



Publications Template

#	Research Title	Field	Abstract	Year of Publication Publishing	Publishing Link "URL"
1	A flexible ergonomic redesign of the sewing machine workstation		<p>Purpose The apparel industry is a labor-intensive industry, which depends mainly on the performance of the worker. The purpose of this study is to present an ergonomic redesign of the sewing machine workstation, with different sewing table heights and inclination angles, based on the operator's anthropometric data.</p> <p>Design/methodology/approach A flexible ergonomic sewing table has been designed, four main workstation-setting factors were studied; sewing desk inclination angles – X_1, height – X_2, sewing machine type – X_3 and operator's body mass index (BMI) – X_4, with three levels for each factor, except sewing machine type, which only has two levels. The study was undertaken to specify the limitations and advantages of each combination tested. Different measurement techniques were used; subjective information, production rates – P, working postures (head, neck and</p>	2020	. https://doi.org/10.1108/RJTA-10-2019-0050,



			<p>trunk inclination angles in the kinematic stage) were measured.</p> <p>Findings Sewing operators' sitting posture angles in the kinematic stage were affected more or less by their anthropometric measurements and the type of sewing machine. These two factors should be taken into consideration when ergonomically redesigning the sewing machine workstation.</p> <p>Practical implications A new ergonomically redesigned sewing machine table can be incorporated into garment factories, taking into consideration the BMI of the operators to improve their productivity and reduce musculoskeletal disorder complaints due to incorrect operators' posture.</p> <p>Originality/value An important correlation was found between the sewing operator's anthropometric body measurement – BMI and the type of sewing machine (with significant $R^2 = 0.8385$ and 0.9764 with both the head and neck inclination angles O_H, O_N, respectively).</p>		
2	Anthropometric Body Measurements and the Ergonomics Design of the		At a traditional sewing machine workstation many health problems and Musculoskeletal Disorders MSDs are reported. Due to the	2018	



	Sewing Machine Workstation	<p>variations in the anthropometric specifications of the sewing machine operators (SMO), different posture's angles are obtaining. As a result, for that; the sewing machine workstations should be ergonomically re-designed to take into consideration the variance of the anthropometric data for SMO, in orders to reduce the MSDs complains of the operators of getting more a bright posture angles in purpose to increase the productivity rate. In this paper; the relationships between the anthropometric data of the sewing machine operators are considered. Results show high correlation between the eye height in the sitting position (I) in the static stage, the body mass index (BMI) and the working postures' angles, head and neck inclination (Θ_1, Θ_2) in the kinematic stage. The sewing operators sitting posture angles on the kinematic stage were affected more or less by operators' anthropometric data which should be considered in the case of ergonomically re-design the sewing workstation, which will be studied in future work</p>		
3	A hybrid model for knowledge acquisition in expert systems	Information Systems (IS) are based upon data collected by means of questionnaires, interviews, and observation.	2009	



Inexperienced researchers find questionnaires and interviews attractive as a data gathering methodology. Many researchers have discovered that it is not simple to draft a good questionnaire because their answers are very superficial and impact negatively on the research quality. This paper explores a Repertory Grid technique as an alternative method for gathering meaningful data. Also, a hybrid model between questionnaire technique and Repertory Grid technique is presented. The model uses questionnaire as a primary data gathering technique and then the acquired data are automatically transferred to the Repertory Grid. The proposed model is considered an improvement technique of Repertory Grid because it solves many of its problems such as inability to name all the scales in the grid, the size limitation of repertory grid which is opened in the current model, and the expert have to use all elements and



			constructs in the grid without the ability to leave some of them .		
4	A Hybrid Model for Knowledge Acquisition Using Hierarchical Cluster Analysis		Information Systems (IS) are based upon data collected by means of questionnaires, interviews, and observation. Inexperienced researchers find questionnaires and interviews attractive as a data gathering methodology. Many researchers have discovered that it is not simple to draft a good questionnaire because their answers are very superficial and impact negatively on the research quality. This paper explores a Repertory Grid technique as an alternative method for gathering meaningful data. Also, a hybrid model between questionnaire technique and Repertory Grid technique is presented. The model uses questionnaire as a primary data gathering technique and then the acquired data are automatically transferred to the Repertory Grid. The proposed model is considered an improvement technique of	2008	



