Role of ergonomics in re-designing job design in call centres

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Abstract

Purpose of the article

Ergonomics focus, regarding job design is to address the issue of fitting the job to the worker. This means that other things such as space, matter, pedagogical parameters and organizational environment need to be adjusted to the worker, to obtain optimal performance. Hence it is important that jobs are designed in a way that the environment of the worker becomes ergonomically better.

Methods

Seventeen interviews were taken from employees of call centres of three major telecom companies in Islamabad. The interviews were semi-structured and NVivo 10 was used for analysis.

Results

The results indicated the influence of the following ergonomic factors on job design.

i) Force, mental well-being, and supervisor and peer support acted more on complexity of task.

ii) Inappropriate postures, mental well-being, characteristics of work, supervisor and peer support and work environment acted on skill and efforts required.

iii) Repetitiveness, workstation design, mental well-being, supervisor and peer support, work environment and characteristics of work acted more on degree of worker control.

Conclusion

It was concluded that the issues related to these factors should be addressed, to improve job designs at workplace.

Keywords

Job design, physical ergonomics, cognitive ergonomics, organizational ergonomics, call centres

1 Introduction

The term Ergonomics was first used by a Polish scholar Wojciech Jastrzebowski. It did not come into notice until the book that he wrote in polish in 1857 was translated in English in 1997 and was not formally recognized in the organizational context until the early 20th century [1].

According to International Ergonomic Association 'Ergonomics (or human factors) is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance' [2]. Perhaps when looking back at the roots of ergonomics, one might find that Greeks were concerned with how things could have been picked up in the right position due to their interaction and concerns for the worker class [3].

If human interaction with its working environment is the point of concern, then many theories can be related to workers and ergonomics. One of them is balance theory, using the cognitive consistency motive to balance the psychological aspect of the worker. The reliance on the psychological aspect of this theory for determining the behaviour of the worker is limiting because it is unable to explain the interactive process between the worker and the environment [4]. Similarly social comparison theory has its underpinnings in accuracy of self-evaluation. This process happens by comparing oneself with others to determine qualities of self [5]. Apparently, heterophily theory is a one which comes out of the psychological context and somehow focuses on interaction with unlike minded people to promote innovativeness [6].

Henceforth, the most relevant theories that incorporate interaction of human beings with structures, objects and systems are socio-technical systems and actor network theory. The actor network theory states the role of the actor who is the main role in this theory and his interaction with the environment and objects. It is a free-flowing model, where boundaries of the system are less enhanced as compared to the socio-technical systems [7].

3 Problem Statement

In order to study the effects of components of ergonomics, it is important to know the effect of each of these on the job design components. Redesigning jobs considering ergonomic factors will lead to more insightful reconsideration of factors that enables and enhance performance of

the organization, however, this is yet to be researched. Hence the study aims at addressing the following question:

"To what extent can ergonomics be incorporated into job designs to make the workplace of a call center employee a better one?"

2 Literature Review

2.1 Physical Ergonomics

Waters and McDonald [8] raise attention towards increasing musculoskeletal disorders in the United States because of the demand of the job exceeding the required limit. The authors here are trying to argue that as population will age more, there will be more of health issues pertaining to employees and hence it becomes important that jobs be designed in such a way that the physical ergonomic content is taken into account.

In a survey about school children, ageing 10-17 using laptops in Western Australia, Harris and Straker [9] found that 60 % of the students did not feel comfortable using their laptops and 61% were dissatisfied with carrying their laptops. Resnick and Chaffin [10], found out that a work surface height of 67mm for US employees is suitable, but it is not for Columbian workers, since their average heights are lower than the US citizens. Sharan [11] argues that if there are musculoskeletal disorders existing in employees, it might lead to financial burden on both the employer and the employee. Cuesta et.al [12] provides a unique solution of incorporating job rotation schedules to the job and making it ergonomically better.

