2016

Socio Economic Impact of Leather Industry in Bangladesh: An Empirical Study

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SOCIO ECONOMIC IMPACT OF LEATHER INDUSTRY IN BANGLADESH: AN EMPIRICAL STUDY

PhD THESIS

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JUNE 2016

SOCIO ECONOMIC IMPACT OF LEATHER INDUSTRY IN BANGLADESH: AN EMPIRICAL STUDY

Thesis submitted to the Department of Marketing, University of Rajshahi for the fulfillment of the requirements for the award of the Degree of DOCTOR OF PHILOSOPHY IN MARKETING

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DECLARATION

I hereby declare that this thesis entitled “Socio Economic Impact of Leather Industry In Bangladesh : An Empirical Study” submitted by me for the award of the Degree of Doctor of Philosophy In Marketing is the result of my original and independent research work, carried out under the guidance of Prof. Dr. Md. Rabiul Islam (Supervisor) and Prof. Dr. Md. Amanullah (Co-Supervisor) Dept. of Marketing, University of Rajshahi, Rajshahi, Bangladesh and it has not been submitted for award of any degree, diploma, associateship or fellowship of any University or Institution.

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This is to Certify that the thesis entitled, "***Socio Economic Impact of Leather Industry in Bangladesh: An Empirical Study***" is a bonafide research work carried out by Mr. Wahiduzzaman Khan under my supervision and guidance. As far as I know, the thesis as whole or in part has not been submitted elsewhere for any degree.

He is permitted to submit the thesis for the award of the Doctor of Philosophy in Marketing from the University of Rajshahi, Bangladesh.

I wish him every success in life.

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TO WHOM IT MAY CONCERN

The thesis entitled, **"SOCIO ECONOMIC IMPACT OF LEATHER INDUSTRY IN BANGLADESH: AN EMPIRICAL STUDY"** submitted by **Mr. Wahiduzzaman Khan** for the award of the Degree of Doctor of Philosophy in Marketing from University of Rajshahi, Rajshahi, Bangladesh. As a co-supervisor I had the opportunity to guide the research work of Mr. Khan. He incorporated the required suggestions as recommended in the pre-submission seminar. It is a record of bonafide research work and has not been submitted for the award of any degree, diploma, and fellowship to any University / Institution.

I wish him every success in life.

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DEDICATION

I would like to dedicate this research to my Ph.D Supervisor Prof. Dr. Md. Rabiul Islam and my Co-Supervisor Prof. Dr. Md. Amanullah , my Mother Rashida Akhter Khan, my Father Late Mosharraf Hossain Khan, my child Safiyah Khan, my Wife and all the people who have always believed in me. Their continued support throughout this process was a source of encouragement and means a lot to me— they inspired and motivated me to complete this journey. They all gave me unconditional love and encouragement. They provided me with strength, courage, and determination to move through my Ph.D study. My dream came true due to their love and sacrifices. I also dedicate this dissertation to my many friends who have supported me through the process. I will always appreciate their continuous support. Finally, I dedicate this work to each and every one especially Dr. Khalilur Rahman, Dean of Social Science of AUB, who had a hand in my education, and helped in any way like a candle for me along the road to accomplishing my objective.

In the face of many challenges that confront me, one of the greatest achievements I have ever attained is a good education that has helped define my vision and mission. I believe great things are not achieved just by instinct or completed over night, but by a sequence of individual drives and determinations.

ACKNOWLEDGMENTS

First of all, my deep thanks to Almighty Allah for enabling me to complete this project. This piece of work could not have been completed without first the help of the Almighty Allah (SWA). Second, I would like to express my sincere gratitude and appreciation to my father, my mother, my wife, my child, my sisters and my brothers for their support, without them, this work could not have been completed.

Many thanks also go to my Supervisor Prof. Dr. Md. Rabiul Islam and my Co – Supervisor Prof. Dr. Md. Amanullah, Department of Marketing, University of Rajshahi for their expert guidance and encouragement, thoughtful comments, and support. I particularly, thank them for their continued belief in me, their confidence in my ability to accomplish what I set my self to accomplish, and their patience.

I wish also to extend my warmest thanks to all those Faculties of Department of Marketing, University of Rajshahi, especially Prof. Dr. Md. Faridul Islam for his support and assistance. I am also greatly indebted to those who lent me a hand, one way or the other, in my work on this project, and whose help did not go unnoticed, but whom I did not name, and all relatives, friends, and colleagues, who offered their help, sympathy and/or prayers.

Finally, I would like to express my appreciation to all those who participated in evaluating, pre-testing, and piloting the questionnaires; all companies and persons who have offered me their time when I collected necessary data for my research; and indeed all who assisted and participated in my research in whatever capacity.

LIST OF PUBLICATIONS

Khan, Wahiduzzaman, Leather Industry in Bangladesh: Opportunities and Challenges (December 30, 2014). American Journal of Trade and Policy, Vol. 1, No. 3, pp. 117-124, 2014. Available at SSRN: http://ssrn.com

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Abstract

The leather industry is one of the most prospective industries in Bangladesh. This sector occupies an important position in relation to the other manufacturing sectors in terms of gross output, high value addition, employment generation, poverty alleviation, income generation and a socio-economic benefactor for the country. It has enough scope for both vertical and horizontal expansion in terms of economic return and social benefits. The leather industry of Bangladesh is the largest foreign exchange earner of the country, contributing 8% of total export earnings. However, there is little systematic research into this sector. This study addressed the research gap by seeking to understand how leather industry contributes to socio economic development in Bangladesh. A number of studies have addressed economic, social, and community development issues of leather industry in Bangladesh. However, few have combined these constructs (i.e. economic, social, and community development) into a theoretical framework that can be used to assess the impact of a leather industry in Bangladesh. This study developed a Conceptual framework as a model to assess the social and economic impact of leather industry in Bangladesh.

Cross-sectional exploratory quantitative and qualitative approaches were used for this study. A semi-structured questionnaire survey was used to collect data from over 400 participants in various tanneries in Bangladesh. The data were analyzed by using the Partial Least Squares (PLS) method, a statistical analysis technique based on the Structural Equation Model (SEM). The study found that service and facility (t = 15.7547, β = 0.6599, $p < 0.05$) and social security (t = 5.5610, β = 0.2730, $p < 0.05$) had positive influence on social impact of leather industry in Bangladesh, while working environment (t = 0.6281, β = 0.0409, $p > 0.05$) and health security (t =

0.0264, β = 0.0023, $p > 0.05$) had no significant effect on social impact of leather industry in Bangladesh.It was also found that wages and productivity (t = 6.1996, β = 0.2802, $p < 0.05$), employment impact (t = 14.3071, β = 0.6198, $p < 0.05$) and personal income (t = 2.1532, β = 0.1561, $p < 0.05$) had positive influence on economic impact of leather industry in Bangladesh, while job security (t = 1.4186, β = 0.0913, $p > 0.05$) had no significant effect on economic impact of leather industry in Bangladesh.The findings of the present study will contribute to the development of strategies and policies for leather industry in Bangladesh. In addition, the Conceptual Model developed in this study can be easily adapted for studying socio economic impact of leather industry or other industry in developing countries.

ACRONYMS AND VARIABLES

ADB-Asian Development Bank

BB- Bangladesh Bank

BBS- Bangladesh Bureau of Statistics

BCIC-Bangladesh Chemical Industries Corporation

BCSIR- Bangladesh Council of Scientific and Industrial Research.

BFLLFEA- Bangladesh Finished Leather, Leather goods And Footwear Exporters' Association

BER- Bangladesh Economic Review

BHSMA- Bangladesh Hide and Skin Merchants Association.

BIDS- Bangladesh Institute of Development Studies

BLMA- Bangladesh Leather manufacturers' Association

BLRI- Bangladesh Livestock Research Institute

BMRE- Balancing Modernization, Rehabilitation and Expansion

BOD- Biochemical Oxygen Demand

BOI - Board of Investment

BSCIC –Bangladesh Small and Cottage Industries Corporation.

BSRS- Bangladesh ShilpaRinSangstha

BTB- Back-to-Back L/C

BTC- Bangladesh Tanneries Corporation

BTA- Bangladesh Tanners Association

CETP- Common Effluent Treatment Plant

CFFC-The Common Finishing Facilities Center

CIP- Commercially Important Person

COD- Chemical Oxygen Demand

DILF- Dhaka International Leather Fair

EDP- European Development Fund

EM- Employment Impact

EPB- Export Promotion Bureau

EU- European Union

EI- Economic Impact

EIA-Environmental Impact Assessment

ETP- Effluent Treatment Plants

EPZ- Export Processing Zone

ESEP- Employment and Small Enterprise policy

FAO- Food and Agriculture Organization

FBCCI- Federation of Bangladesh Chambers of Commerce and Industry

FOB- Freight On Board

FY - Fiscal Year

GATT- General Agreement on Tariff and Trades

GOB- Government of Bangladesh

GSP- Generalized System of Preference

HS- Health Security

ILO- International Labor Organization

ITC - International Trade Center

JS- Job Security

LRI- Leather Research Institute

L/C- Letter of Credit

LSBPC- Leather Sector Business Promotion Council

M/C - Machine

MOF - Ministry of Finance

PI- Personal Income

Sqf - Square feet

SABINCO-Saudi-Bangladesh Investment Corporation

SEHD- Society for Environment and Human Development

SF- Service and facility

SI- Social Impact

SS- Social Security

TIP- Trade and Industrial Policy

UNCTAD- United Nations Conference on Trade and Development.

UNDP- United Nations Development Program

UNIDO- United Nations Industrial Development Organization

WE- Working Environment

WP- Wages and Productivity

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CHAPTER 1
INTRODUCTION

1.1. Background of the Study

The leather industry is one of the most prospective industries in Bangladesh. This sector occupies an important position in relation to the manufacturing sector in terms of gross output, high value addition, employment generation, poverty alleviation, income generation and a socio-economic benefactor for the country (Rahman, 2009). It has enough scope for both vertical and horizontal expansion in terms of economic return and social benefits (Zahur, 2009).The leather industry of Bangladesh is the largest foreign exchange earner of the country, contributing 8% of total export earnings (Bangladesh Economic review, 2012). It is capital-intensive, with low labor costs in the region of 10 percent to 15 percent.

However, till now leather industry occupies only a modest position in Bangladesh economy way below its true potential. Thus, in 2013-14, value addition in leather enterprises with 10 or more workers amounted to Tk. 8,737 million ($152 million), which was about 3 percent of manufacturing value added in that size group of industries (Khan, 2015). Total employment in leather enterprises with 10 or more workers was 27,686 or about 1 percent of manufacturing employment in that size group. In 2014, export of leather and leather products amounted to $1billion, which was around 3.3 percent of total export earnings in that year (Saha, 2014). Leather Industry occupies a place of prominence in the Bangladeshi economy in view of its massive potential for employment, growth and exports. There has been increasing emphasis on its planned development, aimed at optimum utilization of available raw

materials for maximizing the returns, particularly from exports. The leather industry has been one of the traditional industries operating in Bangladesh and is essentially located in certain regions, but dispersed as cottage industries in rural areas.

Bangladeshi leather industry is both in the organized as well as unorganized sectors. The predominant decentralized nature and small size makes it difficult to change this industry. The global competition has been the major driver that forced the leather industry to upgrade its technological base. A tanner has limited opportunities to isolate any high labor cost and shift it to a low-cost area. European and North American tanners and manufactures have introduced computerization and robotics to reduce the labor input, rationalize selection and production control, and improve effluent quality and discharge volumes. In Bangladesh, the manufacturing of wet blue, the chrome tanned semi-processed leather, was featured in 1965. Earning foreign exchange apart, such trade expansion would mean generation of substantial employment, skill building, and entrepreneurship development and widely spread socio-economic benefits. For Bangladesh, therefore, the growth of the leather industry is a direct contribution to rural advancement and socioeconomic development of the country.

1.2. Research Rationale

In Bangladesh the leather industry is well established and ranked fourth in terms of earning foreign exchange. In consideration of being a value added sector the Government of Bangladesh (GoB), Ministry of Industry (MoI) has declared it as a priority sector. The leather is a unique commodity that links grassroots villages with high societies and traditional practices with emerging technologies. For many developing countries, leather and leather manufacturers constitute an indispensable and dependable source for export trade and foreign exchange earnings. For Bangladesh,

leather is a high priority industrial sector and footwear exports, an extreme focus area. Bangladesh has, just few decades since Independence, made significant gains from the leather trade, progressing from the status of an exporter of 90% plus raw hides and skins to that of an exporter and predominantly leather product manufacturer.

However, there is little systematic research into this sector. This study addressed the research gap by seeking to understand how leather industry contributes to socio economic development in Bangladesh. A number of studies have addressed economic, social, and community development issues of leather industry in Bangladesh. However, few have combined these constructs (i.e. economic and social development) into a theoretical framework that can be used to assess the impact of a leather industry in Bangladesh. The main purpose of this study is to assess the social and economic impact of leather industry in Bangladesh.

1.3. Research Objectives

The main objective of this study is to assess the socio-economic impact of leather industry in Bangladesh. The specific objectives are

- To ascertain the current scenario of leather industry in Bangladesh
- To find out the problems and prospects of leather industry in Bangladesh
- To measure Social impacts of leather Industry in Bangladesh
- To measure Economic impacts of leather Industry in Bangladesh

1.4. Research Questions

This research aims to address the following question

- What are the social impacts of leather industry in Bangladesh?

- What are the economic impacts of leather industry in Bangladesh?
- What are the problems of leather industry in Bangladesh?
- How can the findings of this research assist policy makers and Government of Bangladesh in planning and developing leather industry?

1.5. Significance of the Study

It is observed that a few numbers of studies have been pursued on leather industry in Bangladesh by different scholars and institutions. But unfortunately there is not a single comprehensive and in-depth study touching upon various aspects of the leather industry as yet. Most of the studies are partially tanning process and confined to export efforts of the industry only. Unlike other industries, the leather industry has not been able to draw the attention of researchers and export to any noticeable extent. Most of the important aspects like returns to scale, factors productivity and intensity, elasticity of substitution of the factors and factors inefficiency measure, and the researchers have grossly ignored socio-economic impact of leather industry in Bangladesh. They failed in making appropriate suggestions to overcome the prevailing maladies confronting the industry, for which those studies were basically intended. The analyses have been carried at three levels, viz. macro level, plant level and process-by-process level only, while most other studies have studied at an aggregate level only.

The productivity aspect of any industry in a developing country like Bangladesh deserves much importance, since productivity has now became a synonym for growth. Further, leather industry being labor intensive, it is essential to study the relationship between the trend of labor productivity and labor-share inefficiency measure. Finally it is quite necessary to study the aspects such as concentration and instability pattern of leather exports. All these aspects have to be discussed in the light of Government's international

policies prescribed from time to time in various fronts. It is necessary to study how the Governmental policies have helped or hindered the growth process of the industry. Nevertheless a comprehensive study is yet unavailable and the present study is intended to achieve these objectives taking into consideration some specific measures such as social and economic e.g. social security, job security, employment impact, health security, working environment, personal income, wages and productivity etc.

Tanning industry is one of the most important labor-intensive sectors, where we can use our manpower. There is a scope for the substitutability of labor and capital in the tanning industry. There are sixteen (16) major stages of leather manufacturing industries to have finished leather for final use. However, very few works has been done in Bangladesh on the empirical dimensions of social and economic impact of leather industry in Bangladesh. The present study, which is based mainly on an intensive field-survey, is an attempt to provide in-depth study of the structure of the industry with particular emphasis on socio-economic impact of the leather industry.

1.6. Organization of the Dissertation

This dissertation is organized into seven chapters.

Chapter 1: Introduction

Chapter 1 (One) starts with an introduction, research background, rationale of the study, objectives, research questions and significance. It concludes with an overview of the content of the dissertation.

Chapter 2: Leather Industry of Bangladesh

This chapter begins by providing an overview of leather industry in developing countries. It also provides some background on the status and importance of Leather Industry of Bangladesh.

Chapter 3: Literature Review and Theoretical Framework

This chapter presents a critical review of the existing relevant literature on the leather industry of Bangladesh, which includes overall studies on the leather-manufacturing industries of Bangladesh, studies on production function, export performance and socio-economic impact assessment. This chapter also describes the development of the research model that is the theoretical base for this research. After a short discussion of the theoretical model components, the rationale for the relationships within the proposed theoretical model and research hypothesis are discussed.

Chapter 4: Research Methodology

This chapter explains the issues related to the research method and design of this study. It describes the study methodology, sample selection, data collection methods, validity and reliability of the questionnaire, questionnaire development, and data analysis procedures.

Chapter 5: Findings

This chapter reports the result of testing the research model and the research hypothesis related to the research model. A summary of all findings in terms of socio-economic impact of leather industry of Bangladesh is presented. It focuses on leather and leather goods export and economic performances of Bangladesh. It also shows the environmental hazards in different steps of leather processing and provides a description on economic issues in leather manufacturing industries of Bangladesh.

Chapter 6: Discussion

This chapter interprets and discusses the statistical results in greater details, to provide better insight into the meaning of the study's findings.

Chapter 7: Recommendation and Conclusion

This chapter concludes this thesis by addressing the main contribution of this research. It then outlines the research outcomes and delivers into their theoretical and practical implication. It highlights the limitations of this research, and will discuss and provide guidelines for further future work. Finally outlines policy recommendation of the findings of the study for Bangladesh economy.

CHAPTER 2
LEATHER INDUSTRY IN BANGLADESH

2.1. An Overview of the Leather Industry in Bangladesh

The leather industry is one of the oldest industries in Bangladesh and plays a significant role in the national economy with a good reputation worldwide. This is an agro-based by-product industry with locally available indigenous raw materials having a potential for export development and sustained growth over the coming years. Bangladesh leather is widely known around the world for its high qualities of fine grain, uniform fiber structure, smooth feel and natural texture.

In Bangladesh the leather industry have huge opportunities in generating employment, entrepreneurship and investment by increasing export of higher value added products rather than finished leather and by utilizing locally made raw material (finished leather) to convert into more value added leather products (including footwear and other leather goods). This sector occupies an important position in relation to the manufacturing sector in terms of gross output, poverty alleviation, income generation and a socio-economic benefactor for the country. It is becoming gradually a high performer and the expectations from this sector are considerable.

Statistics prepared by Export Promotion Bureau of Bangladesh for the Financial Year 2013-14 the leather sector grew by 48.55% percent and earned $1124.1 million in revenue representing 8% of the total export in the country, of this $745.6 million was attributed from leather products, accounting for approximately 66% percent of the total revenue. The leather sector includes 220 tanneries, 3,500 SMEs (Small and Medium

Enterprise) and 110 large firms controlling more than 90% of the export market. Most of the enterprises are located in Dhaka, followed by big clusters at Bhairab, Khulna, Jessore and Chittagong. The sector generates direct (only direct 180000) and indirect employment for about 850,000 people, including a significant number (70%) of women, particularly in the leather products industries. Besides, 50, 00,000 persons are involved in shipping, C&F, local agent, insurance, chemical traders, port, airport and so on. The Table 2.1 shows the current scenario of leather sectors in Bangladesh.

Table 2.1: Current Situation of Leather Sector in Bangladesh

Description	Weight
Number of Tanneries	220
Number of leather products large firms	110
Number of leather products SMEs	3500
Employment (direct & indirect)	0.8 million
Total leather used in the country	2 croressft
Total production capacity in the tanneries	42 croressft
Export revenue FY2013-14	USD 1124.1 million
Leather exports earning as % of the total export in the country	8%
Share of total exports earnings in the world	2%
Domestic Market	USD 350 million (15-18%)
Major Clusters	Dhaka, Bhairab, Chittagong
Types of Products	Finished leather & leather products
Level of Technology	Low to Intermediate

Source: Bangladesh Inspired -2014

Over 90% of basic raw materials (i.e. hide) are locally available. About 220m sq feet of leather of high grain produced locally (Khan, 2015). The sector is very much related to the RMG sector, but there is far greater scope of value addition ~90% as oppose to RMG where value addition scope is ~40% as basic raw materials for leather sector are locally available. RMG is the single largest contributor to export about USD over 20b; however,

basic raw materials are imported. About 50% of leather is being exported in the form of semi-finished and finished leather losing the value addition opportunity. Rest 50% is being converted into footwear and leather products for low-end market (Paul et al., 2010).

2.2. History of Leather Industry in Bangladesh

The leather (Tanning) industry of Bangladesh has a fascinating historical background. Prior to 1971 a few small and medium sized tanneries were engaged in the production of wet blue leather. The production was mainly destined for the local market and only a small part for export. With the emergence of Bangladesh, the experienced non-Bangalee tanners abandoned their plants, and a vacuum was created in the leather industry. Despite such a situation, the re silient Bangalees have been able to advance fairly well in the sector during the last three decades. Most of the abandoned enterprises were nationalized and the sector continued to suffer till 1980-81. After 1980-81 major policy reforms took place, which resulted in positive development of the sector. Today the leather sector is a major industry in the country. The basis of this sector is the domestic supply of raw hides and skins of goat, cow and buffalo.

During the 80s and the 90s some Tanneries and manufacturing units were setup and then began a new era for leather and leather goods sector of the country. So in place of raw leather Bangladesh began to export high-quality processed leather and various leather goods. The demand of leather goods, especially for footwear, increased progressively with the growth of the population and economic development not only in International but also in domestic market. For example from 1950 to 2000 the demand of leather goods has increased from 2.1 billion to 11.3 billion, i.e. by nearly 438%, far wicker than the population growth of the world. Besides, even during economic crisis the demand for main leather goods, especially footwear, remains fast unchanged, which indicates that leather and leather goods have a sound and stable world market.

In later years, for rapid development of this sector particularly emphasizing on the switching over to production of crust/finished leather, the Government formulated a policy putting a ban on the export of wet blue leather from the country after June 1990. Simultaneously efforts were initiated by the Government regarding modernization of leather tanning industry through BMRE (Balancing Modernization, Rehabilitation and Expansion), offering certain facilities for the purpose. Utilizing the given facilities of the Government of both fiscal and non-fiscal nature, quite a number of firms developed their leather processing facilities employing skilled technicians and worker, besides brining in latest machinery for the production and tanning of crust/finished leather. We can see the historical development at a glance in the Table 2.2 below:

Table 2.2: Registered Tanneries in Bangladesh up to the Present

Year	Total Number of Plants	Source
1951	1	BB
1951/52	8	BELA
1970/71	54	Ansari (1971)
1980/81	135	BTA
1981/82	140	BTA
1982/83	146	BTA
1983/84	150	BTA
1984/85	151	BTA
1985/86	160	BTA
1986/87	175	BTA
1987/88	201	BTA
1988/89	214	BTA
1993	270	World Bank Survey (1993)
1997	249	SHED (1997)
2002	206	Ahmed (2002)
2007	210	BTA
2012	220	EPB
2015	220	EPB

Source : Export Promotion Bureau

The Government has given special emphasis on the growth and development of leather sector and has taken up initiative for shifting the existing tanneries of Hazaribagh to an eco-friendly place at Savar on the bank of river daleshwari with modern facilities of central effluent treatment plant. The shifting of the tanneries, it is hoped, will bring significant success in the way of productivity improvement and development of the leather industries in the country. It is hoped that our entrepreneurs will establish their position by way of using modern technology, cost effectiveness, quality improvement and diversification of product to contest with the highly competitive international market scenario. If Government initiative is successful, it will provide the entrepreneurs an opportunity to overcome the new challenges of globalization and millennium development goals. Shifting of tanneries will bring into being a new horizon to expand our foreign market.

2.3. Subsectors of Leather

The leather industry has three broad categories of items such as the (a) crust/finished leather, (b) leather goods and (c) footwear. A good number of tanneries have been modernized, along with the establishment of some new ones. There had been genuine progress in the field of leather goods as quite a number of firms are now presently engaged in the manufacturing of wide range of products. A satisfactory development has taken place in the leather footwear manufacturing industry also. A number of leather shoe units have been set up during the last couple of years. The Pie Chart 2.1 shows the leather sector performance in 2013-14:

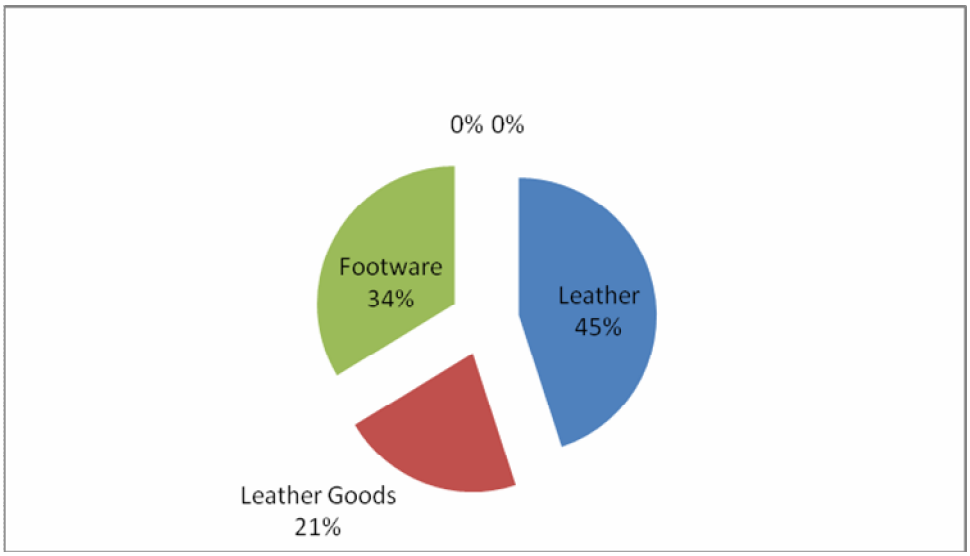


Figure 2.1: Performance of Leather Sectors (2013-14)

2.3.1. Crust and Finished Leather

The export of crust/finished leather is dominating the Country's leather export. The finished leather constitutes about 20% of the total leather export. The total annual availability of hides and skins in the Country is roughly estimated to be 180 Mn.sft of which the contribution of cow/buffalo hides is approximately 120 mn.sft. and that of goat/sheep 50 Mn.sft. The domestic consumption of leather is about 15%. Approximately 127.5 Mn.sft of leather is available for processing for export. Presently there are about 220 recognized tannery units in Bangladesh of these 28 units are well equipped for processing crust and finished leather and their total processing capacity is about 85.50 mn.sq.ft. The main reason for handful of tanneries producing finished leather is that the level of technology required for converting crust leather to finished leather compared with the technology required for converting raw hids to crust is much higher.

