A STUDY ON ERGONOMIC METHOD TO PROLONG PRODUCTIVITY IN BANKING SECTOR

* **Nishchitha Gowda C.G.** Research Scholar, *Dept. of MBA, Centre for P G Studies, Visvesvaraya Technological University, Belgaum-590018.*

** **Dr.Appasaba .L.V** *Assistant Professor & Research Supervisor, Dept. of MBA,Center for P G Studies,Visvesvaraya Technological University , Belgaum-590018.*

ABSTRACT

The organisational Ergonomics plays a very important role for the development of organisation. This paper studies about ergonomics in banking sector and how the ergonomics risk factors effects the productivity in the banks as well as employees .the study limits as it was a pandemic period there was no much scope to interact with the employee to collect data everything thing was collected through phone call and mail

INTRODUCTION:

Ergonomics is the science of work. Ergonomics removes barriers to quality, productivity and safe human performance by fitting products, tasks, and environments to people.

Ergonomics, as defined by the Board of Certification for Professional Ergonomists is a body of knowledge about human abilities, human limitations and human characteristics that are relevant to design. Ergonomic design is the application of this body of knowledge to the design of tools, machines, systems, tasks, jobs, and environments for safe, comfortable and effective human use".

The profession has two major branches with considerable overlap. One discipline sometimes referred to as "industrial ergonomics," or "occupational biomechanics," concentrates on the physical aspects of work and human capabilities such as force, posture, and repetition. A second branch, sometimes referred to as "human factors," is oriented to the psychological aspects of work such as mental loading and decision making.

The profession is comprised of practicing and academic engineers, safety professionals, industrial hygienists, physical therapists, occupational therapists, nurse practitioners, chiropractors, and occupational medicine physicians.

While many individuals have obtained ergonomics training while pursuing a graduate degree with an ergonomics concentration, colleges and universities around the world are offering ergonomics or human factors courses and degrees. Some training also is available through conferences and seminars.

The following points are among the purpose/goals of ergonomics:

- Occupational injury and illness reduction
- Workers' compensation costs containment
- Productivity improvement
- Work quality improvement
- Absenteeism reduction
- Government regulation compliance

Workplace Description

The work setting is characterized by an interaction between the following parameters:

1. A worker with attributes of size, strength, range of motion, intellect, education, expectations, and other physical/mental capacities.
2. A work setting comprised of parts, tools, furniture, control/display panels and other physical objects.
3. A work environment created by climate, lighting, noise, vibration, and other atmospheric qualities.

Work Risk Factors

Task Physical Characteristics (primarily interaction between the worker and the work setting)

- Posture
- Force
- Velocity/acceleration
- Repetition
- Duration
- Recovery time
- Heavy dynamic exertion
- Segmental vibration

Environmental Characteristics (primarily interaction between the worker and the work environment)

- Heat stress
- Cold stress

- Whole body vibration
- Lighting
- Noise

Other Workplace Risks

The risk factors addressed by industrial ergonomics are a partial list of hazards present in the work setting. Others include:

- Job stress
- Job invariability
- Cognitive demands
- Work organization
- Workload
- Working hours (shift work, overtime)
- Displays and control panels
- Slip and falls
- Fire

Workstation Design

Video Display Terminal Workstations

General postural guidelines have been developed for video display terminal workstations. According to ANSI/HFS 100-1988, American National Standard for Human Factors Engineering of Visual Display Terminal (VDT) Workstations, acceptable engineering for video display terminals allows for:

- The angle between the upper arm and the forearm at 70 degrees to 135 degrees
- The angle between the torso and the thigh at 90 to at least 100 degrees
- The angle between the upper and lower leg at 60 to 100 degrees
- The feet flat on the floor

Assessing the Workplace for Ergonomic Risk Conditions

Evaluation of ergonomic risk conditions generally involves two steps:

1. Identification of the existence of ergonomic risks

2. Quantification of the degree of ergonomic risk

Identification of ergonomic risk conditions

Several approaches are used to identify the existence of ergonomic risks. The method used depends on the managerial philosophy of the company (getting workers involved through a participatory process versus top/down process), level of analysis (one job versus companywide evaluation), and personal preference. There is no one correct approach.

Prevention and Control of Ergonomic Risk Conditions

Three types of solutions reduce the magnitude of risk factors:

1. Engineering controls
2. Administrative controls
3. Work practice controls

Engineering controls

Engineering controls involve altering the physical items in the workplace, including actions such as modifying the workstation, obtaining different equipment, or changing tools.

