**PROGRESS REPORT 1**

**OF**

**PERFORMANCE EVALUATION SYSTEM**

**FOR**

**TRANS-MERCH APPAREL (PVT) LTD**

**KADAWATHA**

**IMGT 3†34**

**Design & Development of Computer Based Project**

Submitted by

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**PREFACE**

This report is submitted in the partial fulfillment of the requirements for the Bachelor of Science (Joint Major/ Special) Degree Programme offered by the Department of Industrial Management of the Faculty of Applied Sciences of Wayamba University of Sri Lanka.

Through this report the functions of a Performance Evaluation System are identified. The study is based on an apperal manufacturing company, Trans-Merch Apperal (Pvt) Ltd, Kadawatha. The inefficiency and ineffectiveness of the existing system which is currently being operated manually is analysed and a system is proposed to eliminate the drawbacks and enhance the effectiveness.

This report includes an introduction of the organization, introduction of the existing system, system analysis of the current and proposed systems. Furthermore this report provides a brief description about the organization, a description about the business activities of the current system, drawbacks of the existing system, Business System Options (BSOs), the selected BSO, the requirement catalogue, and the details of the proposed system and also the Entity Matrix and the Logical Data Structure.

The existing system and proposed system are analyzed and presented using graphical methods. In the system design the Logical Data Structure is created and the proposed system is analyzed.

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# 1. INTRODUCTION

Trans-Merch Apparel Pvt Ltd was established in Toronto, Canada in 2006 as an apparel manufacturing and design company. They manufacture and distribute to all leading customers across North America. Furthermore they have strategic partnerships with Walmart, target, Sears and Bay Company. They own and operate manufacturing and distribution locations in Toronto, New York and Sri Lanka.

The Sri Lankan branch of Trans Merch Apparel pvt Ltd was established in Kadawatha in 2015.07.02. The current owner of the organization is Mr. Welayudan Ilangeshwaran Currently about 150 workers are working there under 3 managerial levels. They are specialized in knit garments including men’s, women’s and children’s t – shirts, polo shirts, fleece tops, polar fleece, intimate wear and essentials.

## 1.1Scope of the System

From the whole business process, performance evaluation of the factory workers of Trans-Merch Apparel Pvt Ltd, is selected for this project. That is under the Human Resource department of the company. Performance evaluation is consisted of following processes.

1. Handling Capacity Level Details
2. Handling Quality Level Details
3. Handling Efficiency Details
4. Handling Attendance
5. Handling Employee Behaviour Details
6. Report Generation

Currently most of the functions of the human resource department of this company are done manually. The proposed system suggests a computer based process for current operation of performance evaluation to make the process more efficient and productive.

# 2. SYSTEM ANALYSIS

### 2.1 Analysis of the Existing System

The current performance evaluation system is analyzed using the following tools.

### 2.1.1 Business Activity Model

Business activity model represents all the business activities in the organization and how those activities are interconnected with each other, inside and outside the system boundary. The business activity model in figure 1 illustrates the business activities of the Trans-Merch Apparel (Pvt) Ltd.

Different types of activities are executed in the current performance evaluation system. After the targets are set the instructions are sent to relevant departments and the operations are begun. While those operations are going the work done by the factory worker is mainly observed by supervisors and the data is recorded. Then those data are sent to Human Resource Department to evaluate performance of the employees.



Figure 1 : Business Activity Model

### 2.1.2 Document Flow Diagram

The document flow diagram illustrates how the physical documents passed within the system. Through the document flow diagram external and internal entities of the system can be identified easily. The figure 2 below illustrates the document flow diagram of the existing performance evaluation system.



Figure 2: Document Flow Diagram for Existing System

### 2.1.3 Context Diagram

The context diagram represents the how entire system interact with the external entities. Therefore the relationship among the external entities and the system can be identified clearly through this diagram. The figure 3 below illustrates the context diagram of the current system.



Figure 3 : Context Diagram for Existing System

### 2.1.4 Level 1 Data Flow Diagram

The data flow diagram is a graphical representation of the processes of a system and the data being transformed and stored. Therefore a data flow diagram gives a very good overview of what is happening in the system. The figure 4 shown below illustrates the data flow diagram of the existing performance evaluation system.

According to this performance evaluation system 6 processes are identified as follows.

1. Handling Capacity Level Details
2. Handling Quality Level Details
3. Handling Efficiency Details
4. Handling Attendance
5. Handling Employee Behaviour Details
6. Report Generation



Figure 4: Level 1 DFD for Existing System

### 2.1.5 Level 2 Data Flow Diagrams

The level 2 data flow diagrams are more descriptive graphical representation of the above mentioned 6 processes. Following figures illustrates the level 2 data flow diagrams of this performance evaluation system.

#### 2.1.5.1 Handling Capacity Level Details

The capacity level of each employee is calculated in this process using the information given by line capacity details, daily production details, lost time report and the production details of cutting and packing departments. Using these information the capacity levels of machine operators, cutters, ironers, packers and their helpers’ capacity levels can be calculated.