With the current investment in balancing, modernizing, rehabilitation and expansion (BMRE) of plants, it can be safely mentioned that more than sufficient quantity of crust capacity has been developed. However modern export-quality finishing capacity is still

to be improved with only 3 tanneries exporting on regular commercial basis. Moreover if Bangladesh desires to increase the range of products in the leather industry and penetrate new market segment such as heavy “Timberland” type leather which requires more thickness (substance), local raw materials is insufficient. Thus import of raw hides and skins is very much essential. The January is the peak period for finished leather production. During the peak period, demands of leather are presumably high in the international market. The production of finished leather in October, November and January, are 36.32, 54.48 and 89.93 lac sft respectively. Seasonal fluctuations might act for the shortage of raw hides and skins.

2.3.2. Leather Goods

Leather goods manufacturing had been given due importance for the last couple of years. As a result, satisfactory progress has been noticed in the development of leather products in recent years. At present, there are now 50 leather goods manufacturing units in the country. Some of them have attained satisfactory standard of producing quality items for overseas markets. The range of products now is being made include wallets, key, belts, rings, lady’s hand bag, upholstery and briefcases etc. One of the reputed firms is now in a position to bring out 200 design of bags worth acceptable to the overseas consumers. Quality leather jacket is also produced by certain firms catering to the need of the developed countries. Some of the firms have adopted a professional outlook to develop their infrastructural facility, workers skill, organizing efficient production system and setting a quality standard of their products. GTZ (Germany) had drawn up a three-year project in Dhaka with financial assistance of the German Government, for the development of leather goods in the country. A few firms have been benefitted through this project as it helped them upgrade the quality of the products as well as facilitating those sourcing new buyers and new markets.

2.3.3. Footwear

Footwear manufacturing industry came into limelight with the setting up of few modern shoe industries in the country during the middle of 90's. Later on, during the last few years some more units came into existence. Altogether there are now approximately 15 exports oriented shoe manufacturing units located mostly near the Dhaka City. The shoe manufacturing units are at present making Men and ladies shoes, shoe uppers, Mokasims, shoe accessories etc. Although there are more than 2000 shoe making units spread all over the Country, yet most of them are servicing the domestic market.

2.4. Current Market Scenario and Competitive Edge of Leather Industry

Leather and leather products have traditionally been an integral part of our products for export. The country had been producing hides and skins, the basic raw materials for the leather industry from time immemorial. In the last two decades, the leather industry of Bangladesh has given particular attention towards development of its infrastructure. By combining the latest in leather technology with abundant raw materials and inexpensive skilled labor, leather is now playing an important role in earning foreign exchange revenue for the country. The sector, apart from exporting crust/finished leather at present, has also earned capability to produce quality leather goods and shoes for export to overseas markets.

The footwear production is dominated by newly developed, developing and least developed Countries. So Countries like Bangladesh have all the opportunities to earn an increasingly higher share of the world market. The production, export and consumption data of the countries of Asia Pacific undoubtedly support this conclusion. China, India and Indonesia who produce most of the footwear of the world also export most of the footwear of the world. The Table 2.3 below shows the world footwear supply in 2014.

Table 2.3: World Footwear Supply (Millions of Pairs, 2014)

Country	Production	Exports	Imports
China	13500	10071	50
India	2065	115	79
Brazil	864	113	36
Bangladesh	962	443	52
Vietnam	725	625	25
Indonesia	700	320	33
EU	592	217	2287
Thailand	250	110	45
Mexico	265	26	77
Korea	85	30	169
Japan	69	1.2	629
Taiwan	40	17	75

Source : World Competitiveness Report 2014

The larger enterprises like BATA, Gallerie Apex, Bay, Jennys are controlling the domestic market of high ended leather products but they are mostly dependent on imported products. So there is an immense opportunity for the SMEs to provide up to USD 150 million in import substitution via becoming sub contractors for these very large global enterprises. The main strengths in the leather industry are accessibility of raw material, cheap manpower and other natural assets. Moreover in the contemporary years the tanning industries in developed countries have been shrinking due to pollution problem and high labor cost. The tanning industries are now shifting from developed countries to developing countries. Bangladesh can be benefited from this shifting.

Cost competitiveness of a product in the essence of present of International Marketing that in turn depends upon the supply of raw materials, manufacturing know-how and conversion cost. The leather industry, manufacturing is highly labor intensive and the production cost is greatly dependent on labor wage. There has been a continuous

shifting of leather and leather products manufacturing base from developed countries to low cost countries of developing economy since the Second World War due to high labor cost and strict regulation on pollution control for cost competitiveness. The journey started from USA to war divested European countries in 1950's and then from Europe to Asian countries; Japan, Taiwan, Hong Kong, and Republic of Korea during seventies. The established producers of these newly industrialized countries being affected recently by high rise in labor wages and export limitation in Europe have been looking for expanding and/or relocating their production base to low cost China, Indonesia, Thailand, India, Pakistan, Bangladesh and Vietnam. Supply of quality hides and skins, the basic raw materials for leather industry and availability of a large pool of easily trainable educated cheap labor force are the major advantages of Bangladesh over the other exporting countries. The Table 2.4 shows the cost comparison of shoe worker in different countries of the world.

Table 2.4: Shoe Worker Cost Comparison (2014)

Country	Cost per Hour	Cost % of Change	Exchange Rate (USD)
Ethiopia	0.32	39.1%	18.8
Bangladesh	0.44	2.5%	78
Cambodia	0.61	2.0%	NA
Vietnam	0.80	14.3%	21223
India	0.85	13.3%	59
Thailand	1.32	3.0%	31
Indonesia	1.75	29.6%	10200
China	1.90	18.7%	6.1
Brazil	3.59	6.5%	2.22
Mexico	3.87	28.5%	12.69
Japan	25.66	21.0%	100

Source : World Competitiveness Report-2014

The labor wages as shown in developed industrialized countries is 29-59 times higher than that of developing countries, which is 9-14 times in newly developed Asian Countries. The labor cost in advanced countries for 40-45% of the total production cost where as it is less than 5% in developing countries, which is still the lowest in Bangladesh. Standard production cost of a pair of average quality shoe in Bangladesh is about US$ 14.00 compare to US$ 18.50 in Thailand, US$ 23.50 in Republic of Korea and US$ 32.00 in USA. The GSP facility available for Bangladesh leather and leather products in many potential importing countries is an added advantage for Bangladeshi leather industry. Due to high production costs many firms of advanced and newly developed Asian Countries are becoming wholesale distributors and retailers of imported products rather than manufacturers and entering into contractual arrangement with low cost producers in developing Countries for cost competitiveness. We, Bangladeshi, are in a good position regarding labor cost but we are behind from China, India and Pakistan on the subject of backward and forward linkage industries.

2.5. Linkages of the Industry

There is no industry in the economy that operates in isolation. It is also true for the leather manufacturing industries. The tanning of leather eventually generates a number of activities of industries and ancillary concerns. Leather tanning has backward and forward linkage industries. In the whole of Asia, China is the only single country achieving extraordinary performance in the leather sector. One of the key elements that has led China to this high level of performance, is the successful use of the concept of “backward and forward linkage industries”. The leather tanning linkage industries are shown in a diagram below.

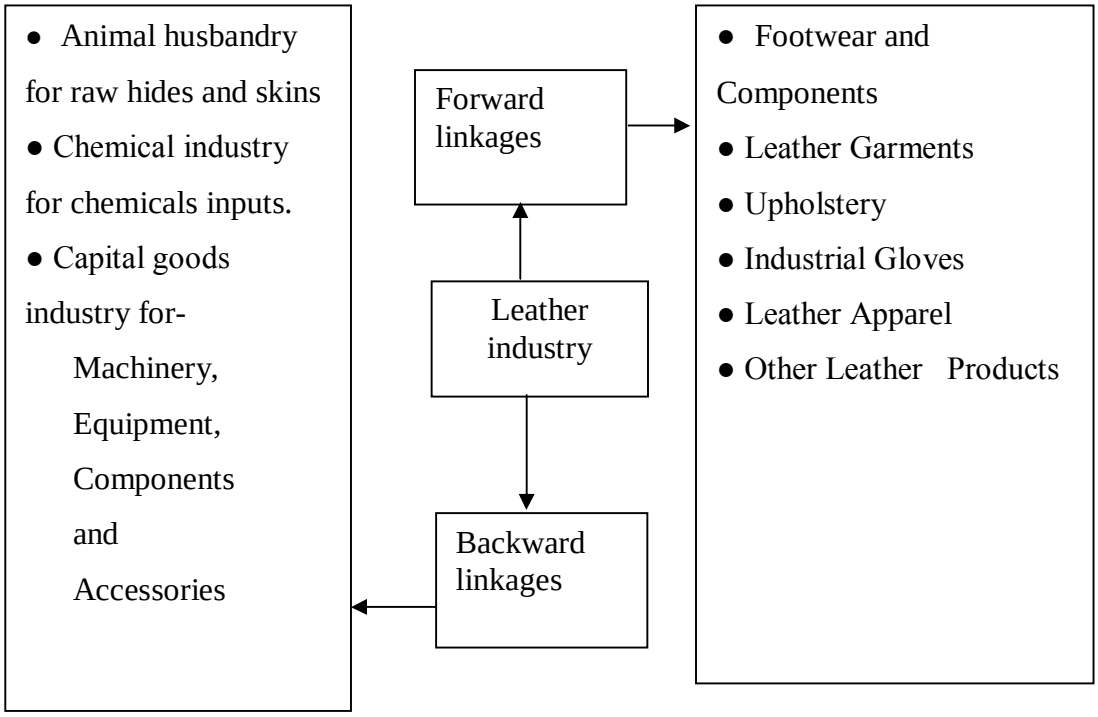


Figure 2.2: The Leather Tanning Linkages Industries

Bangladesh leather industry will have a significant position, if we are able to develop our backward and forward linkage industries. In Bangladesh backward linkages industry did not develop because of no restriction on import of machinery and easily available required machinery from China and India. Chemical industry did not develop due to narrow market and easy condition on import from Europe, China and India. The situation is definitely not helpful for the growth of the capital goods sector of the Country.

Forward linkages industrial products, where value addition is comparatively much higher than leather processing, there are tremendous scopes of development of forward linkages industries in Bangladesh. The Country needs to develop entrepreneurs, designers, training facilities for the floor level operatives, export marketing expertise, supply of finished leather to forward linkage manufacturers, components and accessories manufacturing etc for this purpose.

2.6 Leather Processing

Wet-Blue Leather Processing Leather has been an important and everywhere used material since very old times. It has been in application for various purposes including personal protection against adverse forces for nature long before the development of weaving and knitting and much before use of grass, leaves and natural fibre as fabrics or fabric like materials. Leather is a typical or unique sheet or web-like material having a dense texture that effectively combines air resistance and water vapor permeability while remaining flexible enough to be designed into any preferred pattern.

Leather is a material made of animal skin, which is conditional to chemical treatment (tannage) and mechanical treatment in order to offer it new properties geared to the designed application. This treatment does not, nonetheless, affect the natural structure of the collagen fibre network.

To conduct irreversible stabilization of the hides and skins substance that is inclined to putrefaction is known as “tannage”. Tannage converts the natural fibre network of the hides and skins collagen into the physical leather. The tanning materials are affected with the ploy peptide chains of the collagen, forming some bonds with different reactive groups of the collagen molecules. This has the effect of cross linking the collagen molecules and strengthening them individually and collectively exact like the rung of a ladder determine its stableness.

Various Methods for Tanning

For producing commercial leather operation of above substances base involved the following permanent processes of tanning:

(1) Mineral Tannage

- ❖ Chrome Tannage

- ❖ Alum Tannage
- ❖ Zirconium

(2) Vegetable Tannage

(3) Oil Tannage

(4) Aldehyde Tannage

(5) Tannage with Synthetic Organic Tanning Material

(6) Combination Tannage

In leather industries, raw hides and skins go through different chemical and mechanical operations and finally come out finished leather. For leather manufacture some operations are essential. These operations can be arranged into following four groups:

(a) Pretanning or Beam House Operations: Soaking, Liming, Deliming, Bating, Pickling, etc.

(b) Tanning Operations: Chrome Tanning, Vegetable Tanning, etc.

(c) Post-Tanning Operations: Neutralization, Retanning, Fat liquoring, Dyeing, etc.

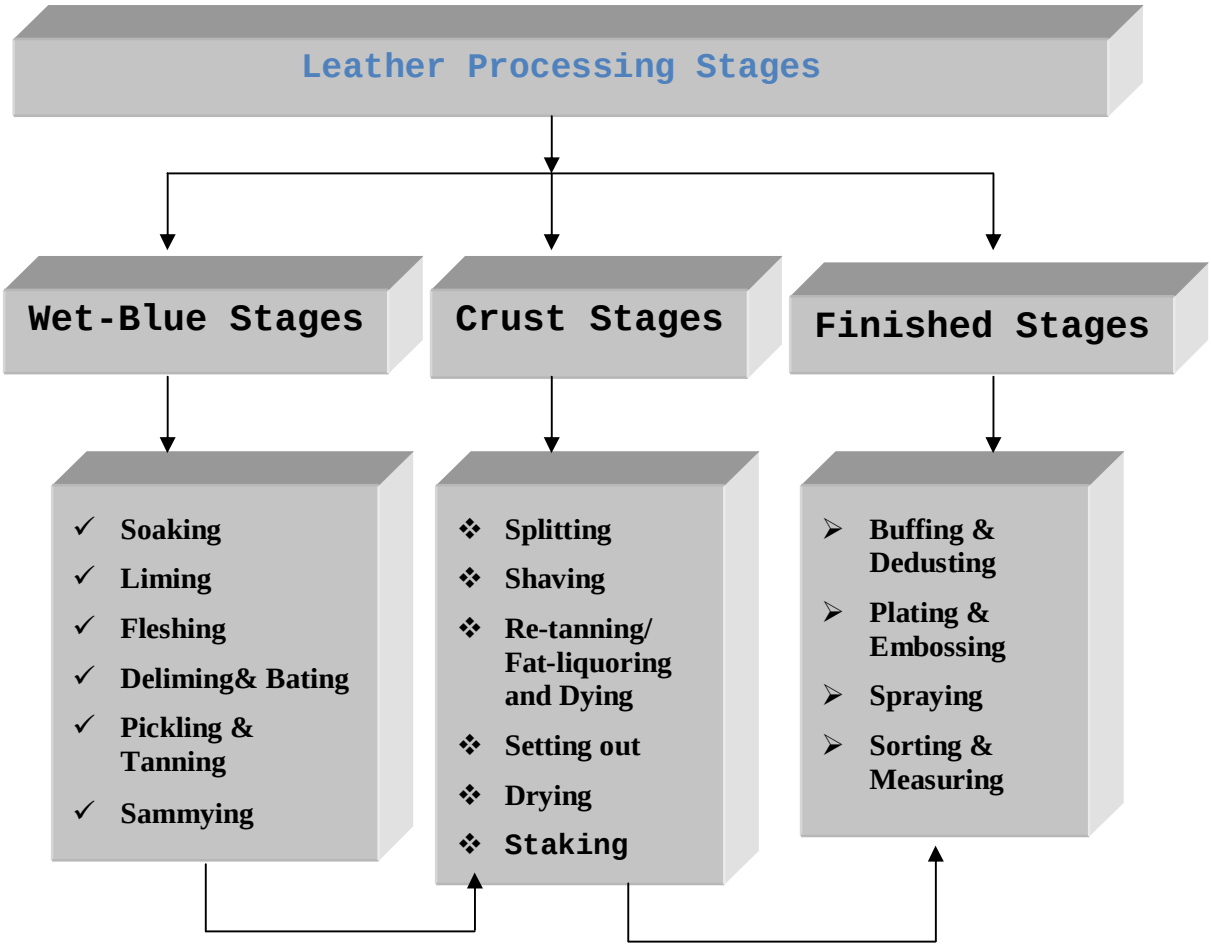
(d) Finishing Operations: Impregnation, Spraying, etc.

Based on the type of leather to be produced, these operations are essentially selected scientific adjustment of wet and dry process and mechanical treatment is a must for quality leather production.

2.6.1 Leather Processing Stages

There are three main leather-processing stages. They are Wet-blue, Crust and Finished stages. They are shown below:

Figure 2.3: Diagram of Leather processing stages



Now we are going to discuss the leather manufacturing sub-processes.

2.6.1.1 Wet- Blue- Stage : Sub- Processes

The hides and skins become wet-blue leather after finishing several steps. These steps are soaking, liming, fleshing, deliming, bating, pickling, tanning, sammying and sorting. All these operations are required to transform the perishable raw hides and skins into the durable material leather.

Soaking

The removal of water from the hide (dehydration) during the preservation causes the fibre to stick together. The purpose of the soak is to restore this water (rehydration),

there by restoring the hide to its original degree of swelling, i.e., as it was on the living animal. At the same time, blood, dirt, dung, preservation salts and soluble proteins are removed. Soaking is usually completed in pits, paddles or wooden drums. Pit is mostly for dried hides, while paddles and drums are used for wet-salted hides. Wetting agents are added to open the hide structure and stimulate water penetration.

Liming

After Soaking, the next sub-process is liming. The main objectives of the Liming are to remove the hair, grease, fats, flesh, etc. Basic inputs at this stage are sodium soaked hide, sulphate, water and lime. According to soaking, this operation system can be put in pits, paddles, or wooden drums to finish this sub-process. The latter method is usually chosen for quicker reports. The concurrent trend is towards soaking and liming in the vessel consecutively by simply alternating chemicals or water rather than using two different vessels. This system is responsive to rapid processing.

Fleshing

Some flesh and fat adhere to the hides and skins even after liming. The flesh, which swells in the lime liquor, should be scraped off at this level. This may be completed on the fleshing beam and cutting off the flesh with a sharp knife. This operation is called hand fleshing which is a skilled work. Expertise and practice are needed to do this effectively. Fleshing can also be completed by fleshing machines, which are alike to unhairing machines with the difference that the rotating spiral blades of the fleshing knife cylinder are sharp and not blunt as in the case of the unhairing machine. The lime fleshing is used for making glue and is an important tannery by-product.

Deliming and Bating

The main objectives of these sub-processes are to remove lime and other alkalis and finally eliminate remains of hairs, hair roots, pigments, cemented materials and unwanted proteins.

These operations are carried out in the same vessels (milling drums, mixers, and tanning machine) as are to be used consequently for the tannage.

Deliming Process

The liming chemicals which were mechanically deposited and chemically bound during liming are neutralized with weak acids or weakly acid reacting salts, e.g., ammonium salts, and converted into readily soluble salts which are then rinsed out during the subsequent rinsing or washing. At the same time, the alkali swelling caused by the liming chemicals subsides and the pelts fall. Bating follows deliming; this one is usually carried out in the same bath. For this procedure, enzymatic-bating agent is utilized, which attack non-structured collagen and non-collagen proteins in a controlled manner and make them soluble. This opens up the pelt for the ensuing tannage. Removing the non-structured collagen improves the softness, grain elasticity and color levelness of the leather. Even intensive bating does not impair the tensile strength of the leather much and may even improve the tear strength by increasing the elasticity of the fibre.

Pickling and Tanning

The hide, which so far has been treated by alkaline chemicals, will now go through a process called **Pickling** which, treat the hide with acids and common salts. The pickled hide is ready for **Tanning**. For chrome tanning, chromium salts are used. Chrome tanned leather is soft and flexible. It can withstand high temperatures, which may occur at some stages of shoe manufacturing.

Sammying

The natural differences in the structure of the hide mean that the tanning material absorption and the liquid absorption also vary. Consequently, leather is still not the same thickness all over after tannage, even if it was already leveled or split in the Pelt

State. In order to shave it to an exact thickness, it must first be sammyed, i.e., squeezed mechanically, to diminish the water content from about 70% to about 60%.

Sorting

After Sammying, wet- blue leather is sorted and graded according to its grain quality.

2.6.1.2 Crust Leather Processing : Sub Process

In this level, the chrome-tanned leather is called wet-blue in consideration of its fair blue color. Now it needs multiple operational sub-process preceding finishing stages.

Splitting

The wet-blue leather is trimmed to eliminate unwanted, unpolished and ragged edges. Traditional method or electric scissors can complete it. This procedure may also be repeated at a succeeding stage so long to remove marks and holes. Thick hides are splitted by splitting machine to get desirable extent, which are demanded by buyer. After splitting, we get two parts, top of the layer is called the grain part and the inner part is called flesh part. The best types of products are made from grain part of leather and inferior types of products are made from flesh part.

Shaving

Shaving blades lessens the substance of the leather according to the preferred thickness and modifies thickness of splits.

Re-Tanning, Fat-Liquoring and Dyeing

This is a joint operation where the semi-finished leathers will prepare for latest tanning and few applications of chemicals. Preceding the ultimate shade is given to the leather; another property, e.g., perspiration resistance is added by tanning with vegetable or

synthetic tanning articles. In the process of chrome-tanned leathers they become acidic and are neutralized ahead of dyeing. Fats are put to use in order to soften the leather, a process known a fat Liquoring. It is possible to associate neutralization, re-tanning, fat-Liquoring and dyeing in one process. Nevertheless many manufacturers select two combined operations: Neutralization and re-tanning and fat Liquoring and dyeing.

Setting- Out

This process is as similar as in the process of Sammying; it involves the mechanical removal of excess water or dampness content.

Drying

At this operation the wet leather is dried unto desired extent. There are many techniques such as natural drying, hang drying, toggle drying, conveyer drying, tunnel drying, vacuum drying and paste drying.

Staking

After drying, leather becomes stiff. In order to further the operation, a definite degree of conditioning; i.e., moistening the leather to 28 to 30 per cent moisture contents is required. Few manufacturers practice a conditioning machine where leather is sprayed with water. The staking process is used as to convert the leather flexible unto the desired level. There are two techniques, which are used in this operation; a jaw-type machine or a vibratory machine. This operation is generally followed next to a final drying or airing off operation.

Sorting

At the end of this operation, the leathers will be sorted on the basis of grain quality.

2.6.1.3. Finished leather Processing: Sub-Process

Buffing-Dedusting

The main object of this operation is to uniform the surface and eliminate particular defects from the leather outside. Dedusting to clear the dust from the surface follows buffing. This sub-process is used particularly for corrected grain leather.

Plating/Embossing

At this level the leather surface is transferred a pigment solution, named 'binders'. The processing puts a coating covering the leather. There are two systems for seasoning, one is hand processing is called hand padding and another is machine processing is called curtain coating. Drying further follows seasoning. A heated plate is used in this sub-process to get the leather outside a uniform showing, which can be paint, smooth or have some artificial grain design, called embossing.

Spraying

This process is the final stage where leather will be given an ultimate coloring. An auto-spray machine or a hand spray gun is used in this operation. This process can be repeated for ironing to furnish the product a luminous look.

Sorting and Measuring

Finished leather will be sorted and measured by pinwheel type or electronic type measuring machine before dispatch.

2.6.2. How Technology Changes Over Time

Table 2.5 shows how technology changed over time. Technology is used in leather manufacturing industry in various steps e.g., wet-blue, crust and finished leather stages.

Table-2.5 Technology Changes Over Time

SL. No.	Sub-Process	Technology use in **wet-blue** stage (Before,90)	Technology use in **crust** stage(After,90)	Technology use in **finished** stage(After,90)
1	Soaking	Pit Wooden Drum		
2	Liming	Pit Wooden Drum		
3	Fleshing	Mechanical Hydraulic		
4	Tanning	Paddle Wooden Drum		
5	Sammying		Mechanical	
6	Splitting		Hydraulic Cum -Electronic	
7	Shaving		Mechanical	
8	Staking		Jaw-type	
9	Buffing		Endless type	
10	Deducting		Automatic	
11	Re-tanning		Stainless-steel Drum	
12	Pressing			Roto Press
13	Seasoning			Semi-Auto
14	Spraying			Fully automatic
15	Measuring	Pin-Wheel Electronic	Pin-Wheel Electronic	Pin-Wheel Electronic

Source: Field Observation

In Bangladesh, Leather-manufacturing industries are using primitive to highly sophisticated techniques. Cottage sub-sectoral units are producing wet-blue and low-grade finished leather for domestic market by applying primitive type of hand-operated techniques. On the other hand the medium and large-scale plants are producing high quality crust and finished leather for export by using sophisticated machinery and equipment in most operations.