The focus of engineering controls involves identifying the underlying stressor (risk factor of awkward posture, force, repetition, etc.) and eliminating it through changing the physical environment.

Administrative controls

Administrative controls involve altering work organization. These approaches usually are less expensive than engineering controls but are less dependable.

Examples of administrative controls include:

- Rotating workers
- Increasing the frequency/duration of breaks
- Assigning a second worker to assist in performing select tasks
- Ensuring proper work techniques are followed
- Conditioning workers for the physical exertion of task demands

Work practice controls

Work practice controls involve training and encouraging a specific method of task performance to reduce worker exposure to the ergonomic risk.

LITERATURE REVIEW

Pinto et al (2018) in their study, aimed to identify and understand the ergonomic practices adopted in the industries in the Metropolitan Region of Campinas (RMC), according to their nature, management, and social actors involved. The main findings in this study demonstrated that many of the professionals in charge of ergonomics work in health and occupational safety engineering fields. Inspection and regulation compliance are relevant drivers in the conduction of ergonomic initiatives in industries. The study showed the acknowledgment of the contribution from ergonomists in the conception of work.

Pickson et al (2017), in their study found that all the indicators explaining work ergonomics from the perspective of the employees of PFC were satisfactory despite the few respondents who indicated unsatisfactory to the general design and workplace decor, and conduciveness of the room temperature and air quality respectively. It was established that all the indicators of work ergonomics have a significant positive correlation with employee productivity of PFC.

Deouskar (2017), in her study found that effect of Ergonomics study on two independent samples of males & females and other factors related to their readily acceptance of the science of Ergonomics. Organizations should try their level best to provide comfortable working environment to its employees to save them from reaching burnout stage soon.

OBJECTIVE

1. To understand the concept of ergonomics and its application in banking industry.
2. To identify the existence of ergonomic risk factors.
3. To quantify the ergonomic risk at various levels.

Scope:

Geographical scope of this study is limited to Chikkamagalur District. Aeonic range will be for 4 years from 2019 to 2022. Banks in the study includes only commercial banks (both Public and Private). Productivity is measured by profits, turnover, number of customers, Short Term and Long term liquidity, funding liquidity, ROA, ROE, Bank Deposits, CASA, Sales per employee and number of loans per employee. Ergonomic Risk Factors considered in the study

are, certain characteristics of the work setting have been associated with injury like, task physical characteristics (posture, force, repetition, duration etc), Environmental characteristics (heat stress, cold stress, lighting, noise etc) and other work place risks (job stress, cognitive demands, workload, working hours etc). Non-overlapping geographical population of the study is considered by using the below table;

Table No – 1: Commercial Banks in Chikmagalur District

Sl. No	NAME	No. of Branches			B L O C K S						
		R	SU	T	CHIKMAGALUR	KADUR	KOPPA	MUDIGERE	N.R.PURA	SRINGRI	TARIKERE
1	BANK OF BARODA		1	1	Chikmagalur						
2	CANARA BANK	20	4	24	Chikmagalur Main	Kadur	Hirekodige	Mudigere	N.R.Pura		
					Basavanahalli	Panchanahalli		Kalasa	Balehonnur	Sringeri	Tarikere
					Mallanduru	Bisalehalli		Kudrekukh			Lakkavalli
					Kalasapura	Sakrepatna		Balehole			Neralekere
					Hiregouja						
					Hospet(Thogarihankal)						
					Sathihalli(Gullanpet)						
					K.B. Hal						
					Belavadi						
3	CORPORATION BANK	5	1	6	Chikmagalu	Yagati	Kogre				Bukkambudhi
											Hunsagatta
											Shivani
4	INDIAN BANK	1	1	2	Chikmagalur		Koppa				
5	INDIAN OVERSEAS	2	1	3	Chikmagalur						Lingadahalli
											Kudlur
6	KARNATAKA BANK LTD.	19	2	21	Chikmagalur	Choulahiriyur	Koppa	Banakal	Balehonnuru	Sringeri	Tarikere
					Shirvase	Anthargatta	Kammaradi	Gonibeedu	Melpal	Begar	Ajjampura
							Kudregundi	Niduvale			
							Narve	Kalasa			
							Jayapura	(Mudigere)			
							Hosakoppa				
							Hariharpura				