2.2 Cognitive Ergonomics

Cognitive ergonomics, as the name indicates, has to do with mental comfort ability of the employee [13]. Some workers do not like the use of computers frequently for getting their tasks completed, others might dislike manual work; indicating that theories of human behaviour also intervene at this level [14]. Green and Hoc [15] discusses that perhaps it is more important to establish a relationship between a person who do the job and the person who designs the job. In order to attain the optimal results, it is important that both the factors are considered. An architect will need both design and the utility of a building, to make a good blueprint of the designed building.

2.3 Organizational Ergonomics

Mcphee [16] argues that other than the physical component of ergonomics, factors such as job content, balancing work demand and support and training are aspects which are equally important in determining the design of the job. A study by Cohen [17] revealed a consultant

view on the failure of management and design of the organization in exposing employees and causing injuries because of exposure to the harmful chlorine gas. Another study by Carayon, Hoonaker and Haims [18] focused on project teams intervening during work settings, proposed new policies which were then incorporated into an overall organizational ergonomics framework.

Other researchers have taken factors of organizational ergonomics into consideration which has to do more with eco-friendliness naming the jobs as "green jobs". Green jobs reduces not only physical hazards, it also enhances cognitive meaning to the job and is effective in organization sustainability as well [19].

2.4 Job Design

Job components of a job design could be designed ergonomically to attain optimal performance from an employee. Das and Sengupta [20] discusses how industrial workplaces can be made better by considering lateral clearance, normal and maximum working areas, adequate posture, work height and visual clearance. They discuss that these factors can be designed in order to gain maximum output from an average worker. The design of organizational work, as Oldham and Hackman [21] simplistically defines it, job design is a major component of internal organizational context.

John [22] states that job characteristics in job design might carry a somewhat complicated dual relationship in a variety of contexts. For example, autonomy in one context might produce better performance but in another context might be exercised to end up in solutions that have nothing to do with the real problem. It is therefore important to design the context first.

Hertel [23] on his discussion on open source software projects has argued that it is more important if work oriented perspective in designing jobs is kept in mind as compared to person oriented perspective. It is because such a design can be replicated in various situations and contexts.

2.5 Ergonomics and job design in call centres

Sprigg and Jackson [24] indicate the role of work design as a mediating factor in determining strain in call centre employees. They took pre-determined factors of work design such as i) Timing control ii) Method control iii) Workload iv) Role conflict v) Role clarity vi) Task variety vii) skill utilization. They state that if these factors are controlled, it will lead to more lean management and particularly dialogue scripting and performance management. Call

centre employees, however, dislike electronic monitoring and the mechanistic form of call centre work [25, 26]

Kraemer and Gouthier [27] contended that if emotional exhaustion of employees is reduced and organizational pride of the employees is enhanced, it will reduce the turnover intentions of call centre employees. Moss et al. [28] provides a contrary view of call centres being mechanistic in their study in the USA on call centres and have put forward a stance that in an era where job security is being dismantled and jobs have been restructured, it is interesting to find that in the USA, jobs have actually been broadened in the call centres.

Schulze [29] in a newspaper article talks about workstation ergonomics. He emphasizes the fact that objects alone cannot fulfil the ergonomic needs of a worker. A worker also needs adjustments to objects and body postures, to have a better ergonomic environment at workplace.

4 Theoretical Framework

Job design includes complexity of task, skill and effort and degree of worker control and is a part of work organization [30, 31]

The researcher has taken these job design elements as core components at the heart of the model and has examined the ergonomic factors which have a greater role in affecting these elements of job design.

The factors of the three form of ergonomics which can affect a call centre employee's work are given below:

- factors in physical ergonomics such as i) repetitiveness, ii) force, iii) poor workstation design and iv) inappropriate postures,
- factors in cognitive ergonomics such as i) perceived characteristics of work and ii) mental well being
- factors of organizational ergonomics such as i) supervisor and peer support ii) work environment

These factors were shortlisted by the team leads working in the call centres.

Figure 1 shows the theoretical framework of the ergonomic factors involved in job design of call centre employees.

Figure 1. Theoretical framework of ergonomic factors in job design

5 Study Design

5.1 Methodology

This research is descriptive in nature and follows an interpretive phenomenon to have a complete insight into the understanding of human factors. The research approach used is inductive, since suggestions for job design forms are indicated. The time horizon utilized here is cross sectional, with studying multiple units at one point in time. Survey methods are involved in the study. Survey method involves Semi structured interviews.