Only low grade leather processing wooden drums and toggle driers are produced in the country and rests are to be imported. The major sources are Italy, Germany, France, UK, Taiwan, Korea, India, Spain, Japan and Thailand. The leather and leather products manufacturing machines and equipments are now operating in Bangladesh is of good quality like German, Italian and UK origin followed by second grade machines from Taiwan, Spain, Thailand and Korea and third grade machines from Indian origin. India is major supplier of low cost mechanical fleshing machine. Leather sector particularly leather processing industries need huge quantity of various type spare parts which are imported mainly from Europe. (Ahmed 2002)

We Can Show The Values Of All Machinery And Equipments' List Below, Which Are Used Randomly In Leather Processing Units

Table 2.6 The Values of Machinery and Equipments

SL. No.	Sub-Process	Technology use in various stage	Average value of machinery and equipments (in Lac Taka)
1	Soaking	Pit Wooden Drum	1.5 3.0
2	Liming	Pit Wooden Drum	1.5 3.0
3	Fleshing	Mechanical Hydraulic	15.0
4	Tanning	Paddle Wooden Drum	2.5 1.5
5	Sammying	Mechanical	3.2
6	Splitting	Hydraulic Cum -Electronic	17.5
7	Shaving	Mechanical	3.5
8	Staking	Jaw-type m/c	10.5
9	Buffing	Endless type m/c	18.2
10	Deducting	Automatic m/c	20.5
11	Re-tanning	Stainless-steel Drum	5.5
12	Pressing	Roto Press m/c	15.6
13	Seasoning	Semi-Auto m/c	17.2
14	Spraying	Fully automatic	20.5
15	Measuring	Pin-Wheel Electronic	16.8

Source: Field Survey

In this chapter we discussed various types of methods, where use different type of machinery and equipment are used in the leather manufacturing sub-processes. The middle of 1990 was a period of turmoil for the leather industry across the country because the Government banned wet-blue leather from 1st July 1990. So we can see in our study that how machinery and equipment are adopted in our tanning processes from 1990 for crust and finished leather processing. There is a rare possibility of leather manufacturing capital goods (machinery) in Bangladesh in near future due to small local market and lack of manufacturing technical know-how. Bangladesh can produce some selected commonly used spare parts like shaving knives, rubber roller, etc.

2.7. Problems and Constraints Confronting the Leather Sector of Bangladesh

Leather industries in Bangladesh are traditional and to some extent modernized. It is confronted with numerous problems and constraints, of which, some are continual, and others are modern and problematical. The quick structural transformation has been taking place within the industry over the years and with more impressive targets of growth for realization of more value added products for challenging and stimulating prospects. Considering the present foreign exchange crisis, we are to look into the various problems and constraints faced by the industry. Our efforts can be prepared to set the targets into reality and to make sure the sustainable growth process. The problems and constraints of the industries relate to raw materials, technical, financial, environmental, marketing and export.

2.7.1. Raw Materials Base Problems and Constraints

- The basic raw materials of hides and skins are required for the leather industry. Recently, the leather industry faces severe shortage of basic raw materials hides and skins which would lead to seasonality problems in the tanning process of

the country. The supply of hides and skins are dependent on the livestock population. Demand for meat is highly inelastic in nature. As a result the supply of hides and skins are irregular and sometimes inadequate. The prices also fluctuate and sometimes fetch a high price in total market.

- The traditional use of cattle in agriculture farming is gradually declining in the Country with the introduction of tractor in farming.

- Hides and skins of Bangladesh suffer from many pre-mortem defects like diseases, pin marks, insect bites, tumors, parasites, ticks, band marks, paint, cuts, wounds, etc. by reason of inferior livestock management and animal health care.

- There are several post-mortem damages for example knife cuts, irregular shape, holes, cracks, sands, seeds etc due to careless flying, insufficient curing and irregular handling, all these down grade the quality and reduce the price of hides and skins.

- In India, there are many chemical industries established from time memorial. Our tannery owners easily purchase their chemicals from India that is why our backward linkages Chemical industry did not grow.

- Many tanneries in Hazaribagh are multi-story buildings. Raw hides are often processed into “wet blue” leather in large wooden drums and pits on the ground floor, before they are taken upstairs for drying and further processing with heavy machinery.

2.7.2. Financial, Marketing, and Export Problems in the Tanning Industries

- Lacks of good management and marketing expertise of the leather industry are the major constraints in development and expansion of finished leather and leather product capacity.

- Most of the owners do not have educational background, managerial capacity and marketing knowledge.
- High bank rate of interest and sudden change in bank lending policy.
- Usual strike and gheraos are political problem that caused 10 crores loss per annum.
- Sick tanneries are doing job-work for commercial exporters, which create unhealthy competition in leather export markets and sudden change in export policy.
- Lack of cost-benefit analysis, weak appraisal and monitoring of bank loans.
- Sometimes paucity of foreign exchange to purchase machinery, equipment and spare parts.
- Scarcity of working capital is severe in this sector.

Marketing Channel of Hides and Skins:

A chain of middlemen as shown in the diagram generally collect hides and skins.

Flow Diagram-1

Collection of hides and skins

↓

Foria

↓

Bepari

↓

Aratdars at Upazilla/Zilla Level

↓

Arats at Dhaka, Chittagong, Khulna and Natore

↓

Tanneries

Prices of hides and skins increase to a large extent by reason of the share charged at different level of transaction through the middlemen from the origin to the user. Cost components are

- Price at inception of hides and skins
- Mark up at Farias, Beparies and Aratdars level.
- Commissions.
- Carrying cost
- Safe keeping cost.
- Chanda paid to mastans and traffics.

2.7.3. Skilled and Technical Personnel Problems and Constraints

There is acute shortage of trained manpower and persons with experienced technical know-how for production of quality crust and finished leather. Most of the leather units are operating with leather technologists who are graduates from the leather college at Hazaribagh, with little practical knowledge in commercial production. Tanning industries are by and large labor intensive. Bangladesh is densely populated country in the world. But we have no training institution for skilled and semi-skilled man power for leather processing. Leather is a fashionable consumer product subject to many changes in styles and designs. It requires a well-trained manpower with a high degree of adaptability for the forthcoming changes in the near future. Manpower resources in tanning industries comprises of technologists, supervisors, chemist, machine operators, maintenance staff, designers etc. More over value added items hardly have the crisis of skilled human resources. Marketing expertise is the major constraint in development and expansion of finished leather and leather product capacity in the country and there is also a seasonality problem in leather production. In order to achieve development of this sector, it would require additional skilled manpower.

2.7.4. Environmental Problems and Constraints

Environment means surrounding conditions and environmental pollution implies any sort of natural disorder, which affect our socio-economic life. Environmental Pollution has become a matter of great concern all over the world in recent years. Existence of human life mostly depends on sound environment. Our environment is being polluted everyday for numerous reasons. Industrialization is an important cause of environment pollution. Industries emit smoke and pollute the environment. Mills and factories throw their pollutants into rivers and canals and contaminate water. The environment pollution is a threat to human existence.

Leather industrial sector has made remarkable growth in developing countries of South and East Asia during the 1980's. This was owing to continuing decline of this sector in the industrialized countries of the world, caused mostly by the rapidly increasing wage bills and strict environmental regulations. Soil and ground water resources were affected, resulting in a huge public chaos.

Tannery industrial area at Hazaribagh in Dhaka city is mostly polluted in Bangladesh. Due to mismanagement, unplanned drainage system, inferior technology, inadequate facilities for tanning wastes, wrong approach towards industrialization and so forth. So the environmental problems in the industrial sector, mainly tannery industry is concerning.

2.7.4.1. Pollution Load by Tannery Industry in Bangladesh

"Pollution is an undesirable change in physical, chemical or biological characteristics of water, air and soil that may harmfully affect human, animal and the plant life, industrial progress, living conditions and cultural assets." (National Academy of Science, U.S.A. 1966)

“Pollutant is a harmful solid, liquid or gaseous substance present in such concentration in the environment which tends to be injurious for the whole living biota.” [Environmental Protection Act (EPA), 1986].

Among the various industries, tannery industries have been polluting the environment dominantly in Bangladesh. Due to mismanagement, unplanned drainage system, inferior technology, lack of facilities for tanning wastes, wrong approach towards industrialization and so forth. An environmental problem in the industrial sector is of great concern.

Since 1991, the volume of production of hides and skins has increased significantly. The pollution is summarized in the following:

Tanned and un-tanned solid wastes were generated in Hazaribagh while processing 74,000 Tons of wet salted raw materials as estimated by UNIDO. Leather industry is a multi furious environment polluting industry, as well as the fifth largest export-earning sector. Leather industry is a highly pollution oriented and hazardous type of industry, based on mainly indigenously available raw hides and skins and processed with more than 15,000 tons of anti-environment chemicals (Alam 2001).

“Meanwhile, the water of Buriganga river has become black and mucky due to continuous inflow of untreated tannery effluents. The tannery units release nearly 22,000 cubic metres of untreated toxic waste everyday to the Buriganga River. According to the local people, the condition of the river is the worst” (The Daily Star, March 25, 2003).

“Tanneries in the city's Hazaribagh area discharge some 21,600 cubic meters of liquid wastes everyday. These harmful wastes, including chromium, lead, sulphur, ammonium, salt and other materials, are severely polluting the capital city and the river Buriganga”. (UNB, November 2003)

“The tanneries collectively emit around 20 million liters of toxic waste every day”, (The NEW AGE, February 23, 2007)

Among the various chemical pollutants, chrome is the most dangerous and long lasting contaminant. Others include aluminium which is used in tanning. Sulphide used in the liming and hair removal process, and solvents which are introduced during leather finishing. These, too, are subject to regulation in most countries. Finally, the industry emits various unwanted protein residues (un-tanned or tanned) in the form of putrescent organic materials. Disposal of these materials is one of the tanners’ main concerns. The magnitude of their task is suggested by the fact that nearly half the weight of the original hides and skins remains as solid waste which is not converted into leather (UNIDO, p-121).

About 3,000 tonnes of solid waste and 0.25 million tonnes of liquid waste generated by tanneries every month are being dumped into the rivers without any treatment. Under such dreadful circumstances, there is an immediate need for taking legal actions against tanneries causing serious environment pollution. If necessary, the tanneries should be shut down as per the law (The Financial Express, May 13, 2010).

From above, it appears that estimates of untreated toxic waste that is released vary between 20,000 and 22,000 cubic meter per day and that of solid waste vary between 150 and 160 Tones everyday.

Few large scale factories are providing some facilities while smallers are in very awful situation. Bad smells got from nearby the Hazaribagh like Rayerbazar, Jhigatola and parts of Dhanmondi. Nobody wants to go to Hazaribagh due to terrible effect of tanneries. Most of the tannery owner do not live in those areas. Environment friendly working environment is essential for the workers to ensure good production and revenues. The factory owners should give attention at this site. Government has already taken decision to shift the all factories from Hazaribagh to outside of Dhaka city but already it is too late as it will take years together to get a green and friendly environment in this area.

Tanneries have been linked with bad smells and the dumping of untreated waste effluent in the Buriganga river and have been created a serious pollution problems in the areas itself and the immediate surroundings. The leather manufacturing industries, especially Hazaribagh tanneries of Dhaka city have been polluting the environment in three ways i.e., air pollution, water pollution, soil pollution.

Air Pollution: Air pollution occurs when industries, vehicles etc. turn out smoke and dangerous gas, main grounds for air pollution are injurious to health. Some of these gases are carbon dioxide, carbon monoxide, CFC, Hydrogen sulfide, Hydrogen chloride etc.

According to WHO about one fifth of the world's people are exposed to hazardous level of air pollutants. An environmental study by the BAEC (Bangladesh Atomic Energy Commission) shows that one cubic meter air of Dhaka contains 463 nanometer lead whereas Bombay and Mexico the worst polluted countries of the world contain 360nm and 383nm respectively. Sodium sulfide is used as un-hairing agent and sulfur containing compounds of hide material may lead to release hydrogen sulfide gas to the air.

Water Pollution: The change in the composition of water in any was which may create threat to living being is called the pollution of water. Sewage, toxic chemicals metals etc. are different substances of water pollution. Environmental problems related with the leather industry are the discharge of extremely contaminated waste water. The waste water generated in tannery contains dirt, blood, hair, dissolved and suspended hide proteins, greaser, animal fats, residues of various type of inorganic and organic process chemicals including sodium chloride, sodium sulfide, ammonium sulfate, enzymes, chromium, vegetable tanning, syntans, resin dyes, fat, bactericides etc. They have propensities for high Biological oxygen Demand (BOD) and Chemical Oxygen Demand (COD).

Soil Pollution: Soil Pollution may be defined as the alternation of the soil condition, which reduces its utility. The combine of various kinds of harmful matters or element which the natural condition of soiled can be defined as the soil pollution. Soil pollutants help to cut essential soil elements and to increase such elements which are dangerous. Chemical fertilizer, pesticide, irrigation, etc. can damage soil in the long run. The tanning industry produces a huge amount of solid wastes consisting of dusted salts, meats, raw hide and skin trimmings, fleshing, lime trimmings, lime sludge, leather trimmings, shaving dusts, buffing dusts, residues of finishing chemicals etc. These wastes with adhering chemicals damage the environment and public welfare.

2.7.4.2. Different Steps of Leather Processing and Environmental Hazards.

The leather manufacturing industries have been polluting the country's environment for a long time. Leather Processing has three main stages. These are: wet-blue, crusting and finishing. The soil, water and air- the three materials elements have all become extremely polluted. Chemical industries in general are more polluting than others and

leather manufacturing is the most polluting of all chemical industries. Different types of waste produced in the process-by-process of leather manufacturing and environmental hazards are shown in below tables. Table2.7give Environmental Hazards in Wet-Blue, Crust and Finished Stages, respectively.

Table-: 2.7 Environmental Hazards in Wet-Blue Stage

Sl. No.	Name of Operation	Waste produced			Environmental Hazards	Recommendations
		Solid	Liquid	Gaseous		
1	Soaking	Flesh and hair	Blood, Flesh, unused sodium chloride		The solid wastes are piled up on the street in front of the tannery. They also polluted air and often causes diarrhea, stomach problems.	* Use correct amount of sodium chloride and sodium carbonate. It helps to reduce the pollution. * Bury solid wastes under soil at a distance place from residential area.
2	Unhairing and Liming	Fat, Flesh & hair	Unused calcium hydroxide, sodium sulfide and sodium bisulfide	Sulfur dioxide and hydrogen sulfide	Maximum environmental pollution occurs at this stage. Hydrogen sulfide is a highly poisonous gas. It affects the human nervous system. It can cause respiration difficulties, skin disease, headache etc.	* Use correct amount of wet lime, sodium sulfide and sodium bisulfide. * The hair
3	Fleshing	Waste & fat Flesh			Solid wastes are piled up on the road or by the drains. The rotten flesh generates disgustingly foul smell. The solid wastes are finally disposed of into the low land of Hazaribagh.	Use fat flesh for producing useful materials such as glue, gelatine and the sticky substance for sand paper. Dried, these wastes can also be used as poultry feed.

4	Deliming and Bating		Unused sodium meta bisulfite, sodium sulfite, salts of ammonia and melted fat.	Sulfur dioxide and ammonia gases.	Poisonous sulfur dioxide gas produced from the unused sodium meta bisulfite, causes burning in the eyes, nose and throat, and causes high blood pressure and bronchitis. Ammonia gas causes headache, nausea and drowsiness.	Everybody in the factory should use masks so that not to inhale sulfur dioxide and ammonia gases.
5	Pickling		Unused sulfuric acid, formic acid and sodium chloride.	Chlorine.	Sulfuric acid and formic acid are very strong. These acids cause wounds on the skin and may cause cancer ultimately. Chlorine gas, created at this stage, may cause death.	Use correct amount of acid.
6	Chrome Tanning		Unused chromium sulfate, sodium bicarbonate, sodium carbonate and sodium formate.		Unused Chromium sulfate, is extremely harmful. Long term chromium contamination may cause cancerous diseases.	Recycle the chromium and ensure its resue.
7	Shaving	Shaving dust.			The shaving machine operator is directly exposed to the shaving dust. The labors who work nearby are also affected.	Manufacture leather board from the shaving dust.

Source: SHED (1998) pp 14-28

Table-2.8.: Environmental Hazards in Crust Stage

Sl. No	Name of Operation	Waste produced			Environmental Hazards	Recommendations
		Solid	Liquid	Gaseous		
1	Rechroming				Unused chromium sulfate and the hexavalent from of chromium are the main hazardous substances generated in this stage.	Recycle and reuse the chromium. Gloves and boots must be worn before using the chrome liquor.
2	Retanning	Non-soluble vegetable extracts.	Unused organic acids, resin, polymer and fat.		Unused organic acids are harmful for skin.	Use correct amount of acid.
3	Dyeing		Unused different dyes, fixing agents.		The labors inside the tanneries regularly inhale the dyeing agents.	Use dye in correct amount. Use benzidine free dyes.
4	Fat Liquoring		Unused oil and liquid fat		The oil and fat contain many substances, which are harmful for the human body.	Use oil, fat and other chemicals in correct amount.

Source: SHED (1998) pp 28-34

Table-2.9. Environmental Hazards in Finished Stage

Sl. No	Name of Operation	Waste produced			Environmental Hazards	Recommendations
		Solid	Liquid	Gaseous		
1	Finishing	Buffing dust, finishing cuttings.	Unused liquid pigment and dye	Ammonium hydroxide and formaldehyde.	Maximum air pollution occurs in the finishing stage.	Apply the finishing season in padding, roller coating or carten padding methods to reduce the air pollution.

Source: SHED (1998) pp 34-36

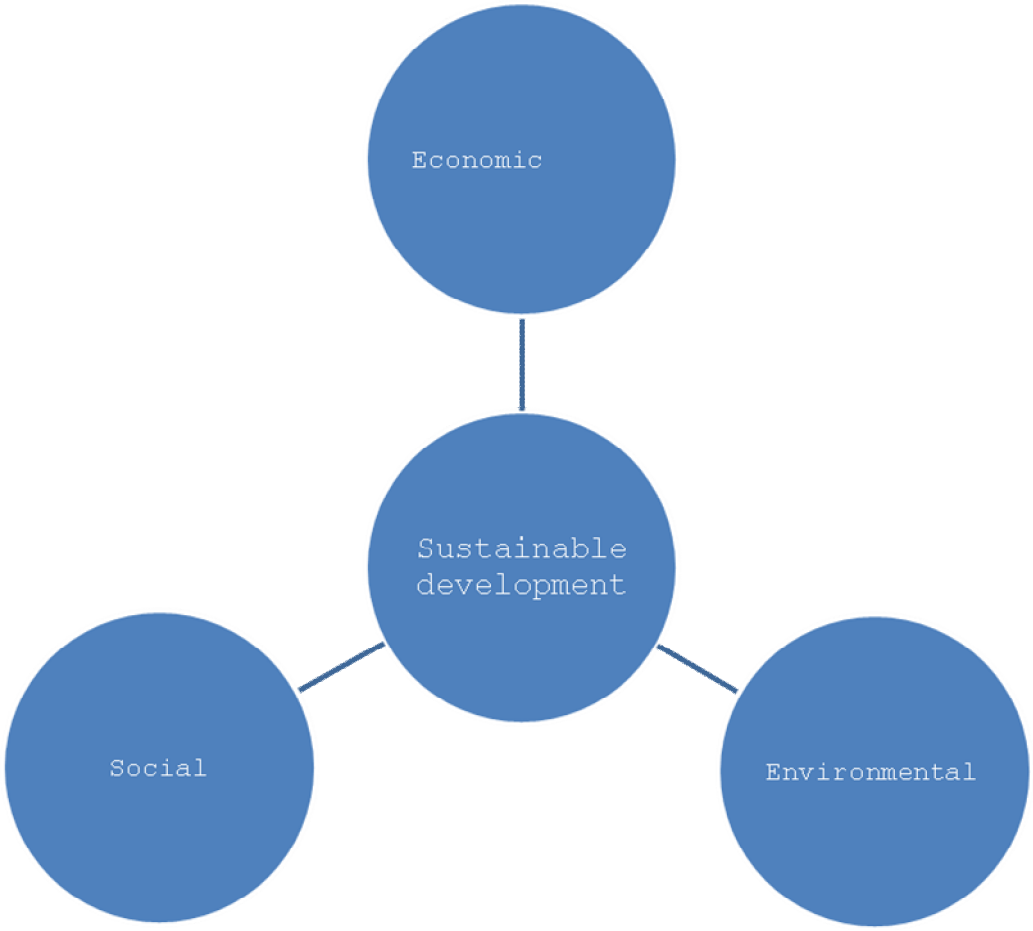
2.7.4.3 Environmental Issues in Leather Manufacturing Industries

Environmental issues are the main elements of sustainable development. Environmental distortions, producers' cost could be less than those born by society as a whole. Environmental externalities can be represented by the gap between private and social costs, which result from the damages of pollution intensive production. If the private costs would be equated with social costs, the pattern of resource allocation becomes socially efficient.

For this, either appropriate taxes or subsidies or creation of missing market for pollution or appropriate property right are necessary to internalize the externalities.

Environmental economics illustrates several points, which help to put the following discussion in a sharper perspective. First, the environmental argument embraces economic and non- economic issues although the discussion here focuses on only one economic issue- specially, that of allocative efficiency. Second, most policies are intended to achieve rather general goals and are not aimed specially for the leather industry. Policies are treated as exogenous factors and their consequences are assessed solely in terms of their impact on industry's economic performance- in particular its cost competitiveness in international markets. Finally, both production and consumption may have adverse external effects on the environment. (UNIDO(2001)pp 122-126).

Figure 2.4.Elements of Sustainable Development



There are certain weaknesses of Bangladeshi tanning industries, these are as follows:

(a) Poor raw hide preservation system which is caused by use of Chittagong sea salt. Its remedy is use of special hide curing chemicals with sea salt.

(b) Poor liming action on raw hides/skins which is caused by use of impure quick lime in lamp forms. However, it remedy is use of pure hydrated lime powder.

(c) Use of strong chemical reaction in de-liming which is caused by use of ammonium sulphate/chloride only. It remedy is use of mild agent at beginning.

(d) Enzymatic activity in bating operation which is caused by use of cold water. However, use of water at 37^0C should be used.

(e) Non-removal of natural grease in pickling which is caused by non-use of special additives. However, use of special additions after salt before application of acid produces best results.

(f) Effluent treatment is costly and has the effect of ever-increasing leather price. Nevertheless the expenditure to the environment would be much higher if the treatment was not carried out.

(g) Unplanned Drainage system: All kinds of effluents being discharged from the tanneries are mixed together and ultimately going away to the adjoining cannels and river.

(h) Use of excess water in tanning: At present the hide-water ratio in the tanning in Bangladesh is about 1:55 which needs to be reduced to 1:35(UNIDO).(2001)

(i) Lack of solid waste management: So far a huge amount of raw hide trimmings are being used in making of glue; tanneries are emitting 45 ton chemically treated solid waste everyday (UNIDO).(2001)

(j) Chrome recovery and Re-Use: UNIDO has already setup one demonstration chrome recovery unit in one of the factories at Hazaribagh to prove how chrome could be recovered from used chrome liquor and then reuse it in leather processing which would be economically more useful. This is helpful not only avoidance of chrome, a heavy metal from going out to the nature, but also equally important to pick up and recycle in the leather processing.

Taking into consideration for environmental and health hazards, the Government had taken up a project in 2003 to relocate the tanneries from Hazaribagh to Savar on the city's periphery. The tannery owners have placed their requirements with the Government through a report mutually prepared by Bangladesh Finished Leather and Leather Goods Exporters' Association, Bangladesh Tanners Association, and Leather Goods and Footwear Manufacturers and Exporters Association of Bangladesh to create the 'leather estate' a unique economic region with all the facilities enjoyed by the export processing zones (EPZs), provision for easy departure of the 'weak' tanneries from the leather industries and special loan rescheduling facilities for other feasible factories. A parliamentary body lately observed that it might not be possible to relocate the tanneries to Savar from Hazaribagh within the stipulated time given by the High Court. It said legal and financial complexities over setting up of a central effluent treatment plant (ETP) have been raised and these could delay the move. Earlier, the High Court ordered relocation of the tanneries within February 28, 2010 next year and asked them to shut down their tanneries those who are unable to move.

The Bangladesh Small and Cottage Industries Corporation (BSCIC) appeared also concerned about the legal and financial complexities of the relocation. The corporation said the tender process to set up the central ETP at Savar at a cost of Tk 4.0 billion was yet to complete as one bidder filed a case with a court. About financial complexities, the BSCIC said as per the initial Memorandum of Understanding (MoU) signed between the Government and the tanners association, the Government was supposed to bear the expenditure for setting up the central ETP. The MoU was reviewed during the last caretaker government that incorporated a new provision asking the tanners association to repay the cost in the next 20 years. The owners, however, refused to

share the cost saying most of them are not capable of paying money for the central ETP.

The industries ministry sets the time frame for shifting the tannery plants to the Savar leather industrial estate (LIE). According to the time frame, the Government is scheduled to hand over the LIE to the tanners by 2010. The Government had prepared the first project proposal in 2003. The estimated cost of the three-year project was Tk 1.75 billion that later shot up to Tk 5.45 billion in the revised project document in 2007.

Assuming the recurring cost of running such as ETP plant to be about T.K. 545 million and yearly total production of hides and skins about 200 million square feet, the average cost of processing could about T.K. 2.5 per square feet. If this cost per unit is added, the hides and skins from Bangladesh will still maintain a competitive edge.

As has been said earlier, the Government's indecision in establishing a waste treatment plant has been delaying the relocation of leather industries from Hazaribagh to Savar. The authorities have cancelled an international tender in January 2007 due to price escalation of the proposed effluent treatment plant. After that the authorities could not make any movement to invite fresh tender for setting up the plant.

