UNIVERSITY OF MANAGEMENT AND TECHNOLOGY	UMT

Framework of Performance Measurement System for Material Supply Chain

Case of Pakistan Railways

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MS SUPPLY CHAIN MANAGEMENT

by

Muhammad Abdus Salam -15012087005

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Declaration

I Muhammad Abdus Salam ID # 15012087005 Session 2015-17, hereby certify that this thesis is being submitted in partial fulfillment of the requirements for the MS degree in Supply Chain Management.

This thesis is my original work, and the data/material presented herein has not been used for the acquisition of any other degree from any institution.

The Similarity Index is below permissible limit.

Researcher Signature _____

Date _____

Researcher **Muhammad Abdus Salam**

Confirmed by

Supervisor's Signature _____

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DEDICATION

The work is dedicated to my whole family, who has always been there for me through every thick and thin. This includes my younger brother Squadron Leader Muhammad Abdur Rehman, his family, and my late grand-parents as well. Although, you are far away but you always remained in my heart, and I always felt connected to you, spiritually.

ABSTRACT

The study defined the basic performance measurement system framework for Pakistan Railways Material Supply Chain. An important aspect of the study is; the focus is kept on Public Sector Supply Chain. Public Sectors are thought to be non-profit organizations. But in the today's competitive world the whole dynamics of various organizations have changed including Public Sector Organizations. There is a constant pressure on organizations whether public or private to evolve and improve on regular basis. The issues like accountability, transparency and profitability are constantly being raised regarding Public Sector Organizations. This requires continuous improvement which in turn is not possible without the provision of an efficient and effective performance measurement system. The study is of qualitative nature and triangulation was used to verify the results. Industry related expert interviews were conducted and matched with department's source documents, participant's observation and with the literature review as well. The research has addressed the basic questions of why Performance Measurement System is required in Pakistan Railways or the drivers of Performance Measurement in Pakistan Railways. Secondly, it addresses the issue of identification of the problems that may be encountered in the Performance Measurement of Pakistan Railways. And lastly a framework is developed for the performance measurement of Pakistan Railways. This framework is divided into strategic, tactical and operational divisions. The Railways Material Supply Chain is divided into three sub-categories namely In-Bound Material Supply Chain, Internal Material Supply Chain and Reverse Material Supply Chain (Reverse Logistics). It is noteworthy that no major study has been performed in the Public Sector that includes the role of reverse logistics.

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List of Acronyms

Analyze, Design, Develop, Implement, and Evaluate	**ADDIE**	Average Monthly Consumption	**AMC**
Balanced Score Card	**BSC**	Chief Controller of Purchase.	**CCP**
Council of Logistics Management	**CLM**	Council of Supply Chain Management Professionals	**CSCMP**
Data Envelopment Analysis	**DEA**	Distribution Center	**DC**
Empty Truck Load	**ETL**	European Union	**EU**
Enterprise Resource Planning	**ERP**	Economy, efficiency and effectiveness	**3E**
Fast Moving Consumer Goods	**FMCG**	Full Truck Load	**FTL**
Gross Domestic Product	**GDP**	High Performance Organization	**HPO**
Human Resource	**HR**	In-Bound Material Supply Chain	**IBMSC**
Internal Material Supply Chain	**IMSC**	International Organization for Standardization	**ISO**
Inventory Shrinkage rate	**ISR**	Just in Time	**JIT**
Key Performance Indicator	**KPI**	Key Success Indicator	**KSI**
Logistics Service Provider	**LSP**	Material Requisitions	**MR**
Material Supply Chain	**MSC**	Moghalpura	**MGPR**
Ministry of Railways	**MOR**	Multi-criteria Performance Measurement	**MPM**

Non Value Added	**NVA**	Operations and Maintenance	**O & M**
Overall Equipment Effectiveness	**OEE**	Pakistan International Airline	**PIA**
Pakistan Institute of Legislative Development and Transparency	**PILDAT**	Pakistan Railways	**PR**
Partial Truck Load	**PTL**	Performance Indicator	**PI**
Performance Measurement	**PM**	Performance Measurement System	**PMS**
Program Assessment Rating Tool	**PART**	Projected Cost Variance	**PCV**
Public Sector	**PS**	Public Sector Organization	**PSO**
Public Sector Score Card	**PSS**	Purchase Requisition	**P/R**
Quality Assurance	**Q/A**	Railways Supplier Group	**RSG**
Return on Assets	**ROA**	Return on Investment	**ROI**
Return on Logistics Assets	**ROLA**	Reverse Logistics	**RL**
Specific, Measureable, Achievable, Relevant and Time Bound	**SMART**	State Owned Enterprise	**SOE**
Stock Usage Report	**SUR**	Strength, Weakness, Opportunity, Threat	**SWOT**
Sui Northern Gas Pipeline Limited	**SNGPL**	Supply Chain Operation Reference	**SCOR**

Supply Chain	**SC**	Supply Chain Management	**SCM**
Track Supply Officer	**TSO**	Triple Bottom Line i.e. Economy/Environment/Society	**TBL**
Water and Power Development Authority	**WAPDA**	International Union for Railways	**UIC**

1- Introduction

Railway is considered to be an engineering marvel in the world. It is unique in nature and operations. The engineering extensiveness of railways, its volume in terms of working, capital involved and logistics of a country, along with its socio-economic effects made it an attractive field for researchers of 21st century. Pakistan has 27th largest railway network in the world. It consists of 7791 route kilometers. PR is a state owned public sector institution employing around 78,000 employees (Pakistan Railways Year Book [PRYB], 2015). The core operational area is to carry passengers and freight inside as well as some outside countries (PRYB, 2015). The level of sophistication and engineering involved within the organization including the volume of material involved gives it a distinctive expertise. Currently there are 16322 Regular Stock Items whereas 1600 items have been declared as common user items and the principle of Just in Time (JIT) is applied in common user items as well as for local purchase (PRYB, 2015). Moreover, there are 2472 Pakistan Railways Workshop Made Items; Local Items are 8698 while Imported Items are 5152 (PRYB, 2015). The consuming departments of Pakistan Railways; Mechanical, Civil, Electrical, Signal, Telecom, Medical and Workshops are provided with new material and the old one is returned vide various channels for reverse logistics. The organization has its own forward and reverse logistics system. Performance Measurement (PM) is carried out at different levels by different bodies resulting in lack of benchmarking and omission of Supply Chain (SC) Perspective altogether for the all three flows of SC namely material flows, information flows, and cash flows.