Figure 5 : Level 2 DFD for Existing System – Handling Capacity level Details

#### 2.1.5.2 Handling Quality Level Details

Although the information about the quality of the work done by the factory workers are collected using End line inspection details, Quality audit details, Cutting panel inspection details and etc. only the quality level of the machine operators are calculated in this process. Other workers’ quality is not much concerned when compared to machine operators.



Figure 6 : Level 2 DFD for Existing System – Handling Quality level Details

#### 2.1.5.3 Handling Efficiency Details

Employee efficiency details are handled mostly using the quantity details of each department. Here also efficiency of workers are not very much concerned except machine operators.



Figure 7 : Level 2 DFD for Existing System – Handling efficiency Details

#### 2.1.5.4 Handling employee behavior details

Generally employee behavior details are collected from their department. This includes information like discipline, loyalty, appearance, cooperation and etc.



Figure 8 : Level 2 DFD for Existing System – Handling Employee Behaviour Details

#### 2.1.5.5 Report Generation

Machine operator grading report and the employee performance evaluation reports are the two kinds of reports generated in this system. Employee capacity level, quality level and efficiency re considered while generating the machine operator grading report, whereas employee behavior details and attendance is also considered in generating employee performance evaluation system.



Figure 9 : Level 2 DFD for Existing System – Report Generation

### 2.1.6 Problem Definition

Currently they have a manual system. But there are many problems in the existing system.

* They have to handle many files to keep information to evaluate performance. It is difficult to handle them manually.
* There is a heavy work load.
* There is no solid and continuous report generation process for the current system.
* It is not a user friendly environment.
* It has less accuracy.
* It is time consuming.

## 2.2 Software Solutions

## 2.2.1 Requirement Catalogue

Requirements are mainly divided in to two categories as functional requirements and non-functional requirements. In the requirement catalogue these requirements are listed in two tables as shown below.

#### 2.2.1.1 Functional Requirements

Table 1: Table of Functional Requirements

|  |  |
| --- | --- |
| **ID** | **Description** |
| 01 | Should be able to keep employee personal details |
| 02 | Should be able to receive employee attendance details |
| 03 | Should be able to keep employee attendance details |
| 04 | Should be able to keep employee leave details |
| 05 | Should be able to assign absent covering workers |
| 06 | Should be able to keep employee capacity details |
| 07 | Should be able to calculate employee capacity levels |
| 08 | Should be able to keep employee quality level details |
| 09 | Should be able to calculate employee quality levels |
| 10 | Should be able to employee efficiency details |
| 11 | Should be able to calculate employee efficiency |
| 12 | Should be able to receive lost time details |
| 13 | Should be able to receive employee behavior details |
| 14 | Should be able to grade employees |
| 15 | Should be able to generate employee grading reports |
| 16 | Should be able to generate employee performance reports |
| 17 | Should be able to represent employee performance graphically |
| 18 | Should be able to evaluate performance according to job category |
| 19 | Should be able to identify training needs |
| 20 | Should be able to identify recommendations for promotions |

#### 2.2.1.2 Non-Functional Requirements

Table 2 : Table of Non - Functional Requirements

|  |  |
| --- | --- |
| **ID** | **Description** |
| 01 | Shall be able to save time |
| 02 | Shall be able to minimize paper usage |
| 03 | Shall be less costly |
| 04 | Shall be able to increase accuracy and efficiency |
| 05 | Shall be able to provide user friendly interfaces |
| 06 | Shall be able to access to the system easily |
| 07 | Shall be able to handle data files easily |
| 08 | Shall be able to run on windows XP or other windows operating systems |
| 09 | Shall be able to store and process large amount of data |
| 10 | Shall be able to secure the information |

### 2.2.2 Business System Options (BSOs)

#### 2.2.2.1 BSO 1 - Improved Manual System

One of the options for the proposed system is improvement of the manual system. Here the existing system will be revised and implemented an improved system with the changes of the procedures and standards.

#### 2.2.2.2 BSO 2 - Manual System with Simple Computer Based Systems

Another alternative solution is manual system with simple computer based system. In this case one computer would be used to store of data and to do simple calculations. One employee (computer operator) would have to handle the system. External entities would send information manually to him and the data will be updated periodically. Here a word file can be used to store data and prepare reports and an excel sheet can be used to calculate capacity levels, efficiency and etc. Then the generated reports will be send to the departments manually.

#### 2.2.2.3 BSO 3 - Computer Based Networked System

This system is capable of storing, updating and retrieving data while having less paper work. This will reduce the workload and is easy to handle. In this system everything is stored electronically and except the factory workers all other parties would have access to the database through user interfaces.

## 2.2.3 Requirement Catalogue vs. BSOs

The above mentioned functional and non-functional requirements are compared with the identified BSOs are given in the below tables.