			Repertory Grid because it solves many of its problems.		
5	Effect of dynamic and static dispatching strategies on dynamically planned and unplanned FMS		<p>Dispatching strategies are crucial in scheduling of flexible manufacturing systems (FMSs), in which each operation of a job may be performed by any of the several machines. This paper presents a study of the effect of dynamic and static dispatching strategies on dynamically planned and unplanned FMS. The proposed simulation model comprised eight machines, storage buffer areas, receiving area, and three robots and pallets. Parts enter and leave the FMS at load/unload stations and transferred between machine centers by available trucks. Based on a number of specific assumptions, 12 different dispatching strategies were considered. A simulation run was made for each strategy, where the design parameters were systematically changed. The analysis of the obtained results showed that an overall improvement could be achieved for dynamic dispatching than</p>	2004	https://doi.org/10.1016/j.jimatprotec.2004.01.054



			that rendered by static dispatching.		
6	TIREDDX: an integrated intelligent defects diagnostic system for tire production and service		<p>Tire manufacturing is a complicated process due to the number of processing variables involved, dealing with more than 80 raw materials undergoing six main processing steps. Accordingly, the quality of a tire and its efficiency in use depend highly on the raw materials quality and the processing variables. Consequently, in order to properly diagnose a defect (quality parameter) in a tire, the manufacturing history data of that particular tire is essential, with the raw materials inspection results, as the starting point, and going through all manufacturing steps, to the final inspection results and customer claims.</p> <p>This study presents an integrated tire defects diagnostic expert system (TIREDDX) that can be applied during production and service. The main objective of developing a diagnostic integrated expert system is to achieve an integrated diagnostic procedure. The developed system is able to diagnose the probable cause(s) of the defect by tracing the acquired quality and production information at the various steps of tire manufacturing processes, starting from the serial number of the defected tire. Implementing such a system significantly reduces the time consumed in tire defect diagnosis, increases the consistency of diagnosing decision-making, and better utilizes the company's management information</p>	2003	https://doi.org/10.1016/S0957-4174(02)00153-7



			<p>system. Moreover, it can be regarded as an advisory tool to those having much technical experience and as a training tool for less-experienced personnel those who seek guidance and advice.</p> <p>TIREDDX comprises two main modules: manufacturing history databases and diagnostic expert system. The system was developed and implemented in one of the leading truck tires production companies in Egypt, where satisfactory results were achieved.</p>		
7	Effect of dynamic and static dispatching strategies on dynamically planned and unplanned FMS		<p>Dispatching strategies are crucial in scheduling of flexible manufacturing systems (FMSs), in which each operation of a job may be performed by any of the several machines. This paper presents a study of the effect of dynamic and static dispatching strategies on dynamically planned and unplanned FMS. The proposed simulation model comprised eight machines, storage buffer areas, receiving area, and three robots and pallets. Parts enter and leave the FMS at load/unload stations and transferred between machine centers by available trucks. Based on a number of specific assumptions, 12 different dispatching strategies were</p>	2004	https://doi.org/10.1016/j.jmatprotec.2004.01.054



			considered. A simulation run was made for each strategy, where the design parameters were systematically changed. The analysis of the obtained results showed that an overall improvement could be achieved for dynamic dispatching than that rendered by static dispatching		
8	A Combined Multicriteria Approach for Cellular Manufacturing Layout		In cellular manufacturing, the inter-cell layout phase is frequently affected by multiple qualitative and/or quantitative criteria. This paper presents a computer system developed to handle the two aspects individually or collectively. The system operates in tandem mode, combining a knowledge base with an improvement algorithm. The knowledge base generates a layout based on a set of rules, this layout is seeded optionally to an improvement Simulated Annealing global optimization algorithm to find a better configuration for the situation. The verification process is carried out by consulting the system a reasonable number of times using different boundary	1997	https://doi.org/10.1016/S0007-8506(07)60845-2



			conditions. Results from consultations are included to illustrate the system's performance and capabilities.		
9	Taguchi methods and expert systems in fabrication design		<p>This experience which the human experts have is usually heuristic, judgemental, subjective or intuitive in nature. Moreover, the optimum procedures usually differ from one job to another. Hence, the application of the design of experimental techniques, such as Taguchi's approach, can be used to identify optimum conditions which are robust against unwanted disturbances in the testing environment while providing an improved degree of sensitivity. Taguchi methods (Taguchi, System of Experimental Design, Unipub Krauss, 1987; Phillip, Taguchi Techniques for Quality Engineering, McGraw-Hill, 1988) which are aimed at reducing variability and cost, can be used to improve the sensitivity of ultrasonic measurement methods through the use of the Signal-to-Noise (SN) ratio as the quality characteristic of a measuring system. Traditionally, the quality of measuring systems has been evaluated on the basis of repeatability. Another important element associated with the quality of measurement systems is</p>	1992	https://doi.org/10.1016/0308-0161(93)90103-Z



			<p>'sensitivity', which is the ability to perceive and discriminate between two signals or samples to be measured. Parameter design in Taguchi methodology can be used to provide the human experts with a means of optimising inspection parameters.</p> <p>Therefore, knowledge-based systems incorporating heuristic algorithms, as well as analytical and empirical models provided by Taguchi methods can in turn provide human experts with support to further improve their decision making.</p> <p>This paper will describe how parameter design can be used to increase the efficiency of NDT procedures by providing robust inspection parameters for a knowledge-based expert system, an ongoing research program to enhance industrial quality.</p>		