choice than to employ migrant contract workers. Perhaps, there is an urgent need to give woodworkers a professional status, by requiring a mandatory registration with an authority which in turn will ensure a higher wage rate which could possibly be more attractive to the local workers (Ratnasingam and Bennet, 2009). Further, the training of woodworkers must also be transformed from being a skilled-based to a competency-oriented program which will create a more skill workforce that could garner a higher socio-economic status as observed in many developed countries. In essence, it is imperative to realize that migrant contract workers are a boost to the labour intensive furniture industry and their replacement would require a transformation of the local workforce from a psycho-economical dimension.

CONCLUSIONS

This study shows that contrary to common perception foreign migrant workers are essentially more productive compared to the local workforce in terms of incidences of occupational accidents. It also reveals the fact that workers attitude and characteristics are more important than workers training to prevent occupational accidents in the furniture manufacturing industry. Hence, the prevailing psycho-economic parameters of the furniture industry need to be re-examined, if it is to attract local workforce.

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