5.2 Participants

The participants included are call centre employees from 3 major telecommunication companies in Islamabad. The inclusion criterion was that the employees should have worked for one year in the call centre. The age range was between 18 to 60 years. There were no limitations on age within this criterion. 17 employees took participation, of whom 10 were male respondents and 7 were female respondents.

5.3 Sampling

The sampling method is non-probability sampling. Within this umbrella sampling method, purposive homogeneous sampling and then convenience sampling technique has been used. NVivo 10 has been used to group major categories in the study.

5.4 Methods

Pilot interviews were taken from 2 employees of one of the major telecom call centre employees. The method includes semi structured interviews. These interviews were aimed at 40 minutes duration. The broader categories were already defined, as indicative in the theoretical framework. More insights were drawn from the participants, using these categories.

6 Results

The results are based on 17 interviews from call centre employees. The results indicate the extent of role of factors influencing the job design of these call centre employees. These apparent and prominent factors are indicated in the analysis as well. The analysis has been carried using NVivo 10. This analysis will lead to implications for other call centres for better ergonomic models in the workplace.

Table 1 and Table 2 indicate the views of 17 employees regarding the ergonomic factors involved in job design.

Table 1. Count of respondents' opinion of ergonomic factors involved in job design

Table 2. Continuation of count of respondents' opinion of ergonomic factors involved in job design

7 Analysis

7.1 Physical Ergonomics

7.1 a. Musculo-skeletal disorders from force and complexity of task.

According to the count given in this paper (table 1), most answers came from the factor that force did contribute to the complexity of task, leading to several musculo-skeletal disorders. It can also be seen from the secondary literature that musculo-skeletal disorders have been indicated in various cases and examples.

Yes, it does, we have to work for about 8 to10 hours a day and it is the job with all kind of physical as well as mental stress. I must be on my seat for quite long which cause neck pains, back pains as well as eye and ear pain.

Headaches and body pains are very common and it's a part of the job. If I have to name a few, the eye stress is at the first place because we have to look at the computer screen for hours and because of it our eyes start burning a bit; after that ear stress and then stress caused due to continuous sitting on the seat.

Basically this has been indicated due to working longer hours. In this case the respondents thought that if one sits for longer time duration, then working on smaller tasks makes it complex and requires exertion of force. So force is an indirect factor in complexity of task but a major one. Apparently lesser respondents agreed that force is involved in skill development or degree of worker control.

7.1 b. Repetitiveness

Most of the respondents agreed that employees can have more control over their work by repeating a task. One of the respondent stated the above fact in the following way:

Repetitiveness, though monotonous, increases the degree of worker's control over the job. It is exactly like driving for the first time and then the 80^{th} time. Obviously, there is going to be a huge improvement in driving skills at the 80^{th} time because one is repeating it. Nonetheless, sometimes it gets boring.

7.1 c. Monotony and Boredom

Interestingly, another factor which emerged from the results was monotony and boredom. Some respondents stated that repetitiveness leads to monotony and boredom.

Definitely, there is monotony. But on and off some events are planned, such as going to Pearl Continental Hotel Bhurban or having a ping pong table tennis game. Some dinners are also planned. If we don't have these activities, people tend to leave the job.

Oh yes, if we didn't have recreational activities, then our work is so monotonous, that we would have died out of monotony.

It does not make the task more complex, however, it becomes very irritating repeating the same thing again and again. Also in meeting sessions, a lot of sessions seem to be repetitive, which makes it very boring.

7.1 d. Inappropriate Postures

Most of the respondents agreed that unhealthy/inappropriate postures affect skill development. Some of them responded in the following way:

Sometimes, unhealthy postures resulting in problems such as neck sprains, might hinder the skill development.

Yes, I have longer legs and if I don't get up and walk around in half hour or so, they seemed to get clamped.

7.1 e. Workstation design and degree of control

Most respondents agreed that workstation design or system design has contribution in degree of worker's control.