7	STATE BANK OF	2	1	3	Chikmagalur			ADS Mudigere			
								Kudremukh			
8	STATE BANK OF MYSORE (Now SBI)	11	5	16	Chikmagalur	Kadur	Koppa	Mudigere	N.R.Pura	Sringeri	Tarikere
					a) I.G. Road	Biruru	Uttameshwara	Kannapura		Kuncheblu	Ajjampura
					b) Main Road	Singatagere	(Belavinakodige)	Pattadur			
						Nidagatta					
9	SYNDICATE BANK	13	2	15	Chikmagalur (Main)	Hirenalluru	Koppa	Kudremukh	Gadigeshwara	Sringeri	-
					Belur Road, Chickmagalur		Elemadlu	Javali	Muthinakoppa	Addagadde	
							Basarikatte	Mudigere		Markal	
							Harihara pura				
10	VIJAYA BANK	10	2	12	Chikamagalur	Birur		Mudigere	Magundi		Rangenahalli
					Aldur	Devanur		Hirebylu			
					Sangameshwarapete	Yallambalase					
					Avathi	Mathigatta					
11	BANK OF INDIA		1	1	Chickmagalur						
12	THE VYSYA BANK LTD.		2	2	Chikamagalur	Kadur	-	-	-	-	-
13	FEDERAL BANK LTD.		1	1	Chikmagalur	-	-	-	-	-	-
Total		83	24	107	24	17	15	19	8	8	14

Source: http://www.chickmagalur.nic.in/htmls/stati_banks.htm

R – Rural

SU – Semi Urban

T - Total

Source of Data: In contemplation of above set research objectives, it requires both primary and secondary data. Secondary data helps in knowing the productivity and primary data helps in identifying the ergonomic risk factors.

Sample Design: Out of 107 branches of 13 commercial banks in 7 taluks, 50% of banks are

considered in each taluk. Number of banks from each bank out of 7 taluks is determined on a prorata basis of total number of branches in each bank. The detailed calculation is shown below.

Table No – 2: Sample Size determination in selecting number of branches

Name	Total Branches	Prorata %	CHIKMAGALUR	KADUR	KOPPA	MUDIGERE	N.R.PURA	SRINGRI	TARIKERE	Sample Size
BANK OF BARODA	1	1	0	0	0	0	0	0	0	1
CANARA BANK	24	22	3	2	2	2	1	1	2	12
CORPORATION BANK	6	6	1	1	0	1	0	0	0	3
INDIAN BANK	2	2	0	0	0	0	0	0	0	1
INDIAN OVERSEAS BANK	3	3	0	0	0	0	0	0	0	2
KARNATAKA BANK LTD.	21	20	2	2	2	2	1	1	1	11
STATE BANK OF INDIA	3	3	0	0	0	0	0	0	0	2
STATE BANK OF MYSORE (Now SBI)	16	15	2	1	1	1	1	1	1	8
SYNDICATE BANK	15	14	2	1	1	1	1	1	1	8
VIJAYA BANK	12	11	1	1	1	1	0	0	1	6
BANK OF INDIA	1	1	0	0	0	0	0	0	0	1
THE VYSYA BANK LTD.	2	2	0	0	0	0	0	0	0	1
FEDERAL BANK LTD.	1	1	0	0	0	0	0	0	0	1
Total	107	100	12	9	8	10	4	4	7	53

Source: Table No – 1

Employees of the banks are the sampling unit for the study, 7 samples shall be selected from each branch using Multistage Simple Random Sampling. Calculation of sample size determination is as follows;

$$= \frac{Z^2 * p * q}{2}$$

$$= \frac{1.96^2 * 0.5 * 0.5}{0.05^2}$$

$$= 385$$

Thus 385 samples shall be considered in the study by selecting 7 samples from 53 branches

Conclusion:

There on study intends to bring out a model that would help any banking institution to advice an empirical ergonomic structure. This in turn will be checked with whether the structure is able to correlate with the performance indicators of the banks. Further the ergonomic risk factors shall be mitigated using suitable control mechanism like, Engineering controls, Administrative controls and Work practice controls. Whereas Engineering controls deals with altering the physical items in the workplace, including actions such as modifying the workstation, obtaining different equipment, or changing tools. The focus of engineering controls involves identifying the underlying stressor (risk factor of awkward posture, force, repetition, etc.) and eliminating it through changing the physical environment.

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