2.7.5. Others Problems in the Tanning Industries

- Limited access to market - Bangladesh has a limited or small share (~0.56%) in the global business, so there is a tremendous opportunity to grow to capture more market share around the world. Vietnam can be a benchmark for Bangladesh who imports 70% of raw materials and exports Shoes and footwear products: USD 6.549b, Bags & leather handbags: USD 1.289b.

- Limited access to market information: A deeper, more widely held understanding of market trend in terms of quality, fashion, leather product prices, competitors, importers and consumers' preferences, and anticipated regulations and restrictions needs to be developed in Bangladesh.

- Poor cooperation between firms/ stakeholders: Strong connections between value chain members for a strong sector position, the stakeholders should hold their hands together for mutual benefits. Unfortunately this is still not the case.

- Low product quality and productivity: Product quality and overall productivity is always a concern for this sector.

Besides, Bangladesh has been facing some international challenges. One of which is the dominance of the world market by China, India, Thailand, Indonesia, etc. These countries are relatively stable politically and developed, have big local markets and are preferred by foreign investors and buyers. The International image problem is another constraint, which hinders high value addition. Internationally Bangladesh is known as a low-quality and cheap goods producer country which does not care for environment and employs child labor. Furthermore, the world market is dominated by consumers and there is hard international competition to gain and increase market share- which demands that the quality of the products constantly be improved and the price of products be competitive. Moreover, the global market demands that environmental issue, question of quality, design, material usage, prices and after sales services must be kept in consideration and all necessary development and marketing steps.

2.7.6. Challenge of International Brand Image

The importance of brand image is an area where all the parties involved, producers, exporters, government, political parties need to sit down and address. Bangladesh has already been saddled with a very poor world image that has now been beamed all over the world by satellite TV and the Internet. If Bangladesh cannot find a way to agree on a long-term strategy to repair, improve and transform this image the country may never succeed. But international experiences show that countries like Bangladesh should be optimistic. Japan, as for example, was once known as a producer of only cheap automobiles but now it is seen as one of the global leaders in technology, development and safety. In this respect Bangladesh has already secured some advantages, as for example, on the Quota advantage some of the biggest brands in the world are already sourcinggarments from Bangladesh. What is needed is to ensure that these brands and buyers act as image ambassadors for Bangladesh in general, and that they are provided with a competitive and facilitative workplace. This demands, however, an absolute stop to the hartal culture, political stability, favorable economic reform, whole-hearted support of government agencies such as Customs, Dhaka Airport, Chittagong Port, to name but a few. This can only be done if there is political will at the highest level, a spirit of co-operation and tolerance and willingness to put the Nation before self or party.

2.7.7. Challenge of the Liberalization of International Trade Transactions

This means that Bangladesh will have to reinvent existing system of import through Master L/C, back to back L/C etc. all of which are time consuming and expensive. In these days of shorter and shorter lead times and constant pressure on margins, buyers are no longer willing to tie up funds in advances on letters of credit for several months, so that they can then be used to finance L/C's to suppliers on deferred terms. This

procedure was relevant when the garment industry had just started in Bangladesh and the buyers were also the suppliers of all the trims. But today buyers just want to buy, they do not want to get involved in the logistics of sourcing raw materials etc. The supply function is totally independent from the buying function. Therefore if Bangladesh insists on these points its potential buyers of leather and leather goods will merely say that they do not need to deal with all this if they buy from China, India, Thailand, Indonesia or Eastern Europe and so that is where they will go.

2.7.8. Challenge of E-commerce

The effective application of information technology in this industry, as in other industries, can open up a whole new dimension to this sector. Particularly for distant producers like Bangladesh the advent of the Internet for collecting market information, sourcing materials, promotion and advertising can be a tremendous boon. It is important to learn how to harness this power and develop the skills to best utilize it. The opportunity now exists to completely bypass the middleman, but Bangladesh has to overcome the handicap of distance and lead times.

CHAPTER 3
LITERATURE REVIEW AND THEORETICAL FRAMEWORK

3.1 Studies on the Leather-Manufacturing Industries based on Bangladesh and Global Level

There has been a moderate number of research works, published and unpublished, relating to the broader field of leather industry in Bangladesh. Research on and for the leather industry has undoubtedly grown-up in contemporary years. The existing socio-economic condition of Bangladesh provides an encouraging prospect for leather Industry. It attracted many economists, environmentalists and technical persons to do research works regarding various aspects of this sector. In this chapter makes an attempt has been undertaken to present to a brief review of the existing relevant literature on the leather industry of Bangladesh and Global level.

The leather and its related downstream industries can claim to be the world's largest industrial sector based upon a by-product. In the case of leather, the raw material is a by-product of the meat industry. Hides and skins and their downstream products are vital earners of foreign exchange and they compare very well with the other agricultural commodities and, in fact, with any internationally traded commodities. The country's tanneries and leather, leather goods and footwear makers are putting on war paint to battle for more orders in the international markets (Sarker, 2000). The hides, skins and leather industry is one of the key agricultural subsectors with a high potential towards commodity development that addresses pertinent issues of socio economic importance and positively impacts on rural development, creation of wealth and employment.

The contribution of the sub sector towards achieving economic growth through an expansion of the export market for both semi-processed and finished leather goods is immense and the only way to such success is through embracing the value addition initiatives. This is the direction that the Ministry has adopted and strongly pursues to meet the industry's demand (Mohapatra, 2002). The EPB's data revealed that leather goods exports, during the period between July 2012 and January 2014, were to the tune of $149.46 million, which is 8.46 per cent lower than the target of $163.28 million. An analysis of the EPB data showed that the country's leather product export earnings were forging ahead due to growing international demand for Bangladeshi leather products, mainly for quality and cheaper prices (Export Promotion Bureau, 2014).

But in terms of export earnings leather products lag far behind finished leather. According to the statistical data of EPB, the country earned $31.40 million through exports of leather products during the July 2012-January 2014 period; the earning was 62.11 per more than the targeted figure of $19.37 million. During the last seven months of the current fiscal, exporters of leather products registered 145.70 per cent earnings growth over that in the corresponding period of the previous year. Further expansion of the labor-intensive leather industry will create more employment opportunities compared to other export sectors. In most developing countries tanning operations is a family business, carried out in small to medium scale semi-mechanized units, very frequently grouped tightly in clusters which used to be outside residential areas (Ahmad, 2005). Tanners in such units have no formal education and have little or no understanding of the complexities of the leather processing, their skills acquired from their elders with hardly any perception of environmental protection Low waste technologies, generally speaking, require better skilled personnel and closer technical

control than conventional processing (Dhanarajan, 2006). Thus, lack of properly trained staff at different levels remains one of the crucial constraints.

The first detailed baseline survey of leather industrial sector of Bangladesh was organized in 1979-80 by the committee on Development of Leather Export level headed by the Government of Bangladesh. This extended survey made a package of recommendations together with prohibition of wet-blue export, return of duty on imported leather processing chemicals for export of crust and finished leather, cash subsidy on export of crust, finished leather and leather products at the rate of 9%, 12% and 15% respectively on FOB value, air freight subsidy at the rate of 15% of FOB value, bank finances for capital investment and working capital, etc. to encourage export of crust, finished and leather products. They also advocated for progress of required infrastructure facilities including water supply, road and drainage system, power and gas, building up a National Leather Institute for R&D and formation of leather Board to help the development of leather sector. This report was followed by a number of studies in the middle of 1980s.

In 1981 The World Bank carried out a study for the leather manufacturing industries as a review of the Second Five-Year Plan. As part of the ESCAP attempt to identify the leather manufacturing industries as prime conveyor for development of industries in Bangladesh, on behalf of BSCIC (Bangladesh Small and Cottage Industries Corporation). Chowdhury (1982) made a study on leather and leather products industries of Bangladesh in 1981-82 and indicated a number of development action plans and specific role of the BSCIC. Winters (1983) surveyed the tanning industry as a sub sector in 1983 on behalf of UNIDO and achieved that installed capacity for wet-blue was 171 million square feet against total accessibility of 100 million square feet of hides and skins.

In mid 1980s, TIP (Trade and Industrial Policy) Reform Program of Bangladesh Planning Commission assisted two important studies. These report showed acceptable economic and financial rates of return in the transformation of wet blue into crust and finished leather. Haq and Islam (1988) in a study in 1988 recorded that the social rates of return is higher than the financial rates in the processing of finished leather for export. Our Government has provided various incentives packages to footwear and leather goods export to ensure the policy suggested by TIP.

Huq and Islam (1990) made one of the pioneering efforts (Choice of Technology: A Case study of leather manufacturing in Bangladesh) in the form of a pilot inquiry. They made an in-depth study of the leather manufacturing industry focusing on technology transfer in Bangladesh in 1988. The study attempted to identify alternative techniques by types and sources and then evaluated in the light of the existing input costs and revenue earned (cost effectiveness) in the context of development objectives of the dominion. An equal improvement in technology selection involving the use of least cost techniques including machinery and equipment from local sources will greatly help to reduce unit cost of production and at the same time it will help the development of the local capital goods sector.

Huq and Ahmed (1990) created only four week's brief survey on "Bangladesh Leather Sector-strategy for Further Development" from mid- December 1989 to mid-January 1990 for Harvard Institute for International Development's Employment and Small Enterprise Policy (ESEP) project, Bangladesh Planning Commission, Government of Bangladesh. They identified some major constraints in expansion and development of leather manufacturing industry- such as working capital, technical know-how, management, skilled operators, administrative bottlenecks, customs formalities,

frequent changes in policy decisions, etc. and suggested a number of policy changes including BMRE. They also suggested to move finished leather to footwear and leather products for export, withdrawal of incentives on crust export to assure development of finished leather, grant cash subsidy for export of leather products, use of export potentials of small and cottage level footwear and leather goods sub-sector, strengthening of training facilities at Leather College, setup Common Finishing Facility Center, development of R&D facilities, etc.

International Trade Center (ITC) implemented an Export Development Project during 1991-1994 for the Government of Bangladesh (GOB) to help export development of non-traditional items including leather and leather products. Attempts were made to find joint venture or technical collaboration partners for leather sector industries at market places and market familiarization visits to potential selected markets but the achievement was not up to satisfaction. A few foreign firms showed interest in marketing and technical collaboration but none entered final contract. Bangladesh is so weak in the case of market promotion for all traditional and nontraditional products especially for leather and leather products.

In 1995 Research department of Bangladesh Bank has undertaken a detailed study on the basis of survey to examine the export potentialities of leather & leather goods sector. The Team conducted the survey and prepared a report on the basis of in-depth analysis of the available data and the situation prevailing in different areas of leather and leather manufacturing businesses of the country. The report ended with some suggestions for development of the sector.

Karim (1996) had an attempt to update present knowledge of leather industry, undertook a study which was published by the World Bank Resident Mission, Dhaka,

as “Industrialization Strategy study of Bangladesh: Export prospects For Leather and Leather products”. The objective of the study was to assess prospects and possibilities for developing forward linkage with leather goods manufacturing. The specific investigation encompassed grounds such as the size and structure, production facilities and production issues, procurement of raw materials, laborer skill, marketing of leather, management and environmental issues.

Islam and Faiz (1997) made a study on “The Leather and Leather Product Industry and The Informal Credit Market in Bangladesh”. They determined the urban informal monetary market in Bangladesh with specific reference to its significance in financing the Leather and Leather products manufacturing industry and business. In this study they investigated the size and trend of the activity in its different stages such as hide and skin cutting, tanning, manufacturing leather and leather products and their marketing channel. The study attempted to locate the geographic concentration of the activity and to discuss the contemporary production methods and rates of return from the activity and to identify several constraints and ordered to credit rating, unhealthy credit giving system in the institutional sources, etc. They emphasized the extent of informal financing, the sources of credit and the altogether usefulness of the informal financial sector in promotion activity for leather manufacturing sector.

Ahmed (2002) in the study titled “Inventory of Leather Sector of Bangladesh: Problems and Prospects” made an intensive survey. For Bangladesh Finished Leather, Leather goods and Footwear Exporters' Association (BFLLFEA) with financial assistance of the Matching Grant Facility Management Units, a component of Export Development Project of GOB and the World Bank. This study was undertaken for a thorough study of leather sector industries of the country covering all aspects of manufacture to assess

the present status of raw material supply, capacity and production of leather and leather products, to identify problems of production and export and determine needs for the development of industries to make optimum use of the potentials of local raw stock.

Besides these, there are some papers relating to various factor of leather sector. These papers contained some general discussions, suggestions and conclusions and were not directly involved with applied studies on this sector. In this respect, work of Manzur (1994) and Mahtab (1998) received wide attention. Manzur (1994) in his paper "Leather Industry-The present and Future" highlighted the prospect of leather industry of Bangladesh and its development over the years. He pointed out the advantageous position of our leather industry from various points of view.

In a survey, Huq and Hossain (1996) has reported that manufacturing industries in and around Dhaka city provide about 2, 70,000 jobs. Zahur (2006) found that leather industries have enough scope for both vertical and horizontal expansion in terms of economic return and social benefits.

SEHD (Society for Environment and Human Development 1998) has studied the environmental pollution in Hazaribagh aiming at developing realistic recommendations for mitigating pollution. This report has been prepared with findings from studies, observations and laboratory tests.

CBI of the Neatherlands organized a study on pollution issues of tanneries in Hazaribagh zone on behalf of Asian Development Bank in 1995. They suggested establishing a common plant for treatment of wastewater of tanneries before discharge to surface water and estimating an expected cost for consideration of ADB and the Government of Bangladesh.

Rahman(1984) studied to estimate the polluting effect of tannery waste and to improve appropriate processing method for the harmless disposal of this waste. Rahman (1988) made an effort to determine the degree of pollution at Hazaribagh by reason of discharge of tannery waste and to make a parallel study of onsite treatment versus shifting of the tanneries at Nayarhat, Dhaka.

Alam (2001) aimed an investigation on pollution control and discovered that in traditional way, tannery production causes wastage of water, chemicals, lime and electricity, which had a direct influence on the production cost, quality of leather and harmful for health. UNIDO's regional program had taken a comprehensive view of the environment problems caused by the tanning industry of Bangladesh. The primary strategy of this program is to estimate the pollution load in the discharged effluents and introduce cleaner technologies in production, which effectively reduce the pollution pressure and amount of effluent. UNIDO was hoped for to setup one Central Effluent Treatment Plant at Hazaribagh for the overall environment management. However, still it is on processing.

Stephens (1978) visited 40 tanneries in the country to evaluate their infrastructure, production capabilities and market expertise. He also visited the technological institutions. He surveyed the market for hides and skins in Dhaka for several days. He suggested improvement in the tactics of flaying and curing of hides and skins and grading. Raha (1993) analyzed the stock position of hides and skins in Bangladesh and showed that cattle and goat population raised by .49 and .196 million heads per year, respectively and the increase rate of cattle and buffalo hides supply was about 4.5%, as long as the supply of goat and sheep skins were 9.3% and 2.3%, respectively. The

present situation of livestock production indicated that there is an inadequate scope to further increase the supply of hides and skins in the country. However, scopes exist for betterment of quality of hides and skins.

Nooruddin and Dey (1993) determined the degree of economic losses by reason of numerous leather defects based on primary and secondary data in Bangladesh. The primary data covered grading and recording of the size of 13,156 crust leathers (e.g. leathers made from cattle hides 6,087; buffalo hides 2,027; goat skins 2,522; sheep skins 2,520). A plentiful proportion of leathers were detected to be downgraded and dropped by the defects in leathers made from cattle hides (98.9%), buffalo hides (100.0%), goats' skins (92.0%), and sheep skins (94.0%). An annual (1990-91) economic loss of US$ 220.95 million (Taka 818.0 crores approximately, 55.2%) was estimated to be allied with various leather defects. Major ingredients of these losses (in million US $) were 194.45 (88.01%) for leathers made from cattle hides, 1.88 (0.85%) for buffalo hides, 24.09(10.90) for goatskins and 0.52 (0.21%) for sheepskins. Consequently, the control of leather defects is essential for the purpose of value addition and improvement in the national economy.

BARC (2001) was conducted for reviewing the Government development plans and policies, management system, production, processing and constraints to hides and skins in Bangladesh. Moreover, to support the review work, 100 market intermediaries from 5 divisions, 40 tanneries, 10 leather and leather goods industries and 200 households who sacrificed animals during Eid-ul-Azaha (the largest religious festival of the Muslim) 2001, were randomly selected from 5 divisions of the country. The study review the Government development plans and policies on procurement, processing,

preservation and trading of hides and skins in the country and identified the constraints responsible for hindering the overall production and trading of hides and skins.

Several factors must be considered when determining approaches for social and economic development within communities. Mills (1995) stated that, the goal of community economic development efforts and professional economic developers should be the improvement of the economic well-being of the community and enhancement of the overall quality of life for all members of the community. Bergstrom, Cordell, Watson, and Ashley (1990) suggested that new industrial development does not always provide large increases in jobs and salaries for local workers. Ranney (1997) recommended the need to focus on ordinary people in relation to economic development. He posited that tax burdens on lower and middle-income community residents tend to increase while underemployment often continues to rise.

Bruner and Parachini(2009) provided a clear mandate that economic development must be closely interrelated with the social, economic, and political dimensions of a community so that economic growth will be sustained. Within this framework, one perceives the need to identify the community characteristics of any given rural environment or small town so as to assess its strengths and weaknesses.

The main findings of the study, conducted by Krishna and Sahota (1991), on productivity growth and time invariant technical efficiency are that about one half of the industries covered under the study are suffering from stagnation as far as productivity is concerned; some of the industries (cotton textile, grain milling and cigarettes) are characterized by acceleration in the growth in total factor productivity.

Azom et al. (2012) conducted a study on tanneries of Hazaribag located in Dhaka to assess the present scenario. They unearth the environmental impacts of these industries through Environment Impact Assessment (EIA). This study found that there is a significant impact on employment as they are earning rather than remaining unemployed. However, it creates several health problems on workers of this tannery.

Muhammad and Haque (2012) conducted a survey on tannery industries of Hazaribug area to investigate the effect of industrial pollution on the physical and mental health of the tannery workers as well as the related residential area's people of Hagaribag in Dhaka city. The results of this study suggested that physical health of related residential area's people is better than that of tannery workers. They also found that tannery creates the job opportunity.

Rouf et al (2013) conducted a study at leather industries of Hazaribagh, Dhaka to evaluate the tannery effluent quality. The samples of effluent were taken from seven leather industries and three places around the area of leather industries. The odour of the samples was more or less pungent. The color of the samples was blackish blue, violet, brown, black etc. Khan (2015) found that Leather and leather manufacturers constitute an indispensable and dependable source for export trade and foreign exchange earnings. For Bangladesh, leather is a high priority industrial sector and footwear exports, an extreme focus area.

Now focus of success scenario of leather industries at global level. The export of leather goods increased form USD 19.4 billion in 2000 to USD 34.4 billion in 2014. The figures for both developing and developed countries increase over the same period.

Leather goods export of developing countries jumped from USD 9.9 billion in 2000 to USD 19.9 billion in 2014. For developed countries it increased from USD 9.4 billion in 2000 to USD 14.8 billion in 2014 (UNCTAD, 2015).

A FAO report explores the prospects of global leather markets (FAO, 2009). During much of 2008 and 2009 the global hides and skins market was deeply affected by the wide spread economic down turn following the international financial crisis. World production of bovine hides contracted by about 2 percent in 2008, not withstanding the increase in global meat output recorded in that year. Most of the reduction took place in developing countries, where output of hides is estimated to have fallen to about 3.7 million tonnes in 2008, down almost 3 percent from the previous year. China reported a significant reduction in bovine hides production. Such change is consistent with the contraction observed in the total number of cattle heads in the country, which was generated by two main causes: the unfavourable weather conditions which materialized during the year, on the one hand; and the reduced demand for meat, brought about by the economic downturn. The slow-down in slaughtering resulted in a reduced availability of raw hides to process. Moreover, tanneries were confronted with raising production costs, due both the increase in chemical and oil-based inputs, as well as the need to comply with increasingly demanding environmental regulations. By contrast, production expanded in Brazil and Argentina in 2008, albeit marginally, following an increase in beef prices which drove up slaughtering, and in spite of a limitation on exports in the latter country. Asian producers have generally been more dynamic, as shown, for instance, by the positive performance of Bangladesh. Bovine hides and skins production in India underwent a 6 percent increase in 2008 and by 5 percent for

goat and sheep skins. Such growth stemmed from an aggressive investment policy, promoted by the Government, together with buoyant domestic demand. Despite generally unfavourable outcomes in 2008 and in the first few months of following year, preliminary global indications point to a small recovery in 2009. For bovine hides, 2009 production could expand by over one percent to 6.3 million tonnes; goat hides could also record a marginal increase, while global production of sheep hides is estimated to contract by about 4 percent.

Much of the anticipated expansion in global bovine hide production is set to take place in China, where production could sharply rise to the tune of 17 percent. Demand for domestic skins is likely to fare better under the recessionary climate, compared to other producing countries. Similar reasoning applies to Latin America, where output is forecast to increase by a robust 4 percent in Brazil and 1 percent in Argentina. Overall, production growth in developing countries, is foreseen to reach over 3 percent in 2009. Prospects for bovine hide production in developed countries remain bleak, however, with output expected to fall almost 2 percent in 2009. In Europe and the United States, production is expected to slow down substantially in the year, as European producers, particularly those in Italy, have reacted to successive contractions in demand by either downsizing operations or closing tanneries. Just in the last few months of 2008, ten plants were reported to have already suspended production.

The Table 3.1 shows the summary of findings of researchers on leather industry in Bangladesh and Global level.

Table 3.1: Summary of Findings of Literature Review

Author	Year	Title	Findings
Committee on development of Leather Export	1979-80	"Report of the Committee on Development of Leather Export"	The committee gave some recommendation based on the study. These are: 1. Wet-blue export should be prohibited. 2. Cash subsidy on export on crust. 3. Bank financing for capital investment and for working capital. 4. Infrastructural development (such as water , road and transportation etc.) . Though this report recommended some measures to promote leather export, it does not point out social impact of leather industry in Bangladesh.
TIP reform program of Bangladesh Industrial Planning Commission	1980	"Program of Bangladesh Industrial Planning Commission"	Show the economic and financial rate of return in the transformation of west-blue to crust and finished leather. The gap of this research is that it focuses only on economic aspects of industrial sector in broad sense.
Chowdhury	1982	"Leather tanning and leather products in Bangladesh"	Try to indicate a number of development action plans and specific the role of BSCIC. Though this study suggested some measures to promote leather industry, it does not point out social impact of leather industry in Bangladesh.
Winters (on behalf of UNIDO)	1983	"Leather Industry Development and Export: Bangladesh"	The capacity is much more than the accessibility on that time. Though this study suggested some measures to promote export of leather industry, it does not point out social and economic impact of leather industry.

Rahman	1984	"A Study on Policy, Management and Constraints to Processing of Hides and Skins in Bangladesh"	Estimated the polluting effect of tannery waste and improved appropriate processing method for the harmless disposal of this waste. The gap of this study is that it does not provide any estimation of economic and social impact of pollution on the workers of leather industry.
Haq and Islam	1988	"Financial return in the finished leather export in Bangladesh"	Social rate of return than financial rate of return is higher in the processing of finished leather for export. The gap of this study is that it does not discuss on socio-economic impact of leather industry in Bangladesh.
SEHD (Society for Environment and Human Development)	1988	"Leather Industry-Environmental Pollution and Mitigation Measures"	They gave realistic recommendations for mitigating pollution. The gap of this study is that it does not provide any estimation of social impact of migration on the workers of leather industry in Bangladesh.
Huq and Islam	1990	"Leather Industry in Bangladesh: Challenges and Techniques"	Alternative and new techniques are more cost effective than existing techniques. This study does not shed lit on socio-economic impact of leather industry in Bangladesh.
Huq and Ahmed	1990	"Bangladesh Leather Sector-Strategy for Further Development"	There are some major constrains in expansion and development of leather manufacturing industry such as working capital, technical know-how, management, skilled operator, administrative bottlenecks, custom formalities, frequent change in policy decisions etc.Socio-economic impact assessment was not discussed in this study.
Raha	1993	"Recent Trends in Livestock Population and Products in	Cattle and goat population raised by .49 and .196 million heads per year, respectively and the increase

		Bangladesh"	rate of cattle and buffalo hides supply was about 4.5%, as long as the supply of goat and sheep skins were 9.3% and 2.3%, respectively. Economic impact assessment of leather industry was not discussed by the authors.
Nooruddin and Dey	1993	"The Economic Impact of Leather Industry in Bangladesh"	The degree of economic losses by reason of numerous leather defects based on primary and secondary data in Bangladesh. The annual economic loss of US$ 220.95 million (Taka 818.0 crores approximately. The gap of this study is that it does not provide any estimation of social impact of pollution on the workers of leather industry.
World Bank	1993	"Industrialization Strategy Study of Bangladesh Export Prospects of leather and leather products"	To identify the leather manufacturing industry as a prime conveyor of development of industry in Bangladesh. Absence of socio-economic impact assessment of leather industry is one of the gaps of this study.
International Trade Center	1991-94	"Market Promotion for Leather Goods in Developing Countries"	Bangladesh is so weak in case of market promotion especially for leather goods. This study does not focus on social factors that affect promotion of leather goods in Bangladesh.
Research Department of BB	1995	"Leather and Leather Goods in Bangladesh: Export Potentiality and Challenges"	The export possibility of leather and leather goods sector is potential but need some development. This study does not incorporate social factors affect exportation of leather goods from Bangladesh.
CBI of the Neatherlands	1995	"Treatment of Wastewater of Tanneries in Bangladesh"	Establishing a common plant for treatment of wastewater of tanneries before discharge to surface water was suggested and cost was estimated. The gap of this study is that it does not provide any estimation of social impact of pollution on the workers of leather industry.