Yes, it will, we are too used to our setup and if there is a slight change, it will translate accordingly to the control we have over our work.

Yes, for example if you are sitting upright on a chair, this means that there is a tendency that one will work better but if somebody is slumped in a chair, this means that they are lethargic and hardly focusing on worker's control.

7.2 Cognitive Ergonomics

7.2 a. Mental Well-being and complexity of task

Most of the respondents agreed that mental satisfaction is related to skill development and degree of worker control but lesser to complexity of task. A major area that emerged was that of lesser compensation. Respondents indicated that less remuneration was the reason for mental dis-satisfaction. Some of the quotes indicating this area are given below

The fact that there is no incentive and benefit for good work makes us less spirited and less sanguine about the organization.

We work for quite longer hours and we need to be very careful while talking to the customers. It is quite a stressful job and for this what we are compensated is actually meagre and peanuts. If this goes on, our mental satisfaction with the job will definitely decrease and not increase.

Initially we thought that we were here to earn something and that we will get good salaries but as the job is tough and we complete our task on time, in the end our salary disappoints us…because the salaries are not at par with the type of work we are producing.

7.2 b. Mental well-being and worker's control and skills

Most of the respondents agreed that meaningful work provides more control over the work and enhances skills, but several respondents agreed that this was mainly because of product knowledge, so product knowledge provided more control in this regard. Skill development was mainly because of trainings.

As far as worker's control is concerned, there is an important aspect. If you increase their knowledge on the specific product that they are working on, it increases their control. So product knowledge is one important factor that they need to have training on.

Creativity at work actually increases the degree of worker's control over his/her job. This is because, at a time, a worker has to do various tasks because of which the knowledge of the worker is enhanced……again which means there is going to be more control over the job.

Yes, as I told you, trainings and workshops can increase creativity. Whenever I attend a training or workshop, I feel that I am empowered, and I feel that there is more creativity in my work.

Because our trainings and the kind of work that we have is pre-determined so everything is pretty under control and tasks are not very difficult.

7.2 c. Characteristics of work and degree of worker control, skills, complexity of task:

Characteristics of work were well defined and respondents did not find any difficulties in task complexity. It also gave them control over the work and did not hinder the skills as well.

7.3 Organizational Ergonomics

Most of the respondents agreed that supervision style and peer support influences worker's control, skills and complexity of task. Some interesting findings are quoted below

Well not on complexity, but it does have an effect on willingness of the employee. Sometimes the morale of the employee is affected…..sometimes there are discomfort zones between the boss and the subordinate, but it does not go beyond a certain extent. We try to finish the matter as soon as possible; the sooner it is resolved the better it is.

Yes, scratching back increases responsibilities of the workers. If there is an environment of mutual trust between the supervisor and the employee, then obviously, the worker feels obligated to do extra for the organization or the boss in this case.

It's a natural thing that if you enjoy good working relations, you are going to benefit from it and if you have bad working relations, then you will suffer. Good working relations can sometimes prove an obligation but by and large, I think it has a positive effect rather than negative.

7.3 a. Environmental factors

Most of the respondents did agree that work environment did provide worker control over the job.

No, I don't think the environment here is very official. I can see biases and I can see nepotism, but I don't think it prevails in an extensive form. What is more important is that the environment should be more relaxed…..and nobody should be under immense or undue pressure and strict deadlines.

The meeting times here are quite extensive. These should be reduced to increase productivity. Succession planning is practiced rigorously here. The interests of the employees are matched with the opportunities available at the organization. For example we have training positions and quality assurance positions…..so these are matched with the employees interests. Through succession planning, internal promotions are encouraged and hence attrition rate can be reduced.

However an interesting factor emerged from this question. In light of the then political scenario, some of the respondents pointed at the fact that situations like political instability and natural calamities affect the control over their work, which also included the effect on their skill development.

In Pakistan, there is turbulence anyways, whether it is political or geographical, such as these sit-ins at the red zone…..or the floods. These have affected our work schedules in a great way. Sometimes we are being called on odd times, which also disturb our family lives.