#### 2.2.3.1 Functional Requirements vs. BSOs

Table 3 : Table of Functional Requirements vs. BSOs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Description** | **BSO 1** | **BSO 2** | **BSO 3** |
| 01 | Should be able to keep employee personal details | √ | √ | √ |
| 02 | Should be able to receive employee attendance details | √ | √ | √ |
| 03 | Should be able to keep employee attendance details | √ | √ | √ |
| 04 | Should be able to keep employee leave details | √ | √ | √ |
| 05 | Should be able to assign absent covering workers | √ | √ | √ |
| 06 | Should be able to keep employee capacity details | √ | √ | √ |
| 07 | Should be able to calculate employee capacity levels | √ | √ | √ |
| 08 | Should be able to keep employee quality level details | √ | √ | √ |
| 09 | Should be able to calculate employee quality levels | √ | √ | √ |
| 10 | Should be able to employee keep efficiency details | √ | √ | √ |
| 11 | Should be able to calculate employee efficiency | √ | √ | √ |
| 12 | Should be able to receive lost time details | √ | √ | √ |
| 13 | Should be able to receive employee behavior details |  | √ | √ |
| 14 | Should be able to grade employees | √ | √ | √ |
| 15 | Should be able to generate employee grading reports | √ | √ | √ |
| 16 | Should be able to generate employee performance reports | √ | √ | √ |
| 17 | Should be able to represent employee performance graphically | √ | √ | √ |
| 18 | Should be able to evaluate performance according to job category | √ | √ | √ |
| 19 | Should be able to identify training needs | √ | √ | √ |
| 20 | Should be able to identify recommendations for promotions | √ | √ | √ |

#### 2.2.3.2 Non Functional Requirements vs. BSOs

Table 4 : Table of Non- functional Requirements vs. BSOs

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Description** | **BSO 1** | **BSO 2** | **BSO 3** |
| 01 | Should be able to save time | √ | √ | √ |
| 02 | Should be able to access to the system easily |  | √ | √ |
| 03 | Should be able to handle data files easily |  |  | √ |
| 04 | Should be able to increase accuracy and efficiency |  |  | √ |
| 05 | Should be able to provide user friendly interfaces |  | √ | √ |
| 06 | Should be able to access system resources concurrently |  |  | √ |
| 07 | Should be able to secure the information |  | √ | √ |
| 08 | Should be able to run on windows XP or other windows operating systems |  | √ | √ |
| 09 | Should be able to store and process large amount of data |  |  | √ |
| 10 | Should be able to minimize paper usage |  |  | √ |

### 2.2.4 The Selected BSO and Justification

According to the above mentioned requirement fulfilment the Business System Option of Using Computer Based Networked System would be the best option since it fulfills all the functional and non-functional requirements. Furthermore it is technically, operationally and economically feasible.

The first BSO needs a lot of work force and a lot of paper work. Also it is not easy to handle such kind of a system manually. It is time consuming too. Furthermore we cannot be sure about the accuracy of this option. When compared with other two options this is less productive. Therefore this is not acceptable.

The second BSO would not facilitate the objectives such as consumption of fewer resources, reduce documentation and improve efficiency. The reports need to be manually processed and it would be an unsuitable, half-fulfilled mission acquisition. Therefore this is not acceptable.

In the third BSO the system provides storage, updating and retrieving facility. In this system everything is stored electronically. Therefore very less amount of paper work is required and information can be retrieved very easily without searching here and there into document files. With the deployment of this system all important reports can be generated automatically with no necessity for expensive manual commitments and the performance can be evaluated accurately. Therefore this is an acceptable option.

Therefore the best option would be introducing a computerized system replacing the existing one.

# 3. SYSTEM DESIGN FOR THE PROPOSED SYSTEM

When comparing the existing system analysis with proposed system analysis, other than the Document Flow Diagram, Context Diagram, Level I and Level II Data Flow Diagrams there is a Logical Data Structure developed for the proposed system. It is supportive to design the proposed system. It represents the relationship type between entitles as One to One, One to Many or Many to Many as well as whether it is partial or not.

## 3.1 Document Flow Diagram



Figure 10 : Document Flow Diagram for Proposed System

## 3.2 Context Diagram



Figure 11 : Context Diagram for Proposed System

## 3.3 Level 1 Data Flow Diagram



Figure 12 : Level 1 DFD for Proposed System

## 3.4 Level 2 Data Flow Diagrams

### 3.4.1 Handling Capacity Level Details



Figure 13 : Level 2 DFD for prosed System – Handling Capacity level Details

### 3.4.2 Handling Quality Level Details



Figure 14 : Level 2 DFD for proposed System – Handling quality level Details

### 3.4.3 Handling Efficiency Details



Figure 15 : Level 2 DFD for Proposed System – Handling Efficiency Details

### 3.4.4 Handling Employee Behaviour Details



Figure 16 : Level 2 DFD for Proposed System – Handling Employee Behaviour Details

### 3.4.5 Report Generation



Figure 17 : Level 2 DFD for Proposed System – Report Generation

## 3.5 Database Design

### 3.6.1 Entity Relationship Matrix

Table 5 : Entity Relationship Matrix



### 3.6.2 Logical Data Structure



Figure 18 : Logical Data Structure

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