Karim	1996	"Export Prospect for Leather and Leather Product"	Some prospects and possibilities for developing forward linkage with leather goods manufacturing. This study does not incorporate social factors that affect exportation of leather goods from Bangladesh.
Huq and Hossain	1996	"Critical Environmental Issues Relating to Tanning Industries in Bangladesh"	Although leather manufacturing has some environmental problem, it provided about 270000 jobs. The gap of this study is that it does not provide any estimation of social impact of migration on the workers of leather industry.
Islam and Faiz	1997	"The Leather and Leather Product Industry and The Informal Credit Market in Bangladesh"	The size and trend of the activity in its different stages such as hide and skin curing, tanning, manufacturing leather and leather products and their marketing channel. The relationship between geographical area and unhealthy credit system. The gap of the study is that it does not focus on social impact of informal credit market on leather industry in Bangladesh.
Rahman	2001	"Environmental Effect of Leather Industry in Bangladesh"	Degree of pollution at Hazaribagh by reason of discharge of tannery waste. The gap of this study is that it does not provide any estimation of social impact of pollution on the workers of leather industry.
Alam	2001	"UNIDO Regional Program for Pollution Control for an Environmentally Sustainable Leather Industry in Bangladesh"	How pollution can be controlled with the traditional way of production. This study does not incorporated estimation of economic impact of pollution control in leather industry in Bangladesh.
BRAC	2001	"Hide and Skin Production in Bangladesh"	Review the Government development plans and policies on procurement, processing, preservation and trading of hides and skins in the Country and identified the constraints responsible for hindering the

			overall production and trading of hides and skins. The gap of this study is that it does not provide any estimation of social impact of pollution on the workers involved in hide and skin production.
Ahmed	2002	"Prospect of Leather Product Export from Bangladesh and Its Requirements"	Assessed the present status of raw material supply, capacity and production of leather and leather products, identified problems of production and export and determine needs for the development of industries to make optimum use of the potentials of local raw stock. The gap of this study is that it does not provide any estimation of social impact of pollution on the workers of leather industry.
Ahmed	2005	"Value-added Transformation of Leather Industry in Bangladesh-Present Position and Future Prospects"	In most developing countries, tanning operations are a family business and carried out in small and medium scale. The business normally situated outside residential area. This study fails to focus on social factors that can hinder value-added transformation of leather industry in Bangladesh.
Dhanaranjan	2006	"Leather Industry in Bangladesh: Perspective from Business"	Tanners in family business have no formal education and a little or sometimes no learning about the complexities of leather processing or environmental protection and wastage of leather . This study does not incorporate social factors that affect exports of leather goods from Bangladesh.
Zahur	2006	"Solid Waste Management of Dhaka city: Public Private Community Partnership"	Leather industries have enough scope for both vertical and horizontal expansion in terms of economic return and social benefits. This study does not incorporated estimation of economic impact of pollution control in leather industry in Bangladesh.

Azom et al.	2012	"Environmental Impact Assessment of Tanneries: A Case Study of Hazaribag in Bangladesh"	Physical health of related residential area's people is better than that of tannery workers. They also found that tannery creates the job opportunity. This study does not provide any estimation on economic impact of pollution in leather industry in Bangladesh.
Rouf	2013	"Characterization of Effluents of Leather Industries in Hazaribagh Area of Dhaka city"	The odour of the samples was more or less pungent. The colour of the samples was blackish blue, violet, brown, black etc. This study does not incorporated estimation of socio-economic impact of pollution control in leather industry in Bangladesh.
Khan	2015	"Industry in Bangladesh: Opportunities and Challenges"	Leather and leather manufacturers constitute an indispensable and dependable source for export trade and foreign exchange earnings. For Bangladesh, leather is a high priority industrial sector and footwear exports, an extreme focus area. The gap of this study is that it does not provide any estimation of socio-economic impact of pollution on the workers of leather industry.

From the discussion of Relevant literature it is clear that several studies have been undertaken in the context of leather industry of Bangladesh. Those studies explored several dimensions, such as export potentialities of leather industries in Bangladesh, challenges associated with export of leather products from Bangladesh, strategies to overcome the problems in leather industry, forward linkages of leather industry in Bangladesh and estimation of the damage caused by tanneries. A few numbers of

studies have strived to point out economic, social and community development issues of leather industry in rural areas. The research gap in this context is that those studies were not comprehensive from the point of view of assessing social and economic impact of leather industry in Bangladesh. The uniqueness of this study lies in that it develops a comprehensive conceptual framework to gauge the social and economic impact of leather industry in Bangladesh. Moreover, this research model of the study is based on Structural Equation Model (SEM) which is one of the most sophisticated statistical tools used in modern day economics.

3.2. Theoretical Framework

Socio-economic impact assessment is designed to assist communities in making decisions that promote long-term sustainability, including economic prosperity, a healthy community, and social well-being. Assessing socio-economic impacts requires both quantitative and qualitative measurements of the impact of a proposed development. For example, a proposed development may increase employment in the community and create demand for more affordable housing. Both effects are easily quantifiable. Also of importance, however, are the perceptions of community members about whether the proposed development is consistent with a commitment to preserving the rural character of the community. Assessing community perceptions about development requires the use of methods capable of revealing often complex and unpredictable community values.

Quantitative measurement of such factors is an important component of the socio-economic impact assessment. At the same time, the perceptions of community members about how a proposed development will affect their lives are a critical part of the assessment and should contribute to any decision to move ahead with a project. In

fact, gaining an understanding of community values and concerns is an important first step in conducting a socio-economic impact assessment.

The socio-economic impacts of a proposed development on a community may actually begin the day the project is proposed. Changes in social structure and inter-actions among community members may occur once the new development is proposed to the community. In addition, real, measurable and often significant effects on the human environment can begin to take place as soon as there are changes in social or economic conditions. From the time of the earliest announcement of a pending policy change or development project, attitudes toward the project are formed, interest groups and other coalitions prepare strategies, speculators may lock up potentially important properties, and politicians can maneuver for position.

Because socio-economic impact assessment is designed to estimate the effects of a proposed development on a community's social and economic welfare, the process should rely heavily on involving community members who may be affected by the development. Others who should be involved in the process include leaders and others who represent diverse interests in the community such as service organizations, development and real estate interests, minority and low income groups, and local environmental groups. In addition, local agencies or officials should provide input into the process of assessing changes in the social environment that may occur as a result of the proposed development (e.g., providing estimates and information demographics, employment and service needs).

Conducting a social impact assessment is important for several reasons. In general, it is used to alert the society, including residents and local officials, of the impact and

magnitude of the proposed development on the community's social and economic well-being. The assessment can help communities avoid creating inequities among community groups as well as encourage the positive impacts associated with the development.

The impact assessment provides estimates of expected changes in demographics, housing, income, services and facilities, security and employment that will result from the development. Equally important, the assessment provides an opportunity for diverse values to be integrated into the decision-making process. Together, these components of the assessment provide a foundation on which decisions about whether to alter or change a proposed development can be made.

Socio-economic impact assessment also provides a foundation for assessing the cumulative impacts of development on a community's social and economic resources. For example, a community may not recognize a change in their quality of life if a small strip mall goes up on the edge of town. In fact, their quality of life may improve if the businesses located in the strip mall provide services which would otherwise not be available to residents. However, if the construction of a small strip mall on the edge of town sets a precedent for constructing additional commercial establishments on the out skirts of town, the socio-economic impacts on a community may become significant indeed. Small, family-owned businesses located downtown may begin to close as competition lures consumers to the outskirts, where accessibility to more diverse commercial establishments is greater. The result may be a loss in the sense of community and cohesion among residents that existed prior to development because the focal point or "common meeting place" for residents has shifted to a new location.

The change is subtle, yet may have a profound impact on the long-term sustainability of the community.

It is necessary to conduct the socio-economic impact assessment in the context of the other impact assessment components (i.e., fiscal, environmental, transportation). The relationship between the socio-economic impacts and other impacts of a pro-posed development is a close one. For example, changes in the physical environment or fiscal expenditures required of the community as a result of the development may directly influence community perceptions about whether to proceed with the project.

Unfortunately, socio-economic impact assessment often takes a backseat to other types of impact assessment such as fiscal and environmental impact analysis because the impacts are often more difficult to measure, and the social impacts associated with a development are generally more subtle than impacts on a community's fiscal balance sheet or local natural resources. However, it is important to consider, as early in the planning process as possible, whether the proposed development will have a significant effect on the social and economic welfare of the society.

Development invites growth in new jobs in a community and draws new workers and their families into the community, either as permanent or temporary residents. When this occurs, the incoming population affects the social environment in various ways including increased demand for housing and social services (e.g., health care, day care, education, recreational facilities). Because residents' needs depend on a wide range of variables (e.g., age, gender, employment status, income level and health status), the diversity of service needs are determined not only by the absolute size of the incoming population but also by the old and new populations' demographic and employment

profiles. As a result, a proposed development may have a significant impact on the community's ability to accommodate new residents and adapt to changes in the social environment for existing residents. Assessing the magnitude and rate of population change has important implications for community infrastructure and service requirements and can play a major role in determining social impacts associated with the proposed development.

Development directly influences changes in employment and income opportunities in communities. Such changes may be more or less temporary (e.g., construction projects, or seasonal employment) or may constitute a permanent change in the employment and income profile of the community should the development project bring long-term job opportunities for community residents (e.g., establishment of a light industrial, manufacturing, or commercial establishment). Assessing these types of changes is an important component of social impact analysis because growth in employment places additional demands on community services and resources. For example, a development that brings lower-wage jobs to a community may generate the need for different types of housing in the area. Changes in income also influence the social environment in a number of ways such as raising or lowering the average standard of living for residents.

The new residents and their associated activities will require a variety of services provided by the areas public and private institutions. A social impact assessment must determine the quantity and variety of anticipated needs. The goods and services most commonly included in a social evaluation are open space and parks; cultural and recreation facilities; education; health care; special care for the elderly, the disabled, the indigent and pre school-age children; police and fire protection; and a variety of

administrative support functions. The optimum amount of resources that would be required for the satisfaction of needs is based on either planning standards, which are guidelines established by professional organizations and Government agencies, or service levels, which are observed national (or regional) average amounts of resources expended per capita or some unit of size.

Impacts on the aesthetic quality of a community are often the most obvious sign of development; yet, are too often not included in the development impact assessment. Shopping malls and subdivisions in the rural landscape are one example of the impact development has on the aesthetic quality of a community. In many cases, community members perceive themselves as powerless in guiding “the way development looks” in their community and thus do not participate in making decisions that protect the visual and aesthetic qualities of the natural and built environment. While aesthetic impacts are often associated with environmental impacts, they also have a significant impact on the social well-being of the community and resident perceptions about the quality of life in the community.

Socio-economic impact assessment is important for assessing changes in a community’s social well-being that result from development. This type of social change is more difficult to quantify than changes in the social environment because the assessment relies on the perceptions of current and new residents about how a proposed development may affect their quality of life. Social impact assessment of this nature is important because it can help local officials, planners, developers and the public identify and address potential conflicts of interest that may accompany development. In addition to quality of life issues, it is important to assess how a proposed development may influence neighborhood cohesion or cultural differences among members of the community.

The attitudes community residents have toward development and the specific actions being proposed as well as their perceptions of community and personal well-being are important determinants of the social effects of a proposed action. Such attitudes are a reflection of the quality of life residents seek to enjoy and preserve, whether it be limiting growth in order to maintain the rural image of a small community; expanding the boundaries of the village; or providing a variety of housing choices to new, diverse residents and businesses. Changes in a community's social well-being can be determined by asking the individuals and representatives of groups or neighborhoods in the area to make explicit their perceptions and attitudes about the anticipated changes in the social environment.

Some of the methodologies and techniques for assessing changes to the social environment are quantitative in nature and existing sources of data such as the Census Bureau provide a useful starting point for estimating social impacts. Other techniques such as surveys, focus groups, charrettes, public hearings and meetings with community residents may be appropriate for collecting data that is both more qualitative in nature and useful for assessing the perceptions of community members. A summary of techniques that may be used to elicit community perceptions about development, including features of the technique, advantages, and disadvantages to their use.

As should be evident from the preceding discussion, socio-economic impact assessment is a complex, yet important aspect of development impact analysis. The various changes in the social environment and social well-being of a community that result from development may be significant, yet they are often subtle and not easy to quantify. However, this does not mean that socio-economic impact assessment should not be considered an essential component of the development impact assessment process.

It is important to bear in mind that while certain individuals or community groups may be active and forthcoming with input into the planning process, other community groups (e.g., low income or minority groups) that may be equally or even disproportionately affected by the proposed development may be less vocal in expressing concerns and interests. In situations where traditionally dis empowered groups may be impacted by a development, it is important to make a concerted effort to involve them in the social impact assessment process.

Depending on the resources available to conduct the socio-economic impact assessment and the specific objectives of the analysis, some methods may be more appropriate than others. At any rate, a list of references is provided to guide further efforts in conducting a socio-economic impact assessment.

Finally, it is important to note that a socio-economic impact assessment not only forecasts impacts, but should also identify means to mitigate adverse impacts. Mitigation should include efforts to avoid an impact by not taking or modifying an action; minimizing, rectifying or reducing the impacts through the design or operation of the project or policy; or compensating for the impact by providing substitute facilities, resources or opportunities.

Before an analysis of a particular development can be conducted, the economic health of the local community must be assessed. This requires a close look at activity, particularly in the central business district. Key indicators of economic health include vacancy levels, property values, employment impact, store turnover, retail mix, employment, tax revenues, new business incubation, critical mass/concentration, and

the availability of goods and services demanded by the community. Second, changes in trade area demographics should be estimated. The trade area is generally defined as the geographic area in which three-fourths of current customers reside. A significant increase in population could signal new opportunities for expansion or development. The profile of these new or anticipated residents can help you assess future market demand for various types of products or services.

We can design a Socio-Economic Assessment by asking the following questions.

- What do you feel is important or special about the community (e.g. culture, diverse population, urban or rural qualities, natural environment, access to amenities and services)?
- What do you consider important to the quality of life (e.g., clean air and water, good jobs, arts and culture, security and safety, good relations with neighbors) in this community?
- What do people you know think is important to the quality of life in this community?
- What do the local Chamber of Commerce or other community organizations "pitch" as key community attributes?
- What aspects of the community are you interested in changing or working to change?
- Do you feel the quality of life has improved or worsened over the last 10, 20 or 30 years? Why?
- Do you belong to or know of any particular group (e.g., low-income, minority, farmers, elderly) that feels that their quality of life is disproportionately affected by development in the community?

- What do you envision as an ideal future for this community?
- Are there plans or other documents that describe an overall vision?

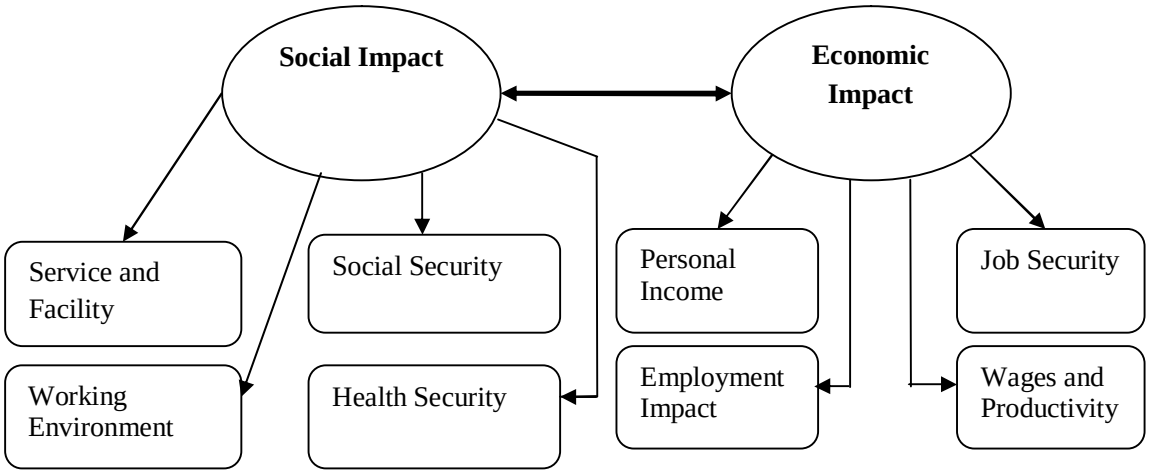


Figure 3.1: Theoretical Framework

The figure 3.1 shows the research model of this study. There are two dependent variables: Social Impact and Economic Impact. The independent variables of Social Impact are service and facility, working environment, social security, health security; and the determinants Economic impact are personal income, employment impact, job security and wagers and productivity. Total Eight hypotheses have been developed which will be discussed in the following section.

3.3. Hypothesis Development

3.3.1. Service and Facility

In a complex manufacturing environment such as the leather sector, assessing the perceived importance of services and facility attributes provides their service level provision to retain and increase their employees. Bhagya. L.S. and Ravanavar, G. M. (2014) defined services and facility attributes provided by the employers to the employees. Service and Facility is comprised of housing facility, official transport

facility, refreshment and recreation facility and health and safety facility. Services and facility were found to significantly contribute to social development. Many researchers found a positive relationship between facility and social development in a community (Jabbar, 2010).As a construct of social impact, service and facility poses great significance in the context of Bangladesh. As it is evidential from different studies that workers of tannery industries have no decent housing, transportation and education facilities. These will certainly impact the development of leather industry workers from social point of view. Hence the following hypothesis is proposed.

H1: There is a strong positive relationship between service and facility and social development.

3.3.2. Working Environment

The productivity of employees is determined by an inordinate level, on the environment in which they work. Work environment involves all the aspects which act and react on the body and mind of an employee. Under organisational psychology, the physical, mental and social environment where employees are working together and there work to be analyzed for better effectiveness and increase productivity. The major purpose is to generate an environment which ensures the ultimate ease of effort and eliminates all the causes of frustration, anxiety and worry. If the environment is congenial, fatigue, monotony and boredom are minimized and work performance can be maximized (Jain, R. and Kaur, S. (2014).When pertaining to a place of employment, the work environment involves the physical geographical location as well as the immediate surroundings of the workplace. Typically involves other factors relating to the place of employment, such as the quality of the air, noise level, and additional perks and benefits of employment such as free childcare or unlimited coffee, or adequate

parking (Harel et al., 1990). In leather industry, keeping employees happy and productive requires frequent and open communication, regular recognition of achievements, and constructive feedback, according to staffing employment agency. Research shows that social development depends on offering your employees generous salaries and flexible vacation policies. Equal Employment Opportunity employer has strong social impact in a community. Many international organisations have claimed that the working environment in leather industry in Bangladesh is very poor. This type of allegation is undoubtedly attributable in the case of manipulating and hindering the activities of labour union by the employers in Bangladesh. Hence the following hypothesis is proposed.

H2: There is a strong positive relationship between working environment and social development.

3.3.3. Social Security

The Social Security encompasses several social welfare and social insurance programs. It includes capacity to adapt with cultural values and norms, safety facilities and job nature. To be More specific, permanent employees are more pleased with their jobs in comparison to the employees who are on contract. It is funded through payroll taxes and Self Employed Contributions (Kotlikoff, 1996). The role of a pay-as-you-go social security system as a partial insurance and re distribution device significantly reduces political support for a transition to an economy with a fully funded system. The social security system is stronger in economies in which agents of similar age differ significantly with respect to labor earnings and wealth because of idiosyncratic income uncertainty which influence the social development of community (Conesa and Krueger, 1999). Social security is one of the major concerns of every workers and as

well as employers. However, in Bangladesh, in most of the cases, employers are found out to be disingenuous on social security concerns of their staff. Employees themselves also have no visible concern regarding this. So it can be argued that social security is one of major construct of social development for workers of leather industry in Bangladesh and has serious implications. Hence the following hypothesis is proposed.

H3: There is a strong positive relationship between social security and social development.

3.3.4. Health Security

There is growing acceptance of the concept of health security. However, there are various and incompatible definitions, incomplete elaboration of the concept of health security and insufficient reconciliation of the health security concept. More important, there are major differences in understanding and use of the concept in different settings. Health security commonly referred to as occupational health and safety or workplace health and safety. This is an area concerned with the safety, health and welfare of people engaged in work or employment. The goals of occupational safety and health programs include to foster a safe and healthy work environment. Policymakers in industrialized countries emphasize protection of their populations especially against external threats, for example terrorism and pandemics; while health workers and policy makers in developing countries understand the term in a broader public health context (Aldis, 2008). Most of the people in a society want to prevent and reduce the likelihood of outbreaks – natural, accidental, or intentional. International organizations and public and private stakeholders seek to accelerate progress toward a world safe and secure from infectious disease threats and to promote global health security as an international security priority. Hence the following hypothesis is proposed. Health security is one of

the major areas of concern for industrial workers in Bangladesh. In leather industries, most of the workers work in hazardous working environment which poses potential threat to their health and life. So issues like health care facilities to prevent diseases, medical facility after occurring any accident and first aid treatment facilities are very important in the context of social development of leather industry workers in Bangladesh. Hence the following hypothesis is proposed

H4: There is a strong positive relationship between health security and social development.

3.3.5. Personal Income

In economics, personal income refers to an individual's total earnings from wages, investment enterprises, and other ventures. It is the sum of all the incomes actually received by all the individuals or household in a country during the year from all sources. Conventional wisdom holds that money has little relevance to happiness (Cummins, 2000). Personal income includes compensation from a number of sources - salaries, wages and bonuses received from employment or self-employment; dividends and distributions received from investments; rental receipts from real estate investments; profit-sharing from a business and so on. The conventional economic wisdom postulates that personal income significantly influences economic development. There is a well-established claim that income of industrial workers is very low in Bangladesh to cope with the cost of living. This is due to low wage rate provided by employers. So income of workers will certainly have severe implications on economic development in Bangladesh. Hence the following hypothesis is proposed.

H5: There is a strong positive relationship between personal income and economic development.

3.3.6. Employment Impact

According to Oxford Dictionary of Economics the term of employment can be defined as “work, especially when it is done to earn money or the state of being employed”. In the age of Globalization, the employment is of growing significance to policy makers in developing Countries, but is surprisingly difficult to analyze the theoretically and empirically. Received trade theory does not provide a clear guide to its employment effects and in its most commonly used version it assumes away many factors that affect employment during globalization (Lall, 2004). Employment is a relationship between two parties, usually based on a contract, one being the employer and the other being the employee. Rennings and Zwick (2002) found that product and service innovations create more jobs than process innovations.The positive relationship between employment and economic development has been widely established by a number of studies (Aggarwal, 2013). In Bangladesh, accessibility of job is very scarce as there employment opportunities are very limited. Moreover, employment is proved to be one of the major contributor in poverty eradication in Bangladesh. Hence the following hypothesis is proposed.

H6: There is a strong positive relationship between employment impact and economic development.

3.3.7. Job Security

Job security is the probability that an individual will keep his or her job; a job with a high level of job security is such that a person with the job would have a small chance of becoming unemployed. It is often defined by the nature of the employment contact (i.e. whether it is permanent or contractual) (Bhagya and Ravanavar, 2014). Job security provisions are often cited as a major factor in developed and developing

economies. In the Countries considered, medium and long run employment appears unrelated to the extent of job security legislation. In high job security countries, wages tend to be lower and more sensitive to outside unemployment. Job security provisions can be claimed for the economic development countries (Bertola, 1990). In Countries like Bangladesh where employees can be fired on the basis of will of employers, job security is undoubtedly very low. Issues like job satisfaction is not even the area of concern of workers of leather industry in Bangladesh as they have limited or no alternative employment opportunity. Job security is presumed to be one of the major construct of economic development of workers of leather industries in Bangladesh. Hence the study proposed the following hypothesis.

H7: There is a strong positive relationship between job security and economic development.

3.3.8. Wages and Productivity

Wage is the reward of labour that an employee gets. The wage rate is usually paid per unit of time (hour/day/week/month) for work of a given type. Productivity can be defined by the amount of output per unit of input achieved by a worker, firm, industry, or country. A plethora of studies have been conducted to measure the relationship between wages and productivity and found a positive relationship between them (Melike and Aykac 2008).In discussions of wage rates, whether for individuals, firms, or for the entire economy, we hear a lot about the increasing productivity of the worker, and that wages must rise to reflect such increases. A study conducted by Dolado et al. (1996) outlining the systems of wages that operate in different countries such as France, the Netherlands, Spain and the United Kingdom and then consider some evidence on the economic effects of wages in four Countries. Previsions research found

the relation between wage floors and two economic outcomes, employment and the distribution of income in working households. Machin and Manning (1997) find evidence that wages have effect on economic development and some evidence that they have an equalizing impact on the distribution of income among families with someone in work. As discussed earlier, workers work to get paid or receive wages. Historically, wages of industrial workers specifically that of labourers of leather industry is very low in Bangladesh. This type of wage will certainly impact the economic development of leather industry workers. Hence the study proposed the following hypothesis.

H8: There is a strong positive relationship between wages and productivity and economic development.

Now shed focus on how the presumed conceptual frame work will help Bangladesh in the arena socio economic development. As it is shown in figure 3.1 of conceptual framework, overall economic development can be measured by two separate sub-indices: social impact index and economic impact index. Social impact analysis will examine whether the leather industry employees are provided with various facilities, better working milieu, health security and social safety. These four constructs will determine the level of social development of leather industry workers in Bangladesh. On the other hand, the level of economic development of workers of leather industry can be measured by income earned, effect on employment generation, security of job of that particular industry and inter connection between wage and level of economic development. These two sub-indices together will eventually translate into overall development of leather industry in Bangladesh.