For example, seasonal and event factors reduces/increases call volume. If there is Eid coming up, then the volume of the calls increases. If there are major sporting events, such as football or cricket world cup, then again the attitude and the volume of calls increase. If the season or the tournament ends up in positive result, the attitude of the customer becomes delightful.

8 Findings

The above inside views from the employees has allowed the researcher to draw out certain findings. Without these views from the respondents, it would have been difficult to draw inferences. Figure 2 shows the prominent ergonomic factors influencing the three job design elements; complexity of task, skill and effort and degree of worker control.

Figure 2. Ergonomic factors influencing the three job design elements

8.1 a. Complexity of task

From the analysis, we can see that three ergonomic factors acted more on complexity of task. One of it was force. This did not mean physical exertion; in fact, small amount of force such as reaching out for something repetitively, created health issues. This in turn resulted in making the task more complex.

Secondly, when employees do not find output from their work, whether it is intrinsic or extrinsic, they feel that their task is getting complex. In the intrinsic form, we had several responses of monotony and boredom. In the extrinsic form, employees were not satisfied with their remuneration. Most of them responded that a salary of meagre Rs. 15000/- was not enough for an 8 hour shift duty.

Thirdly, supervision style and lack of peer support contributed to complexity of task. The researcher had some interesting responses in this regard. Employees thought that both good and bad rapport with the supervisor and peers contribute to making the task more complex. In

case of good rapport, it becomes an obligation to do something extra for the organization and in case of bad rapport, people make your tasks difficult to achieve.

It is also very interesting to note that all the three factors do not influence the complexity of task directly, but it has an indirect effect acting on it.

8.1 b. Skill and effort required

One of the major factors that were involved in skill and effort was inappropriate postures. One of the respondents stated that their mouse clicking ability was reduced because of the stiffness in the hands and fingers of the employees. This meant that more of skill and effort was required at this stage to carry out this task.

Another factor which contributed to the skill effectiveness was mental well-being, or creativity at work. Several respondents were of the view that non-related job trainings enhanced their creativity. Because of empowerment, they thought that their skills increased.

Respondents agreed that if characteristics of work are well defined, skills are well developed too. Generally the trainings and the skills of the call centre employees are such that they are very well defined. For this reason, the respondents felt that related trainings enhance their skills; but there was a lack of non-related trainings, due to which they felt insecure about their advancement in the career.

Respondents also provided their opinion about role of supervision style and peer support in enhancement of skills. They were of the view that if work relations with supervisors and peers are good in general, one is more satisfied and is keener on learning and developing the skills. On the other hand, if work relations are not good enough, it leads to stress, hindering the skill enhancement ability of the employee.

Work environment was another major factor which affected the skill development of the employees. Again, the respondents agreed that if work environment was conducive, which in most cases was conducive, then employees had less stress on their mind, and they could focus more on their skills and job-related issues. In case if it was not conducive, then it hampered their abilities to excel in their career.

8.1 c. Degree of worker control

One of the major ergonomic factors for worker's control over their job was repetitiveness. Respondents agreed to the fact that repetitiveness of a task gives them more control over their job. Only a few thought otherwise. This was majorly because repetitiveness builds mastery of skills which in turn provides control to the worker.

Work station design is also involved in the degree of worker control over their jobs. Respondents stated that design of chairs, systems and cubicles enhances the control that they have on their work. They said that appropriate workstation design for an 8-hour shift worker can enhance control over their work.

The respondents affirmed that if workers had meaning in their work leading to mental satisfaction, it magnifies worker's control over their job. This was indirectly related to the product knowledge of the employees. If the employees had more knowledge about the product/service they were working on, they experienced more control over their work.

Again, a major factor which has been contributing in all the three aspects of the job design is the rapport with the supervisor and peers. Respondents were of the view that good professional relationship with colleagues at work provides peace of mind, and because of this they felt they had more control over their work. But if the professional relationships were not good, then they felt lesser control over their work.

Work environment is another element that contributes majorly to the worker's control over the job. A few respondents related to the fact that more than work environment, it is the turbulence in the external environment such as political scenarios, that affects their control at work. The respondents specifically pointed at the political sit-ins and the floods in the region.