CHAPTER 4
RESEARCH METHODOLOGY

Research Methodology of this study includes (a) Research Setting, (b) Sample Selection and Design, (c) Measurement Model, (d) Questionnaire Design and Data Collection and (e) Data Analysis. The figure 5.1 shows the research design.

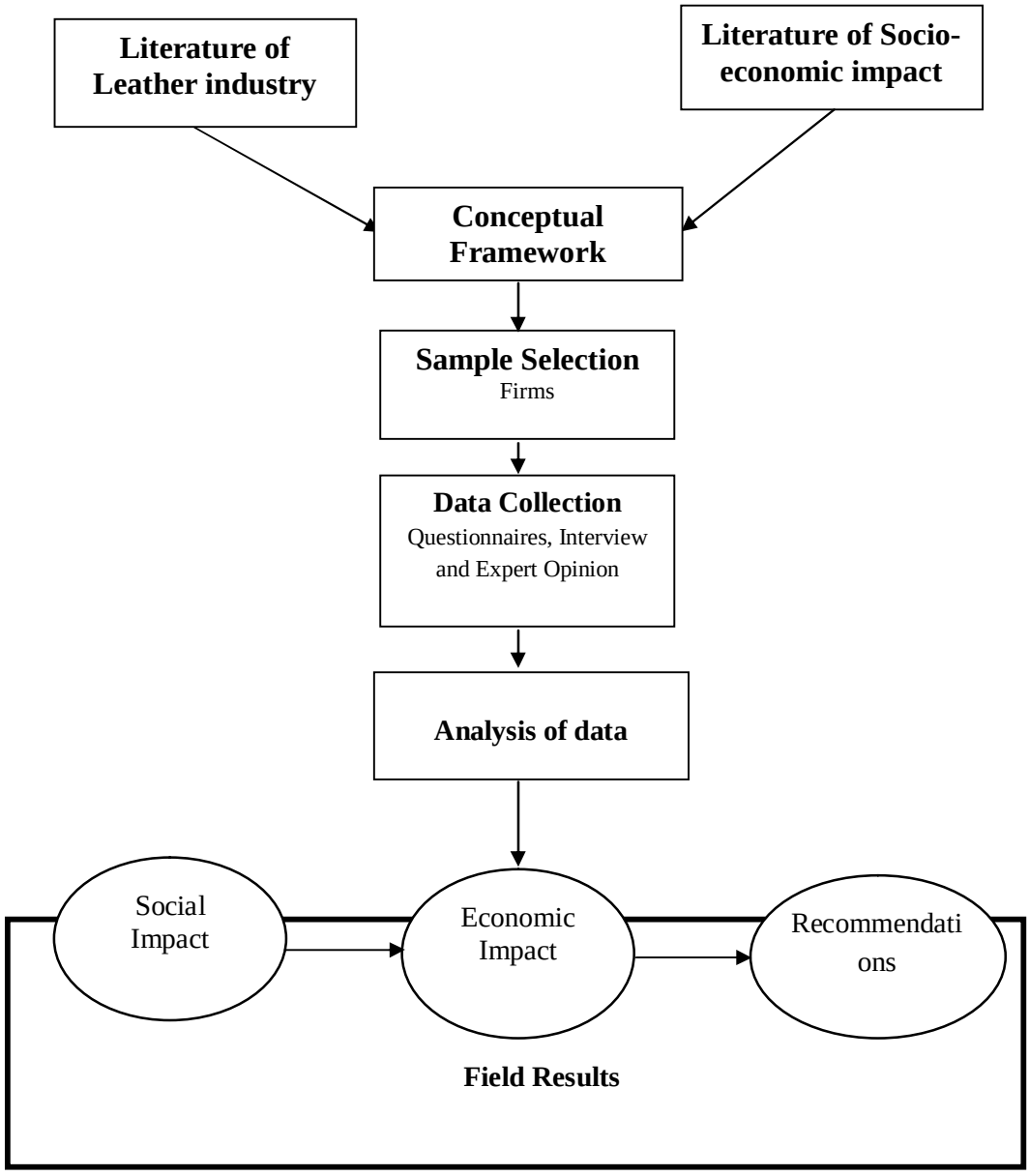


Figure 4.1: Research Design

4.1. Research Setting

As there is no significant research on the socio-economic impact of leather industry, especially within the context of Bangladesh, an empirical research was most justifiable. As a main objective of the research was to investigate the socio-economic impact of leather industry, the most appropriate stance was positivism (Lee, 1991).Positivism is an epistemological position that assumes that reality is objectively given and can be described by measurable properties, which are independent of the observer (researcher) and his or her instruments (Myers and Avison, 2002). According to Orlikowski and Baroudi (2002), a research is considered as positivist if there was evidence of formal propositions, quantifiable measures of variables, hypothesis testing, and the drawing of inferences about a phenomenon from the sample to a stated population (Orlikowski and Baroudi, 2002).

Positivism holds out the possibility that human beings and their actions and institutions can be studied as objectively as the natural world (Fisher, 2003). Moreover, the positivist is trying to look for laws and find out causality through objective analysis of the facts that have been collected. Thus, the researcher is independent of and neither affects nor involved by the subject of the research. Since this research provides evidence of propositions, quantifiable measures of variables, hypothesis testing and the drawing of inferences about a phenomenon from the sample to a stated population, the positivist epistemology was considered to be appropriate for this research.

A research method can be distinguished into two categories: qualitative and quantitative (Figure 4.2). Research methodology of this study focused on quantitative and qualitative research. The quantitative design methodology involved the production of an appropriate questionnaire. Quantitative research method is defined as research

that involves measuring traits, characteristics, or attributes of things (Almogbil, 2005). Examples of quantitative methods now well accepted in the social science include survey methods, laboratory experiments, formal methods (econometrics) and numerical methods such as mathematical modeling, statistical modeling, structural equation modeling (Myers and Avison, 2002). In fact, the quantitative research approach was developed in the natural sciences to enable researchers to study natural phenomena. Straub el al (2005) argued that the numbers come to represent values and levels of theoretical constructs and concepts and the interpretation of the numbers is viewed as strong scientific evidence of how a phenomenon works (Straub et al, 2005).

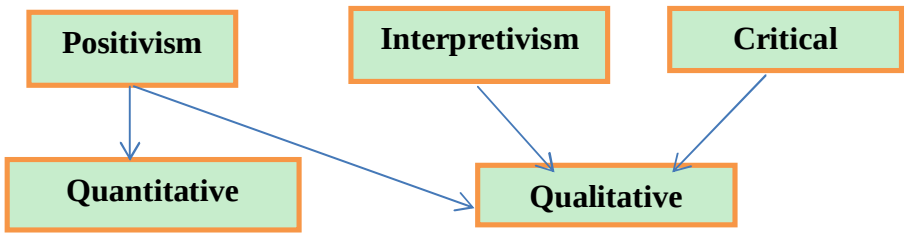


Figure 4.2: Epistemological Consideration for Quantitative and Qualitative Research

The qualitative approach is a method of inquiry employed in many different academic disciplines, traditionally in the social sciences, but also in market research by the business sector and further contexts including research and service demonstrations by the non-profit sectors (Stake, 2005).Qualitative researchers are involved in studies of almost any imaginable phenomenon, and their studies often require institutional human subjects' approvals "in the field". It is a general way of thinking about conducting qualitative research. It describes, either explicitly or implicitly, the purpose of the qualitative research, the role of the researcher(s), the stages of research, and the method of data analysis. There are four of the major qualitative approaches such as Ethnography, Phenomenology, Field Research and Grounded Theory are used in research.

The ethnographic approach to qualitative research comes largely from the field of Anthropology. The emphasis in ethnography is on studying an entire culture. Originally, the idea of a culture was tied to the notion of ethnicity and geographic location (e.g., the culture of the Islands), but it has been broadened to include virtually any group or organization. That is, we can study the "culture" of a business or defined group (e.g., a Rotary club). Phenomenology is sometimes considered a philosophical perspective as well as an approach to qualitative methodology. It has a long history in several social research disciplines including psychology, sociology and social work. Phenomenology is a school of thought that emphasizes a focus on people's subjective experiences and interpretations of the world. That is, the phenomenologist wants to understand how the world appears to others. Field research can also be considered either a broad approach to qualitative research or a method of gathering qualitative data. Grounded theory is a qualitative research approach that was originally developed by Glaser and Strauss in the 1960s. The self-defined purpose of grounded theory is to develop theory about phenomena of interest. But this is not just abstract theorizing they're talking about. Instead the theory needs to be grounded or rooted in observation -- hence the term.

However, although the methodology for this research is quantitative and qualitative in nature, the initial data collection conducted through semi-structured interviews provided valuable qualitative information. It is noteworthy that the main instrument used to collect data for this study was the survey methods which represent values and levels of theoretical constructs such as Service and Facility, Working Environment, Social Security, Health Security, Personal Income, Employment Impact, Job Security, Wages and Productivity. Qualitative methods such as interviews are used in addition to

quantitative methods as a preparation step to a quantitative study, or to refine conclusions reached by means of qualitative research (Sarantakos, 1998). According to Sarantakos(1998), in many instances, qualitative researchers employ qualitative methods in their studies to meet the criteria of quantitative research.

4.2. Sample Design and Selection

Tanning is one of the oldest professions in the country. It has been traditionally adopted as a village level industry. Gradually, with time however, tanning comes to be practiced on a large scale and today it is one of the top most exports earning industry of this country. In the world fashion market leather and leather goods occupy an important position. It is one of our indigenous raw materials based principal export items of Bangladesh, earns a lot of foreign currency by exporting leather and leather goods. After achieving independence industrialization of tannery opened a new area of production and created possibilities of establishing mutually beneficial ties in Bangladesh, which did not exist earlier.

The first set of sampling design is to define the study population. The population of interest for this study is leather industry. Then the organization was selected using a simple random sampling method. Companies were selected from the directory of companies distributed by the Bangladesh Chamber of Commerce and Industry and Bangladesh Tannery Association (BTA). Interviewed companies were located in the city of Dhaka, Chittagong, and Boirob. It is to be noted that collecting research data using interviews in Bangladesh is seen to be costly in both time and money and researchers required to travel to many districts to collect data (Shoaibi, 1998). Simple random sampling was used to select the leather firms. Then, purposive (or judgmental) sampling techniques were used to select the respondents from the selected firms.

Purposive sampling is useful when the desired sample needs to be reached quickly and sampling for proportionality is not a concern (Trochim, 2006). Companies were contacted at least two weeks before the interview and a follow up call was then given to confirm acceptance in order to ensure the correct individual had received it. In addition, a time and a place convenient for both the researcher and the participants to do the interviews were discussed and identified.

Presently there are 220 different sized tanneries out of which a sample of 40 tanneries were randomly selected which contains large-scale a sample of mechanized, medium-scale semi-mechanized and small-scale less mechanized tanneries. From the initial forty companies that were contacted for interview, 33 organizations agreed to participate. Seven companies later dropped out and their reason for not participating was because the key informants were too busy. Shoaibi (1998) mentioned that interviewing managers, workers in developing countries like Bangladesh is relatively hard because those people are always busy. Moreover, it is very difficult to arrange a meeting with them for an hour or so without delay or interruption. Therefore, this could limit the data that could be collected by this method. It is important to note that research suggests that responses from the most knowledgeable respondent can be more accurate than taking an average of several informants in an organization (Day and Nedungadi, 1994). Therefore, the people interviewed consisted of general managers and workers within the individual companies.

4.3. Measurement Model

All scales in this study were adapted from previous literature and based on the exploratory interviews. All items (with the exception of the demographic/firm characteristic data) were measured using interval scaling in the form of a numerical

scale to measure research constructs. The interval scale is probably the most widely used in research (Bagozzi and Heatherton, 1994), and it is considered very suitable to test the hypothesis (DeVellies, 1991). In this scale, numbers are assigned to indicate order and also measure distance in units of equal intervals (Zikmund, 2003).

The most common and easily used scaled question involves the use of the Likert answer scale. Hair et al. (2006) recommend that Likert scales are the best designs when using self-administered surveys methods to collect the data. By definition, the Likert scale is an interval scale that is used to ask respondents to indicate whether they agree or disagree about a given subject by rating a series of mental belief or behavioral belief statements (Hair et al., 2006). In this research study, a 5-point Likert-type scale ranging from 1 "Strongly Disagree" to 5 "Strongly Agree" was used throughout the questionnaire for the collection of most of the data for three reasons. Firstly, a five point scale has been widely used in related research (Premkumar and Ramamurthy, 1995; Morgan and Hunt, 1994). Secondly, it provides a level of intensity and feeling to be expressed. In fact, it is believed that more scale points are better for allowing respondents to answer questions with more specificity (Brady et al., 2005). Finally, a Likert-type scale makes the responses easy to manage and code and is appropriate to different statistical techniques (Luck and Rubin, 1987). The measurement model is shown in Table 4.1

Table 4.1: Measurement Model of Item Scale

Construct	Item	Source	Title of the Study
Social Impact Analysis			
Service and Facilities	My housing facilities are better than before	Khan et al. (2010)	A Sociological Study of Working Women in Informal Sector of Readymade Garments Industry in Faisalabad (Pakistan). In this study, female labors are treated as women in the age group of 15 to 50 years, who are engaged in readymade garment industries. The women can play a vital role in every walk of life. Women encouragement is essential for the economic uplift. However, there is a need to provide proper education and vocational skills to engage them in productive employment.
	I have official transportation facilities		
	My education facilities have been increased than before		
Working Environment	I have had a torture/ harassment free working environment	Uddin (2008)	Wage Productivity and Wage Income Differential in Labour Market: Evidence from RMG Sector in Bangladesh. The study shows that distribution of labor force by two main sector agriculture and non-agriculture shows that during the period of 1990-91 to 1999-2000 there has been a small decline in the share of agriculture in total employment. Empirical result also shows that both the male and female labor force participation is higher in Bangladesh compare to the South Asian Countries.
	Labor union are available in my working places		
	I can learn lessons from my friends working with me		
Social Security	I have more social security now	Tiotangco (2012)	Water, Sanitation, Hygiene, Health and Socio-economic Profiles of the Beneficiaries of the Far Eastern University (FEU) GawadKalinga (GK) Village Housing Project The quantitative and qualitative data reveal a consistent presentation of the FEU-GK community which enjoys a good water quality and sanitation services where women are found to maintain a high level of self-esteem with a high regard for hygiene practice.
	It is easy to adapt with cultural values and norms now		
	My safety facilities have been increased		
	Overall, my social security has been increased		

Health Security	I can reach health care facilities for preventing my diseases	Nancy and Katherine (2002)	Socio-economic Disparities in Health: Pathways and Policies, Inequality in education, income, and occupation exacerbates the, gaps between the health “haves” and “have-nots. Reducing Socioeconomic status (SES) disparities in health will require policy initiatives addressing the components of socioeconomic status (income, education, and occupation) as well as the pathways by which these affect health. Lessons for U.S. policy approaches are taken from the Acheson Commission in England, which was charged with reducing health disparities in that country.	
	I can have medical facility after occurring any accident			
	First aid treatment facilities have been increased			
Social Impact	My standard of living has been increased after joining here	Zachary et al (2003)	How Indicators of Socio-Economic Status Relate to Physical Functioning of Older Adults in Three Asian Societies. The relationship between socioeconomic status and physical functioning is tested among older adults in Taiwan, Thailand, and the Philippines. Education is found to be associated with functional health in Taiwan but is a weaker predictor in Thailand and the Philippines. Income has strong associations in Taiwan and Thailand and only a moderate association in the Philippines. Interaction effects based on pooled data confirm that differences in associations exist across settings.	
	My Social status has been increased after joining here			
	Overall, leather industry have significant social impact on my life			
Economic Impact Analysis				
Wages and Productivity	Rate of my working hours have been increased	Uddin (2008)		Wage Productivity and Wage Income Differential in Labour Market: Evidence from RMG Sector in Bangladesh. The study shows that distribution of labor force by two main sector agriculture and non-agriculture shows that
	Distribution of workers according to their skills			

	Paid leave facilities are provided to us		during the period of 1990-91 to 1999-2000 there has been a small decline in the share of agriculture in total employment. Empirical result also shows that both the male and female labor force participation is higher in Bangladesh compare to the South Asian Countries.
	I am satisfied with my wages and salary		
Employment Impact	My job has helped me to reduce my poverty	Pianta and Vivarelli (2003)	Employment Impact of Innovation: Evidence and Policy. Detailed and comparative international analyses explore how technological and structural change have affected employment patterns. Studies at the macroeconomic and sectoral level investigate the role of demand patterns and the different sectoral impact of product, process and organisational innovation in industries and services.
	Stock options/ownership are given to us		
	Easy accessibility of job		
Job Security	I have job security here	Islam and Chowdhury (2012)	Socio-Economic Factors of Readymade Garments Workers in Bangladesh. This study suggests that housing, water and sanitation conditions, medical facilities and first aid treatment, wages, social status, adaptation of cultural values and norms, attachment with labor unions, ownership arrangement, leave with pay and overtime are significantly related to the socio-economic status of the garments workers of Bangladesh.
	I am satisfied with my job		
	Working benefits and fringe benefits have been increased		
Personal Income	My savings have been increased after joining here	Khan et al. (2010)	A Sociological Study of Working Women in Informal Sector of Readymade Garments Industry in Faisalabad (Pakistan). In this study, female labors are
	My bank deposits have been increased after		

	joining here		treated as women in the age group of 15 to 50 years, who are engaged in readymade garment industries. The women can play a vital role in every walk of life. Women encouragement is essential for the economic uplift. However, there is a need to provide proper education and vocational skills to engage them in productive employment.
	Rate of overtime has been increased		
Economic Impact	I have augmented income	Islam and Chowdhury(2012)	Socio-Economic Factors of Readymade Garments Workers in Bangladesh. This study suggests that housing, water and sanitation conditions, medical facilities and first aid treatment, wages, social status, adaptation of cultural values and norms, attachment with labor unions, ownership arrangement, leave with pay and overtime are significantly related to the socio-economic status of the garments workers of Bangladesh.
	Leather industry have significant contribution in my economic development		
	Overall, I am satisfied with my earnings		

4.4. Questionnaire Design and Data Collection

As the study in explorative in nature, a combination of qualitative and quantitative approaches was used as the research method (Myersand, 2002) for data collection to ensure validity as a means of integration approach. The principal data collection technique selected was semi-structured interviews; this technique was chosen in order to obtain more information about specific variables of interest and to explore in detail issues related to socio-economic impact of leather industry. It also helped the researcher to understand directly from the interviewed specialists the current situation and future perspective of leather industry. In fact, the use of semi-structured interviews

has become the principal means by which researchers have sought to achieve the active involvement of their respondents in the construction of information about their experiences (Punch, 2005). Moreover, semi-structured interviews offer the freedom to explore, probe and ask questions in order to cover all particular subject areas. In general, semi-structured interviews often have an initial question followed by probes and, in this type of interview; the situation has often been analyzed before the interview (Gubrium and Holstein, 2002).

However, interviews are much more expensive than mail questionnaires because it requires additional cost such as interviewer wages, call-backs and travel costs (Bynner, 1979). The data was collected through a well prepare semi-structured questionnaires conducted on the stake holders interviews (i.e. manager, owner), administering questionnaires, focused group discussions and observations. In addition, documentary and literature review was undertaken; Including Internet surfing. The respondents include owners, tannery workers, tannery management and local leaders as well as with the communities in areas where some of the tanneries are located. The choice of the Institutions was visited based on their relevancy to the leather-tanning industry.

Both primary and secondary sources of information have been collected for the purpose of this thesis.The primary information has been collected by semi-structured questionnaires and direct interview. Direct Interview used to collect data from respondents. Observation has been used to collect data where the direct involvement is not possible. In addition to primary data, few secondary information was also collected to fill up the gap. Secondary information was collected from Export Promotion Bureau (EPB), Bangladesh Finished Leather, Leather goods and Footwear Exporters' Association (BFLLFEA), Dhaka Leather Complex (DLC), FAO Bulletins, Statistical

Year Books, Statistics Department of Bangladesh Bank, different publications both published and unpublished sources of the related field etc. Information was also gathered through discussion with the representatives of the concerned associations, Bankers, officials of the various Government bodies, leather businessmen, traders of hides & skins in the different parts of the country and other individuals.

A questionnaire survey is a common method of conducting descriptive research in order to gather and analyze data in conjunction with questions and hypotheses (Johnson and Christensen, 2000). It is noteworthy that there are two main types of descriptive survey research designs: cross-sectional and longitudinal surveys. In a cross-sectional survey, research may be linked to a snapshot of the phenomenon of interest and data are collected at one point in time from a sample selected to describe some larger population (Pedhazur and Pedhazur-Schmelkin, 1991). Such a survey can be used not only for the purpose of description, but also for determination of the relationship between variables at the time of the study (Babbie, 1998). Moreover, the main instrument used to collect data for this study was the semi-structured questionnaire. The questionnaire survey is an important instrument consisting of a set of predefined and structured questions that the respondent has to answer in a set format. In fact, the questionnaire has been very useful in social science research in the past and is likely to continue to be so in the future (Goode and Hatt, 1992). The questionnaire can be carried out either by mailing it to respondents or by personal administration (Oppenheim, 1996).

It has been suggested that researchers could or should use other secondary resources such as annual reports, web sites and information leaflets (Lofland et al., 2006; Walsham, 2006; Kosso, 1998; Orlikowski, 1989). In fact, the aim behind using these

supporting materials is to obtain as clear an understanding as possible of, and as much necessary information as possible for, the research problem. Annual reports of the Ministry of Industry in Bangladesh, Ministry of Commerce, the Bangladesh Tannery Association plan reports, annual report and electronic newsletters were used as secondary data collection methods to support the information obtained in the interview.

Before the interviews took place, arrangements were made by phone and an e-mail was sent to the selected firms informing them of the goals of the study and the purpose of conducting the interviews. Interviewees were assured of data confidentiality before the interview began, and their permission to record the interview was requested. They were also assured that they might withdraw their consent to participate at any stage of the study without repercussion. It is to be noted that, due to the non-disclosure agreements with these firms, pseudonyms were used to protect the anonymity of the companies' identities. A list of the interview questions was prepared in advance and was at hand for the researcher at the time of the interview.

However, participants were not given the questions in advance in order to avoid any possibility that they might prejudge the interview. Each interview lasted from 60 to 90 minutes and no other person was present during the interviews. Interviews were mostly conducted in Bangla and tapes were transcribed. Then, the entire data set was translated into English and the researcher carefully verified each translation to ensure contextual and semantic accuracy. A qualitative data analysis technique was used to identify and categorize themes/concepts of interest through close examination of data in the field notes (Kurnia, 2008). This exploratory phase with managers was characterized by open discussions and all participants welcomed the opportunity to examine issues related to their experiences and practices more deeply.

There are two parts of questionnaire. Part A contains the questions used for studying the factors concerning the socio-economic impact of leather industry in Bangladesh and the current status of the industry. It contains 32 questions addressing the Service and Facility, Working Environment, Social Security, Health Security, Personal Income, Employment Impact, Job Security, Wages and Productivity. Part B contains the questions eliciting the basic information of the participants and the organization. It consists of ten questions related to industry, size of organization, number of years in business, gender, age, level of education, year of experience, and position.

In fact, the way the questionnaire is presented and introduced and the type of assurances given to the respondents determine to a large extent whether the respondent will complete the questionnaire or not, and whether he or she will answer the entire question (Dillman, 1999; Sarantakos, 1998). As a result, a cover page was used to introduce the respondents to the research topic and to motivate them to participate in the study. Moreover, in the cover letter, the researcher was introduced to the respondent and the promise of confidentiality was included in which respondents were assured that the information they provided would be used for the purpose of the study only. The researcher‘s postal address and e-mail address were clearly stated in the covering letter in a further attempt to increase authenticity.

The section requiring demographic and firm information from the respondent was placed at the end of the questionnaire. This was done to assist the respondent to move straight to responding to questions related to the main purpose of the survey after reading the cover letter (Babbie, 1998; Dillman, 2000; Wiersma, 2000). On the very last page of the questionnaire the respondent was thanked for their valuable contribution and, as an incentive to respond, participating organizations were offered a

free copy of a summary report presenting the findings of the study if they indicated their interest. They were asked to provide their company name, e-mail address and fax number.

The questionnaire was written in English and translated into Bengoli. Moreover, the researcher sought to make certain that two versions would match as closely as possible by consulting two bilingual translators. In addition, the cover letter was included with both the Bengoli and English versions. Translation has been considered quite extensively in academic studies and commercial research (Sin et al., 2001; Reynolds, 2000; Nord, 1997). It is recommended that the research instrument has to be translated such that respondents involved in the study understand it. The instrument should also contain equivalent meaning in each research context (Craig and Douglas, 2000). Translation equivalence refers to the translation of the research instrument into another language so that it can be understood by respondents in different countries, and has the same meaning in each research context (Herk et al., 2005: 353). Translation equivalence requires that both verbal and non-verbal stimuli retain their meaning across multiple cultural milieus (Reynolds, 2000; Sechrest and Fay, 1972). According to Malhotra and Birks (2000), a frequently used translation method is direct translation in which a bilingual translator translates the questionnaire directly from the source language to the respondent‘s language. Subsequently, direct translation was used to achieve equivalent translation with the original English-version and to avoid any ambiguity and potential confusion in the translated version.

In fact, a well-organized pilot test will help to improve the efficiency of the main research, and it gives an initial warning about any areas in which the main research could possibly fail or where suggested instruments are inappropriate or too complicated

(TeijlingenandHudley, 2001). Moreover, Teijlingen and Hudley (2001) list nine reasons for conducting pilot tests:

- To develop and test the adequacy of research instruments.
- To assess the feasibility of a (full-scale) study/survey.
- To establish whether the sampling frame and technique are effective.
- To identify logistical problems that might occur when using proposed methods.
- To estimate variability in outcomes to help in determining sample size.
- To determine what resources (finance, staff) are needed for a planned study.
- To assess the proposed data analysis techniques to uncover potential problems.
- To develop a research question and research plan.
- To train the researcher in as many elements of the research process as possible.

The aims of testing the questions and questionnaire were to test the questionnaire to ensure that it was coherent and comprehensible, that the data collected would be accurate and that meaningful data analysis could be subsequently carried out (Kometa, 1995; Ling, 1998). The pre-test was useful in identifying problems with question wording, layout, sequence, grammar, punctuation of the questions and survey length. Hussey and Hussey (1997) suggested that, at the very least, a questionnaire should be tested among friends or colleagues, but as far as possible on the people who are similar to the people in the sample. Similarly, Fink (2003) notes that for pilot testing to be effective, researchers should use respondents who are similar to those who will be asked to participate in the survey.

In order to confirm that the questionnaire for gathering the data was valid, three techniques were followed in this research. Firstly, after the development of the questionnaire and writing of the final version, the research supervisors and two

academics were knowledgeable in instrument development reviewed the questionnaire. They were asked to comment on the questionnaire and identify any gaps or inconsistencies. For example, they suggested some changes to the categorization of size and age in order to avoid any overlapping categories. Moreover, the proposed questionnaire was sent to two business consultants and was pre-tested with four top level executives of four companies located in Dhaka for review and feed-back. The feedback resulted in minor changes in wording but, in general, the feedback was positive.

Secondly, a survey refinement through pre-testing was conducted in the Bengoli language using 15 respondents from the sample frame and aimed to ensure that there were no unanticipated difficulties (Alreck and Settle, 2004) and to further enhance content validity. Hunt et al. (1982) noted that there is considerable inconsistency around the issue of pre-testing. Participating companies in the pre-test were told that they had been chosen to take part in a trial study and that they were required to be critical, to ask about things they did not understand and to help the researcher design better questions. Moreover, participants were asked to comment on the length of the questionnaire, the time required for completing the questionnaire, the content and question layout, the clarity of question wording, and the order and sequence of questions; finally, they were asked to identify any factors not on the questionnaire that they considered important in leather industry.

After piloting the questionnaire and making amendments to the layout and ordering, the field work started and continued for six months. Organizations were contacted asking for their agreement to participate in this survey, and asking for the name of the decision maker who normally participates in each organization. A common reason offered for

refusal to participate was the unavailability of informants during the research period. Explanations for this unavailability included: (1) not interested; (2) key informants on holiday or travelling abroad; (3) organization in restructuring or merger process; and (4) due to company policy and unwillingness of the firms to provide sensitive information about their strategy and traits to outsiders.

A total of 400 survey packets containing a cover letter were hand delivered to the manager and worker of the firm. In most cases, the questionnaire was handed to an appropriate contact person or a coordinator who was requested to forward the questionnaire through their internal mailing systems to the senior manager or decision maker of the firm, such as the managing director or general manager, to then complete and return his or her response. Therefore, during the initial contact with companies, the researcher asked for the name of a contact person in order to ensure cooperation.

The cover letter explained the purpose of the study. A summarized report of the research findings were offered to the respondents as an incentive for them to give a response. The rationale for using personal delivery was because the postal service in Bangladesh is unreliable (Al-Somali et al., 2009; Robertson et al., 2001). In addition, the advantages of personal delivery of the surveys include the availability of the researcher to answer general questions, explain the meaning of items which might be unclear and, more importantly, to spur interest in participating and completing the questionnaire. According to Stover and Stone (1974), the advantage of personal delivery over mailing is that the questionnaire can be checked instantly to ensure all the questions have been answered and nothing has been forgotten or missed. Other advantages as noted by Alqahtani et al. (2000) are: (a) there is an average to high percentage return of questionnaires from respondents, and (b) the researcher is in full

control of how long the data collection exercise will last. Therefore, the personal delivery followed by a later pick up methodology suggested by Robertson et al. (2001) and Tuncalp (1988) was adopted to ensure that the questionnaire reached respondents.

Of the 400 distributed questionnaires, a total of 348 were collected by the agreed pick-up time. Some of the non-respondents were contacted and were requested to explain the reasons for non-participation. In most of the cases, they said that it was because of lack of time to complete the questionnaire. In some cases, when the researcher returned to collect questionnaires, some respondents had not completed them, citing work commitments, and others had lost them. They were asked politely if they would kindly complete them and the researcher asked for their e-mail address to set up a time to come and collect completed questionnaires at a later date. This policy worked in most cases. In fact, the researcher had to make several calls to guarantee the return of completed questionnaires. If the questionnaire had been lost, another copy was given to the participant as the researcher carried extra copies.

Some organizations were located far from the city and, because it was difficult to reach them in person, the researcher mailed questionnaires to the concerned departments of these organizations after contacting them by phone. Then, e-mail and phone calls were used to remind them and make sure that questionnaires had been received and would be completed. Moreover, 22 questionnaires were discarded and could not be used in the analysis because large sections of the questionnaires were incomplete (i. e. left blank in some questions or some parts) or had only one number on all Likert scale items, such as all 1's or all 5's. The final usable sample contained 326 responses.

In fact, a high response rate is viewed as an important criterion by which the quality of a survey is judged (Hox and DeLeeuw, 1994) because a higher response rate implies

less potential non-response bias (Shih and Fan, 2008). On the other hand, the computation of response rate can be very tricky because each study may use its own definition of response rate. As suggested by Shih and Fan (2008), this study adopted the computation of response rate. In fact, the study‘s response rate compares favorably with other studies and is even better in some cases than previous studies (e.g. Grandon and Pearson, 2004; Thong et al., 1996; Premkumar and Potter, 1995). It is worth noting that, the letter from the researcher endorsed the legitimacy of the research, encouraged firms to collaborate with the researcher and informed participants about the benefits and importance of conducting the study.

4.5. Data Processing and Analysis

Filled-in questionnaires were tabulated and processed according to given code marks. Collected data were synchronized and linked to related chapters. Utmost efforts were made to present data in the simplest manner to give an insight into the subject. The collected raw data was prepared and analyzed with advanced statistical package (SPSS, SmartPLS, AMOS, Excel program) in the computer.

SPSS is a software package used for statistical analysis. Long produced by SPSS Inc., it was acquired by IBM in 2009. The current versions (2015) are officially named **IBM SPSS Statistics**. Companion products in the same family are used for survey authoring and deployment (IBM SPSS Data Collection), data mining (IBM SPSS Modeler), text analytics, and collaboration and deployment (batch and automated scoring services). The software name originally stood for **Statistical Package for the Social Sciences** (**SPSS**), reflecting the original market, although the software is now popular in other fields as well, including the health sciences and marketing (Coakes and Steed, 2009). SPSS is a widely used program for statistical analysis in social science. It is also used by market researchers,

health researchers, survey companies, government, education researchers, marketing organizations, data miners, and others. The original SPSS manual has been described as one of "sociology's most influential books" for allowing ordinary researchers to do their own statistical analysis.[4] In addition to statistical analysis, data management (case selection, file reshaping, creating derived data) and data documentation (a metadata dictionary was stored in the data file) are features of the base software.

SmartPLS is a software with graphical user interface for variance-based structural equation modeling (SEM) using the partial least squares (PLS) method. The software can be used in empirical research to analyze collected data (e.g. from surveys) and test hypothesized relationships. Since it is programmed in Java, it can be executed and run on Windows and Mac OS operating systems. SmartPLS uses raw data. The data import uses the text (.txt) and comma separated values (.csv) file format. The columns of the data file represent the variables; the rows represent observations and responses. Only the first row of the data matrix, which becomes the header in SmartPLS, can contain text. Otherwise, only numbers are allowed. Empty cells (e.g., if a missing value occurs) are not allowed (Hansmann and Ringle, 2004). A number that is not used otherwise in the dataset (e.g., -999,999) must be used to fill empty cells.

After data import, the user can indicate that this number represents a missing value. SmartPLS automatically identifies the data and number format (e.g., Europe or USA). If a problem occurs, the user can later determine file format specifications and the number format in the software. In addition to the variables used as indicators for PLS path modeling, the data matrix can contain a weighting vector of the observations and responses (e.g., for carrying out weighted PLS path modeling analyses) and grouping variables (e.g., for conducting a PLS multi-group analysis, PLS-MGA).

We carried out specified statistical analysis by using descriptive statistical tools, cross tables, correlation matrix, and hypothesis testing (both ‘t’ and ‘B’) and an extensive multiple regression analysis for useful presentation of results. Demographic profile was presented first by descriptive statistics. Multiple Regression analyses in line with proposed Structural Equation Model (SEM) were executed to identify the relationship between dependent and independent variables.

Structural equation modeling (SEM) is a family of statistical methods designed to test a conceptual or theoretical model. Some common SEM methods include confirmatory factor analysis, path analysis, and latent growth modeling. The term "structural equation model" most commonly refers to a combination of two things: a "measurement model" that defines latent variables using one or more observed variables, and a "structural regression model" that links latent variables together (Savalei and Bentler, 2010). The parts of a structural equation model are linked to one another using a system of simultaneous regression equations.

SEM is widely used in the social sciences because of its ability to isolate observational error from measurement of latent variables. To provide a simple example, the concept of human intelligence cannot be measured directly as one could measure height or weight. Instead, psychologists develop theories of intelligence and write measurement instruments with items (questions) designed to measure intelligence according to their theory. They would then use SEM to test their theory using data gathered from people who took their intelligence test. With SEM, "intelligence" would be the latent variable and the test items would be the observed variables.

A simplistic model suggesting that intelligence (as measured by five questions) can predict academic performance (as measured by SAT, ACT, and high school GPA) is

shown below. In SEM diagrams, latent variables are commonly shown as ovals and observed variables as rectangles. The below diagram shows how error (e) influences each intelligence question and the SAT, ACT, and GPA scores, but does not influence the latent variables. SEM provides numerical estimates for each of the parameters (arrows) in the model to indicate the strength of the relationships. Thus, in addition to testing the overall theory, SEM therefore allows the researcher to diagnose which observed variables are good indicators of the latent variables.

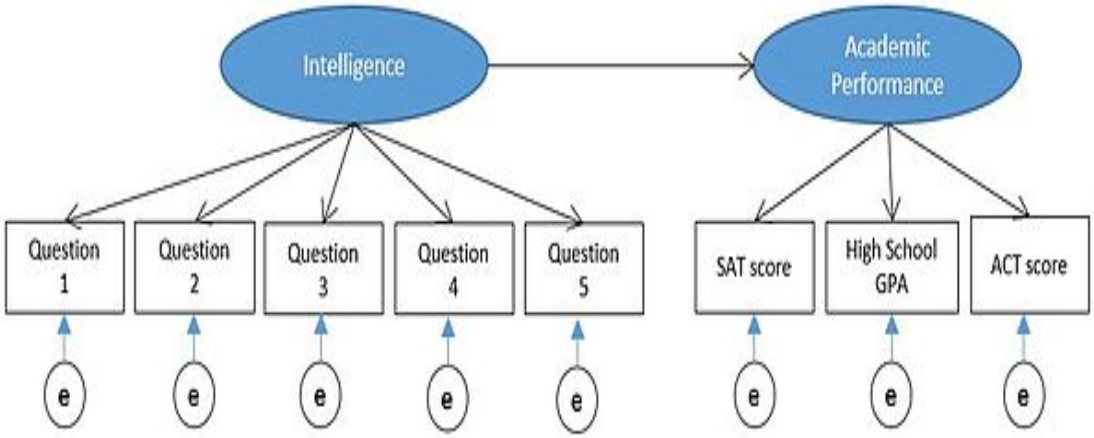


Figure 4.3: A conceptual illustration of a structural equation model.

Modern studies usually test much more specific models involving several theories, for example, Jansen, Scherer, and Schroeders (2015) studied how students' self-concept and self-efficiency affected educational outcomes. SEM is also used in the sciences, business, education, and many other fields. Partial least squares regression (PLS regression) is a statistical method that bears some relation to principal components regression; instead of finding hyper planes of minimum variance between the response and independent variables, it finds a linear regression model by projecting the predicted variables and the observable variables to a new space. Because both the X and Y data

are projected to new spaces, the PLS family of methods are known as bilinear factor models. Partial least squares Discriminant Analysis (PLS-DA) is a variant used when the Y is categorical.

Reliability analysis (Cronbach's Alpha test) was conducted to determine the internal consistency across items for each measure. Moreover, partial correlation between dependent and independent variables was executed. This study tried to use more efficient in-depth probing and greater accuracy and validity with the help of non-parametric statistical tools such as exploratory and regression analysis.

CHAPTER 5
FINDINGS

Bangladesh leather and leather products industries use sophisticated technologies and process chemicals mainly of European origin and, good quality shoe components and leather goods fittings for production of quality articles. Having footing in international markets Bangladesh leather and leather products industries have been gradually improving quality of their products and entering into newer and newer markets. Hides and skins, the outer covering of mammalian animals are the basic raw material of leather industry. The supply position of raw hides and skins therefore, determines the strength of leather industry of a country, which in turn depends upon the livestock population, management of live animals, slaughtering rate and removal of skins from carcasses. Bangladesh being a beef consuming agricultural country has a sizeable livestock population and supply of hides and skins to sustain a healthy leather industry and the industry based on local raw-stock supply plays an important role in the economy of the Country.

Hides and skins of Bangladesh though smaller in size and thinner in substance, have a good demand in international market for their fine fiber structure and good grains and generally used for making high quality leather goods including shoes. Until mid-seventies, the hides and skins of Bangladesh were exported mainly in the form of chrome tanned wet blue leather. With the introduction of export incentives by the Government in seventies and restriction on wet blue export in 1990, there has been a significant development of crust and finished leather in the country during eighties and

nineties. The leather industry is now reasonably established and exporting various types of full chrome, full veg. and semi-chrome crust and finished leathers to UK, Germany, France, Italy, Spain, Japan, Taiwan, Republic of Korea, Hong Kong, China, Russia, Brazil, Australia, Portugal, Mexico, India, Singapore, Malaysia, USA, South Africa, etc. The both primary and secondary sources found the socio-economic impact of leather industry in Bangladesh. The socio-economic impacts of leather industry in Bangladesh are described below.

5.1. Economic Impact of Export of Leather Industry in Bangladesh

Bangladesh is still exporting 65-70% of its hides and skins in the form of crust leather and enormous economic potentials exist in the development of finished leather and leather products for export. The Government of Bangladesh encourages private investment in leather sector with special emphasis on foreign investment and provides policy supports and investment incentives including priority financial assistance for new establishments and existing units, duty free import of capital machinery, export credit at a preferred rate of interest special credit from Export Development Fund at a reduced rate of interest for importation of raw materials, bonded warehouse facilities for duty free importation of raw materials or duty drawback for imported raw materials for export production, exemption of overdue interest for export under L/C on sight payment, export credit guarantee, special rebate in export insurance premium, tax holiday or income tax rebate on export earnings, high rate of depreciation, foreign exchange allocation for business travels, retention of 20 percent foreign exchange earnings in interest bearing foreign currency account for importation of chemicals/spares and business tours, credit card facilities, marketing mission abroad,

etc. The foreign investments are being protected through the Foreign Private Investment protection Act 1980 that provides basic guarantee to foreign investments including: equal treatment in relation to local investment; guarantee against expropriation or nationalization; right of repatriation of invested capital and the profits there to.

The leather and leather products significantly contribute both to domestic consumption and to export. The leather sector of Bangladesh has earned a special status in the national economy. Being the fifth largest export-earning source, this sector plays a vital role in export as well as in the overall economy of Bangladesh. Leather industry is one of the leading export earning sector of the country. Export of Bangladesh leather products before 1990 was limited to tourist items produced mainly in cottage sector. With the development of finished leather, there has been a considerable development of footwear and leather goods export of the country as shown in Table 5.1 with the gradual development of export oriented mechanized industries in this sub-sector. Bangladesh leather industry is now exporting various types of leather shoes and leather goods to Japan, Hong Kong, UK, Germany, France, Netherland, Italy, Spain, Canada, USA, Russia, Australia, Taiwan, Republic of Korea, Singapore, Middle East, South Africa, Sri Lanka, etc. Hardly 15-18% of the this supply is required for domestic consumption and a large surplus, being 82-85% is exported in the form of leather and leather products earning a sizeable amount of foreign exchange for the country.

Table 5.1: Export of Leather and Leather Products During 1990-2014

Export (in US$)			
Year	Leather	Leather Products	Total
1990-91	134.29	2.84	137.13
1991-92	144.46	4.39	148.85
1992-93	147.91	10.72	158.63
1993-94	168.17	23.85	192.02
1994-95	202.08	23.25	225.33
1995-96	211.70	29.25	241.15
1996-97	195.48	26.58	222.06
1997-98	190.26	43.49	233.75
1998-99	195.45	45.05	240.50
1999-00	197.34	44.45	241.79
2000-01	199.76	43.45	243.21
2001-02	201.54	49.31	250.85
2002-03	204.21	50.32	254.53
2003-04	211.41	54.50	265.91
2004-05	220.93	66.86	287.79
2005-06	257.27	67.96	325.23
2006-07	266.08	109.42	375.50
2007-08	284.41	134.05	418.46
2008-09	177.32	159.87	337.19
2009-10	226.10	175.54	401.64
2010-11	297.83	254.81	552.64
2011-12	330.16	333.34	663.50
2012-13	399.73	466.71	866.44
2013-14	472.12	509.11	981.23

Source: Export Promotion Bureau

The leather industry has crossed the record $1-billion mark in exports in the first ten months of this fiscal year on the back of competitive pricing and quality improvement (Figure 5.1). Between July and April, the leather industry exported $1.06 billion of products, whereas the exports receipts for the whole of fiscal 2012-13 stood at $980.67 million, according to data from the Export Promotion Bureau.

Leather businessmen are now confident of meeting the export target of $1.21 billion set by the Government for this year, and the sector will be able to earn as much as $2 billion next fiscal year if the present trend continues. Leather goods exports rose 70.14 percent to $197.36 million in the first ten months of this fiscal year, while it was 33.90 percent to $424.05 million in leather and 30.24 percent to $443.54 million in footwear, EPB data shows. Beyond work orders encouraged entrepreneurs to park more funds in the sector: opening of letters of credit for capital machinery imports rose by 118.58 percent to $4.8 million year-on-year in the July-February period, according to Bangladesh Bank.

Figure 5.1: Export of Leather and Leather Products

The improved quality also helped in winning the confidence of buyers.Many leather goods and footwear makers are producing high quality products targeting the middle- and higher-end segments of the market, which ultimately helps in earning more in unit price. Between July and January, leather shipment rose 45.38 percent year-on-year in terms of value, according to BB. Timely delivery is another reason for the increase in export earnings, Bangladesh exports leather products mainly to Italy, New Zealand, Poland, the UK, Belgium, France, Germany, the US, Canada and Spain. Also, Japan, India, Nepal, Australia and some other countries are emerging as potential importers of Bangladeshi leather goods. Bangladesh now exports only 0.5 percent of the global leather and leather goods market worth $215 billion, according to industry insiders. The country will be able to earn at least $5 billion in exports from leather, leather goods and footwear in the next decade if it can properly address health, environment and compliance issues in the sector.

5.2. Economic Impact of Environmental Issues in Leather Manufacturing Industries

Environmental issues are the main elements of sustainable development. Environmental distortions, producers' cost could be less than those borne by society as a whole. Environmental externalities can be represented by the gap between private and social costs, which result from the damages of pollution intensive production. If the private costs would be equated with social costs, the pattern of resource allocation becomes socially efficient. For this, either appropriate taxes or subsidies or creation of missing market for pollution or appropriate property right are necessary to internalize the externalities.

Environmental Economics illustrates several points, which help to put the following discussion in a sharper perspective. First, the environmental argument embraces economic and non- economic issues although the discussion here focuses on only one economic issue- specially, that of allocative efficiency. Second, most policies are intended to achieve rather general goals and are not aimed specially for the leather industry. Policies are treated as exogenous factors and their consequences are assessed solely in terms of their impact on industry's economic performance- in particular its cost competitiveness in international markets. Finally, both production and consumption may have adverse external effects on the environment (UNIDO, 2001).

5.3. Findings from Field Survey

5.3.1. Demographic Information

The Table 5.2 shows the demographic profile of the respondents. About 63% are male and 37% are females. Most of the respondents are married (57%), where only 1% is separated. About 46% age between 31-40 years old. Majority of the respondent's (59%) have more than 4 years' experience. Educational qualifications such as Illiterate, Primary, High School, Bachelor's, Masters are 17%, 21%, 33%, 17% and 11% respectively.

Table 5.2 : Demographic Profile of Respondents

Characteristics	Frequency	Percentage
Gender		
Male	207	63%
Female	119	37%
Marital Status		
Married	187	57%
Unmarried	123	38%
Divorced	11	4%
Separated	5	1%
Age		
Less than 20 years	21	6%
21-30 years	105	32%
31-40 years	149	46%
41-50 years	37	11%
51- 60 years	11	4%
More than 60 years	1	1%
Educational Qualification		
Illiterate	56	17%
Primary	68	21%
High School	105	33%
Bachelor‘s	57	17%
Master‘s	35	11%
Doctoral	0	0%
Others	5	1%
Experience in this organization		
Less than 1 years	24	7%
1-3 years	43	13%
4-6 years	192	59%
7-9 years	24	8%
More than 10 years	43	13%

5.3.2. Social Impact

5.3.2.1. Measurement Model for Social Impact

Average Variance Extracted (AVE) is a measure to assess convergent validity. AVE is the average amount of variance in indicator variables that a construct is managed to explain. AVE for each construct can be obtained by sum of squares of completely standardized factor loadings divided by this sum plus total of error variances for indicators. For the completely standardized solution all indicator and latent variables are scaled to have unit variance. Convergent validity is considered to be satisfactory when measurement constructs have an average variance extracted (AVE) of at least 0.50 and items loading are well above 0.50 (Hair et al., 1995).Reliability and validity of the measures should be assessed before testing the hypothesis (Bagozziet al., 1991). The reliability was evaluated by considering composite reliability and Cronbach's alpha. Composite reliability is defined as the total amount of true score variance in relation to the total score variance. Thus, composite reliability corresponds to the conventional notion of reliability in classical test theory. Cronbach's alpha is a statistic. It is generally used as a measure of internal consistency or reliability of a psychometric instrument. In other words, it measures how well a set of variables or items measures a single, one-dimensional latent aspect of individuals. Generally, many quantities of interest in medicine, such as anxiety or degree of handicap, are impossible to measure explicitly. In such cases, we ask a series of questions and combine the answers into a single numerical value. The reliability is considered to be satisfactory when composite reliability and Cronbach's alpha have value greater than 0.70. In statistics, the coefficient of determination, denoted R^2pronounced R squared, is a number that

indicates how well data fit a statistical model – sometimes simply a line or a curve. An R^2 of 1 indicates that the regression line perfectly fits the data, while an R^2 of 0 indicates that the line does not fit the data at all. This latter can be because the data is more non-linear than the curve allows, or because it is random. It is a statistic used in the context of statistical models whose main purpose is either the prediction of future outcomes or the testing of hypotheses, on the basis of other related information. It provides a measure of how well observed outcomes are replicated by the model, as the proportion of total variation of outcomes explained by the model. Table 5.3 presents the average variance extracted (AVE),composite reliability, R Square and Cronbach's alpha while Table 5.4 shows the item loading. Figure 5.3 shows the measurement model for social impact.