Characteristics of work also contributed to the worker's control ability. The respondents were of the view that the characteristics of work were very well defined, and this was contributing to the ability of control that they had on their work.

9 Discussion

It has been indicated in the interviews that it is hard to disengage from call centre work. Repetitive tasks and high level of surveillance makes call centre work more complex [32,33]. Although repetitiveness also leads to mastery of skills, it does lead to musculo-skeletal disorders which makes the task more difficult to achieve [8, 34].

It was felt that repetition also leads to monotony and boredom. Creativity and engagement are essentially required during work. If employees could find meaning in their work, it can not only make them happy but also more productive [35]. Unfortunately, employees in this study reported lack of creativity and meaning in the work. The general rule of thumb for motivating employees is extrinsic remuneration. This is also the first need for an employee when taking Maslow's hierarchy of needs into account [36]. This means that the employees have a tangible reward to take home. A lack of this form of motivation can indirectly reduce intrinsic motivation of an employee as well [37]. The remuneration for the employees, according to their perception, was not in accordance to their expectations which led to de-motivation of the employees.

It was also felt by the employees that a good network of supporting people is required in the workplace to enhance the motivation of employees. This support should be available all the time without any conditions [38]. It is important to mention here that according to the participants, favours from a supervisor or colleague is as distressing as non-supportive colleagues or an authoritative supervisor, because then these favours need to be returned. This is why the respondents suggested that both good and bad working relations with people in the workplace sometimes is a menace.

Employees were happy with their job descriptions. They knew exactly how to do their job and they were provided with adequate trainings related to their jobs. However, they were not happy with non-provision of trainings for other areas. They were concerned that if they wanted to change their job role, there was no support for it. It is important for an organization to let their employees experience other job roles as well to enhance their learning abilities [39].

Workers felt that if their work environment, including the ambience and workstation design be improved, it can enhance their motivation. The office design in fact in its totality is important here; this includes lighting, acoustic and visual privacy, social interaction, layout and symbolic identification [40]. Beyond these factors, employees also mentioned extended factors such as political and social factors which influenced their work.

From the above discussion, it is apparent that the organization of work must be reorganized effectively to motivate employees for better performance and well-being [41].

10 Recommendations

In light of the above findings, the following recommendations are proposed.

1. Frequent breaks should be given at intervals during the 8 hour shift. This will break the monotony of the employees. Also this will help in lesser posture problems and the workers will not feel exhausted or burnt out.
2. Employee's compensation is lesser than expectations. This has happened mainly because of outsourcing the call centres. Because of this reason, the employees felt that their salaries are not at par with the effort in the job. This has created unrest among the employees of the call centres.
3. Employees are extremely bored because of the monotony and boredom at work. One of the reasons highlighted by respondents were non job related trainings or creativity at work. Because job descriptions are well outlined, employees follow them, but they hardly have anything to do beside those duties. They wanted to have more room and space to do something out of their job descriptions. It is recommended that they have one or two weeks of job rotation in one month, and then back to their main job.
4. Workstation design or system design should be constructed in such a way that it provides maximum accessibility and articulation of body parts of the employees. There is room for improvement regarding this aspect. Respondents stated the fact that they can feel they are more in control of their job if the workstation design is better.
5. Related and non-related job trainings and workshops should be imparted on a regular basis. This is because the employees felt more in control of their job when they have more product/service knowledge.
6. There should be flexibility in the supervision of the call centres employees. Some of the employees stated that they were treated like machines. Although there have been outdoor activities and other job rotation options too but the employees still related to the fact that Taylorism prevailed in this type of job.
7. There should be some contingency planning regarding turbulence in the political or natural environment. A disaster management committee should be formed to deal with

all such circumstances. Such a committee might recommend temporary working spaces or telecommuting facilities in such circumstances.

11 Conclusion

It was concluded that those ergonomic factors which were having a greater role in the three elements of the job design; complexity of the task, skill and effort and degree of worker control should be addressed in call centres to ensure better performance from the employees.

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