Table 5.3: Measurement Model for Social Impact

Constructs	AVE	Composite Reliability	R Square	Cronbachs Alpha
Service and Facility	0.7359	0.8930	0.7319	0.8197
Working Environment	0.8712	0.9530		0.9328
Social Security	0.6795	0.8945		0.8428
Health Security	0.8723	0.9534		0.9296
Social Impact	0.8026	0.9241		0.8766

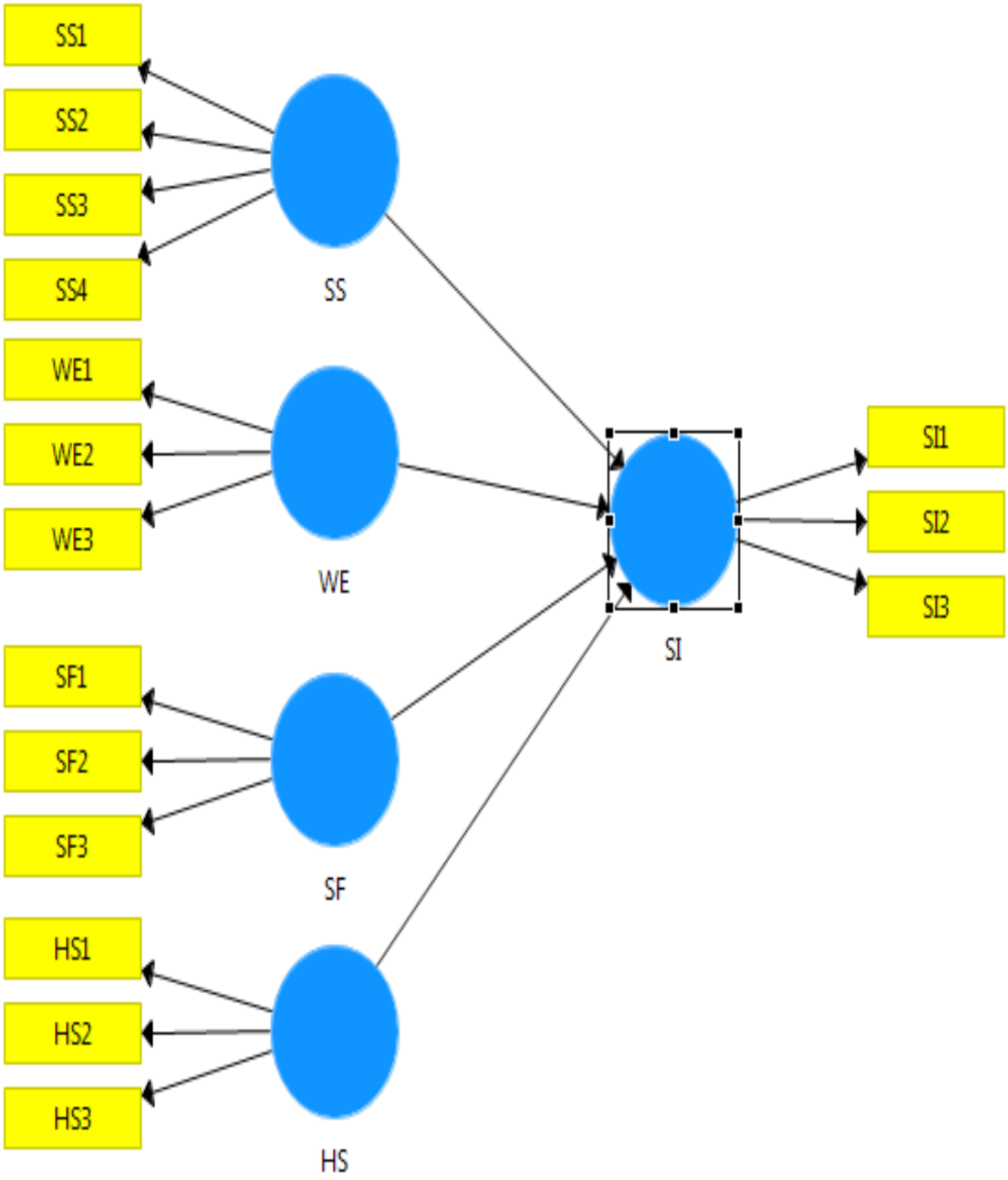


Figure 5.2: Measurement Model for Social Impact

The Cronbach's alpha values ranged from 0.81 to 0.93, and composite reliability ranged from 0.89 to 0.95 which indicates adequate internal consistency. Item loading, ranged from 0.81 to 0.97 and AVE, ranged from 0.67 to 0.87, are greater than the recommended level. Therefore, conditions for convergent validity were met.

Table 5.4: Item Loading for Social Impact

Items	Service and Facility	Working Environment	Social Security	Health Security	Social Impact
SS1	0.5363	0.0843	**0.8222**	-0.0383	0.5608
SS2	0.4438	0.0659	**0.8148**	-0.0722	0.5197
SS3	0.4789	0.1909	**0.8161**	-0.1888	0.5251
SS4	0.5193	0.1734	**0.8438**	-0.1723	0.5760
WE1	-0.1329	**0.9582**	0.1339	-0.8292	-0.0842
WE2	-0.0915	**0.9195**	0.1586	-0.8061	-0.0654
WE3	-0.0283	**0.9219**	0.1934	-0.8128	-0.0082
SI1	0.6445	-0.0013	0.5431	0.0006	**0.8395**
SI2	0.7693	-0.1388	0.6185	0.1714	**0.9157**
SI3	0.8047	-0.0572	0.6155	0.0711	**0.9299**
SF1	**0.8161**	-0.1426	0.5183	0.2030	0.6810
SF2	**0.8526**	-0.1084	0.4903	0.1000	0.6846
SF3	**0.9027**	-0.0569	0.5386	0.0803	0.7658
HS1	0.1198	-0.8426	-0.1622	**0.9471**	0.0427
HS2	0.0932	-0.8218	-0.1852	**0.8805**	0.0650
HS3	0.1687	-0.8099	-0.0973	**0.9719**	0.1194

On the other hand, the discriminant validity was examined by the square root of the AVE and Cross loading matrix. The square root of the AVE of a construct must be larger than its correlation with other construct for satisfactory discriminant validity (Henseler et al., 2009). The square roots of AVE, shown in Table 5.6, were greater than their corresponding correlation, representing that our data had good discriminant validity.

Table 5.5: Correlation Matrix for Social Impact

	SF	WE	SS	HS	SI
SF	1				
WE	-0.1174	1			
SS	0.6014	0.1566	1		
HS	0.1465	-0.8708	-0.1431	1	
SI	0.8297	-0.0771	0.6626	0.095	1

Table 5.6: Square Roots of AVE (Correlation Matrix)

	SF	WE	SS	HS	SI
SF	.8579				
WE	-0.1174	.9334			
SS	0.6014	0.1566	.8243		
HS	0.1465	-0.8708	-0.1431	.9340	
SI	0.8297	-0.0771	0.6626	0.095	.8959

5.3.2.2 The Structural Model for Social Impact

The structural model was constructed to identify the path direction and strength of relationships among the latent variable in the research model. Bootstrapping method was used to test the hypothesis. We tested the relationship between endogenous and exogenous variable. Table 5.7 showed the path coefficient (β) and t-statistics. It was found that service and facility (t = 15.7547,β = 0.6599) and social security (t = 5.5610, β = 0.2730) had positive influence on social impact of leather industry in Bangladesh, while working environment (t = 0.6281, β =0.0409) and health security (t = 0.0264, β = 0.0023) had no significant effect on social impact of leather industry in Bangladesh. Therefore, among the primary hypothesis, H1and H3were supported, whereas H2 and H4 were not supported. The model explains 73.19% of the variance on social impact of leather industry in Bangladesh (R^2 = .7319).

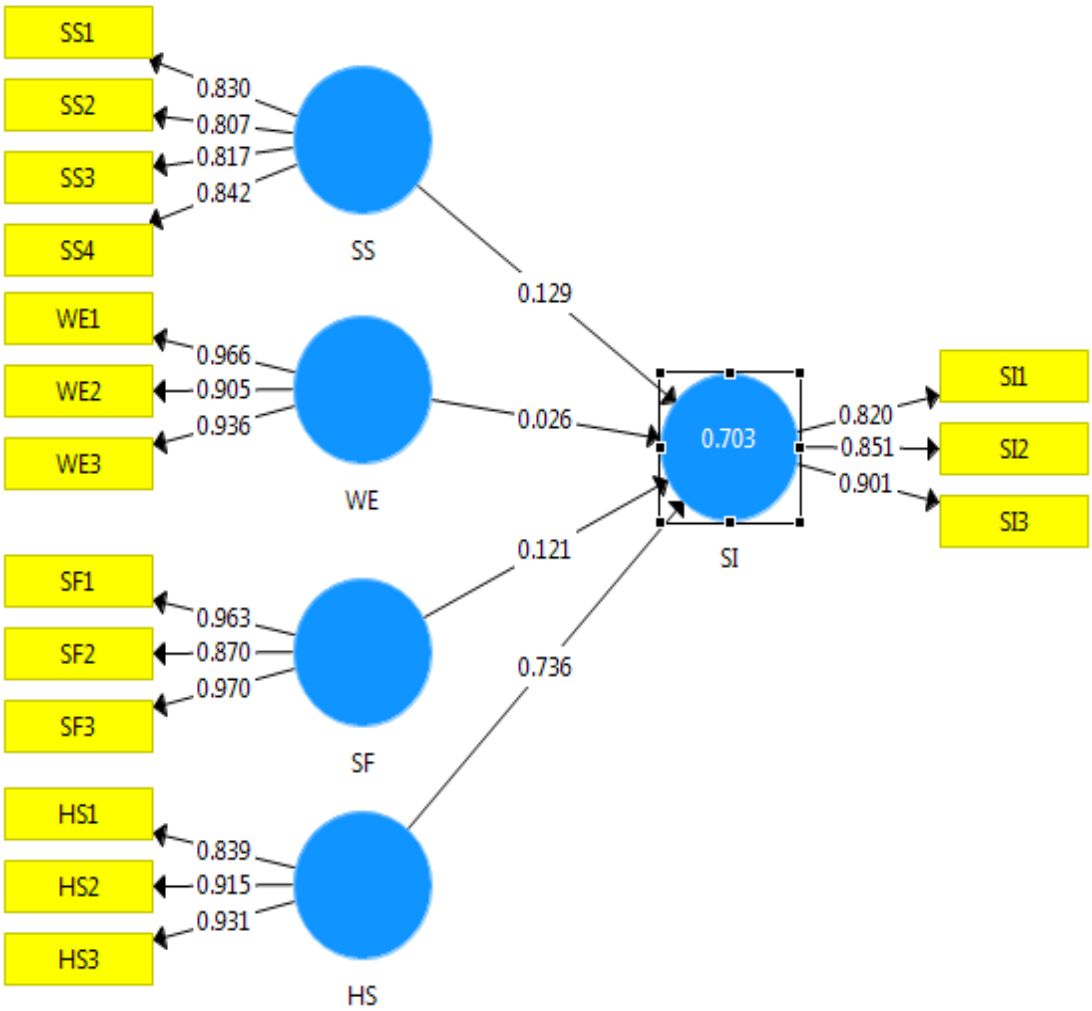


Figure 5.3: Structural Model for Social Impact

Table 5.7: Structural Model for Social Impact

Path	Coefficient	Standard Deviation	t-statistics	Comments
SS -> SI	0.2730	0.0488	5.561	Supported
WE -> SI	-0.0409	0.0644	0.6281	Not Supported
SF -> SI	0.6599	0.0420	15.7547	Supported
HS -> SI	0.0023	0.0652	0.0264	Not Supported

5.3.3. Economic Impact

5.3.3.1. Measurement Model for Economic Impact

Reliability and validity of the measures should be assessed before testing the hypothesis (Bagozziet al., 1991). The reliability was evaluated by considering compositereliability and Cronbach's alpha. The reliability is considered to be satisfactory when compositereliability and Cronbach's alpha have value greater than 0.70. Convergent validity is considered to be satisfactory when measurement constructs have an average variance extracted (AVE) of at least 0.50 and items loading are well above 0.50 (Hair et al., 1995). Table 5.8 presents the composite reliability, Cronbach's alpha and average variance extracted (AVE), while Table 5.9 shows the item loading. And Figure 5.5 shows the Structural model for Economic Impact.

Table 5.8: Measurement Model for Economic Impact

Constructs	AVE	Composite Reliability	R Square	Cronbachs Alpha
Wages and Productivity	0.7389	0.9188	0.6921	0.8824
Employment Impact	0.7977	0.9219		0.8728
Job Security	0.8927	0.9136		0.9521
Personal Income	0.8738	0.9339		0.9300
Economic Impact	0.7355	0.8228		0.7993

The Cronbach's alpha values ranged from 0.79 to 0.95, and composite reliability ranged from 0.82 to 0.93 which indicates adequate internal consistency. Item loading, ranged from 0.81 to 0.96 and AVE, ranged from 0.73 to 0.89, are greater than the recommended level. Therefore, conditions for convergent validity were met.

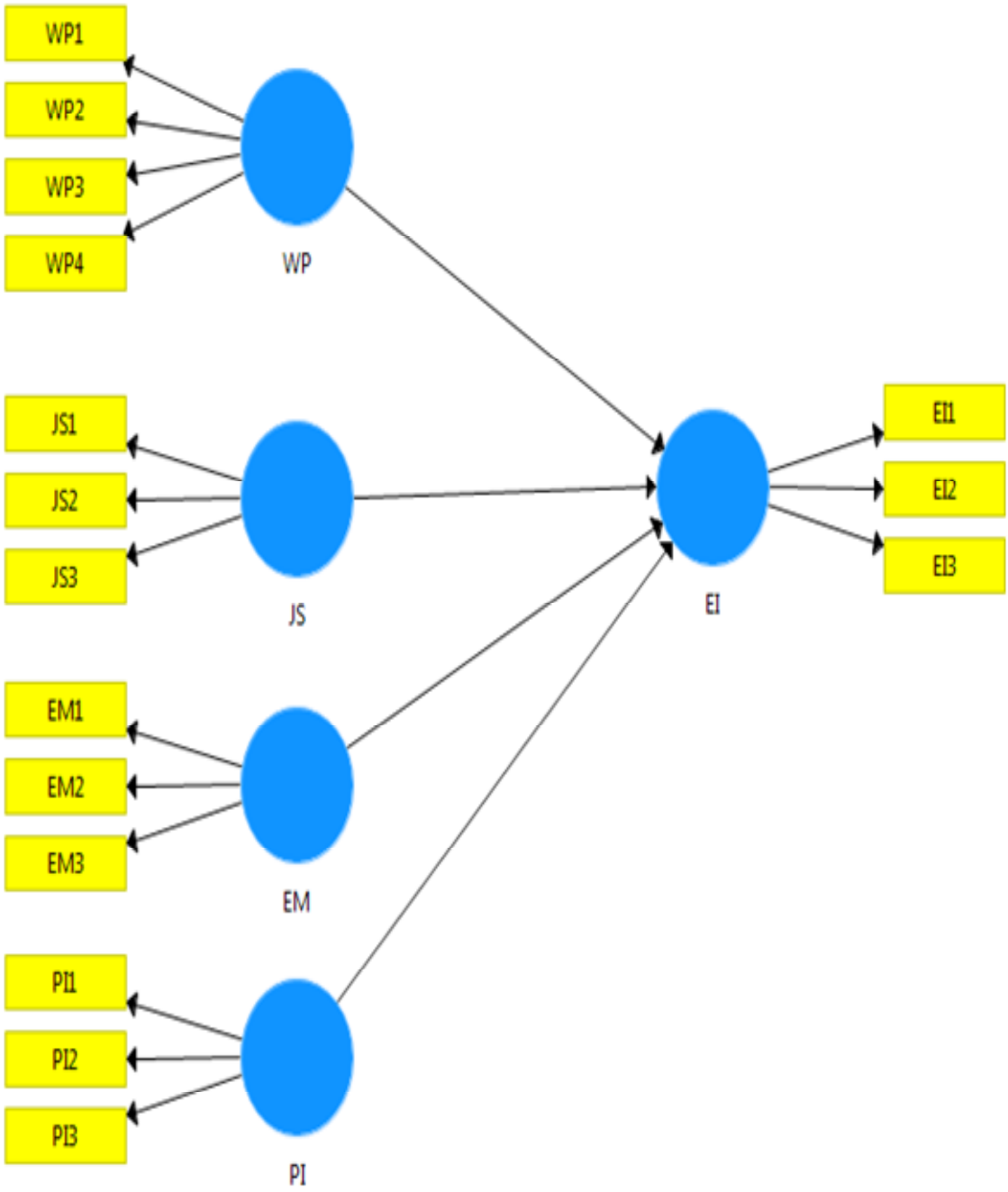


Figure 5.4: Measurement Model for Economic Impact

Table 5.9: Item Loading for Economic Impact

Items	Wages and Productivity	Employment Impact	Job Security	Personal Income	Economic Impact
WP1	**0.8866**	0.7106	-0.0894	0.0816	0.6891
WP2	**0.8588**	0.5797	-0.0199	-0.0199	0.5995
WP3	**0.8141**	0.5093	-0.1764	0.0475	0.5225
WP4	**0.8772**	0.6604	-0.111	0.0776	0.6692
JS1	-0.1096	-0.0716	**0.9641**	-0.8219	-0.1262
JS2	-0.1136	-0.0499	**0.9082**	-0.805	-0.0873
JS3	-0.0407	0.0077	**0.9294**	-0.8107	-0.0188
EM1	0.5376	**0.8347**	0.0215	-0.0334	0.6416
EM2	0.6620	**0.9130**	-0.1327	0.1629	0.7667
EM3	0.7215	**0.9289**	-0.0401	0.0594	0.8042
EI1	0.5913	0.6725	-0.1256	0.1909	**0.8141**
EI2	0.6203	0.6919	-0.112	0.0975	**0.8552**
EI3	0.6578	0.7681	-0.0491	0.0792	**0.9014**
PI1	0.0266	0.0342	-0.8393	**0.9642**	0.1190
PI2	0.0199	0.0502	-0.8185	**0.8641**	0.0829
PI3	0.0892	0.1098	-0.8049	**0.9620**	0.1680

On the other hand, the discriminant validity was examined by the square root of the AVE and cross loading matrix. The square root of the AVE of a construct must be larger than its correlation with other construct for satisfactory discriminant validity (Henseleret al., 2009). The square roots of AVE, shown in Table 5.11, were greater than their corresponding correlation, representing that our data had good discriminant validity.

Table 5.10: Correlation Matrix for Economic Impact

	WP	EM	JS	PI	EI
WP	1				
EM	0.7227	1			
JS	-0.1123	-0.0606	1		
PI	0.0566	0.0763	-0.8664	1	
EI	0.7273	0.8303	-0.1095	0.1408	1

Table 5.11 : The Square Roots of AVE (Correlation Matrix)

	WP	EM	JS	PI	EI
WP	.8595				
EM	0.7227	.8931			
JS	-0.1123	-0.0606	.9341		
PI	0.0566	0.0763	-0.8664	.9347	
EI	0.7273	0.8303	-0.1095	0.1408	.8576

5.3.3.2. The Structural Model for Economic Impact

The structural model was constructed to identify the path direction and strength of relationships among the latent variable in the research model. Boot strapping method was used to test the hypothesis. We tested the relationship between endogenous and exogenous variable. Table 5.12 showed the path coefficient (β) and t-statistics. It was found that wages and productivity (t = 6.1996, β = 0.2802), employment impact(t = 14.3071, β = 0.6198) and personal income (t = 2.1532, β = 0.1561) had positive influence on economic impact of leather industry in Bangladesh, while job security (t = 1.4186, β = 0.0913) had no significant effect on economic impact of leather industry in Bangladesh. Therefore, among the primary hypothesis, H5, H6 and H8 were supported, whereas H7 was not supported. The model explains 69.21% of the variance on economic impact of leather industry in Bangladesh (R^2= .6921).

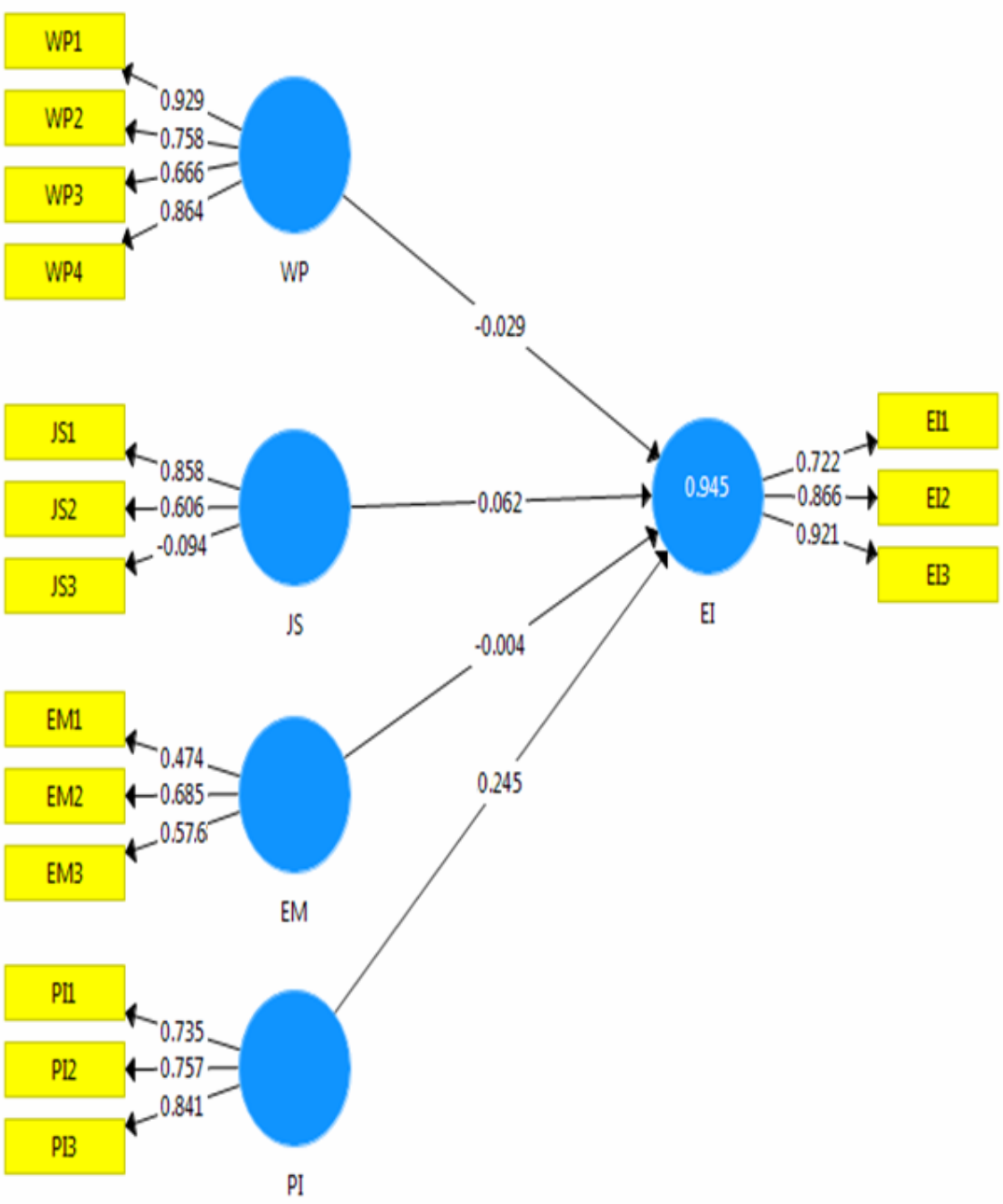


Figure 5.5: Structural Model for Economic Impact

Table 5.12: Structural Model for Economic Impact

Path	Coefficient	Standard Deviation	t-statistics	Comments
WP -> EI	0.2802	0.0454	6.1996	Supported
JS -> EI	0.0913	0.0762	1.4186	Not Supported
EM -> EI	0.6198	0.0434	14.3071	Supported
PI -> EI	0.1561	0.0795	2.1532	Supported

CHAPTER 6
DISCUSSION

6.1. Discussion on Export Performance Findings

In order to strengthen the leather manufacturing sector, it has been identified as the thrust sector in the current Industrial Policy. In the export policy leather products have been listed as the highest priority sector and the finished leather has been listed as special developing sector and necessary steps have been taken up to ensure the proper development of this sector. (Source: EPB 2008 and BER 2009). The location of the production site for world leather goods and its consumer's show that at present most of the leather goods are produced in so-called newly industrialized and developing countries. The majority of the products, however, are consumed by highly developed, affluent countries. World regional movement of the production site of leather goods show that it has been moving away from countries with high labor cost to countries with cheap labor cost. Besides, Bangladesh has a huge raw material base which provides extra opportunities for the development of this sector. These days world footwear production is absolutely being dominated by China, India, Thailand, Indonesia, Pakistan and other developing countries. Most of the leather goods, however, is being consumed by the USA, EU, Japan and Canada. The USA, EU, Japan and Canada are, however, consuming most of the leather goods. The study found mixed findings. Some hypotheses are accepted, whereas, some hypotheses are rejected. The following section discussed the findings in details.

6.1.1 Evolution of the Export Policies

An important element of trade policy reform has been the use of a set of generous support and promotional measures for exports. While the import liberalisation was meant to correct the domestic incentive structure in the form of reduced protection for import-substituting sectors, export promotion schemes were undertaken to provide the exporters with an environment where the previous bias against export-oriented investment could be reduced significantly. Important export incentive schemes available in Bangladesh include, subsidised rates of interest on bank loans, duty free import of machinery and intermediate inputs, cash subsidy, and exemption from value-added and excise taxes. Table 6.1 summarises some of the most important incentive schemes that have been put in place in the country. A few sectors, especially the ready-made garments (RMG), have been major beneficiaries of these reforms. Apart from supporting the main items, non-traditional sectors with high export potentials have also been identified as privileged activities, for which special facilities are offered through export policies. For example, in the Export Policy 2009-12, software and ICT products, agro products (including agro-processed goods), light engineering goods (including auto-parts and bicycles), leather goods, home textile, toiletries and ship building were identified as ‘thrust sectors’ and several incentives such as the provision of project loan with low interest rate on a priority basis, income tax rebate, cash support with other financial facilities, export credit under relaxed conditions and with subsidized interest rate, concessions on air freight, support for marketing, etc.

Table 6.1: Important Export-Incentive Schemes in Bangladesh

Scheme	Nature of Operation
Export Performance Benefit (XPB)	This scheme was in operation from mid-1970s to 1992. It allowed the exporters of non traditional items to cash a certain proportion of their earnings (known as entitlements) at a higher exchange rate of WES. In 1992 with the unification of the exchange rate system, the XPB scheme ceased.
Bonded Warehouse	Exporters of manufactured goods are able to import raw materials and inputs without payment of duties and taxes. The raw materials and inputs are kept in the bonded warehouse. On the submission of evidence of production for exports, required amount of inputs is released from the warehouse. This facility is extended to exporters of RMG, specialized textiles such as towels and socks, leather, ceramic, printed matter and packaging materials, who are required to export at least 70 percent of their produce.
Duty Drawback	Exporters of manufactured products are given a refund of customs duties and sales taxes paid on the imported raw materials that are used in the production of goods exported. Exporters can also obtain drawbacks on the value added tax on local inputs going into production.
Duty Free Import of Machinery	Import of machineries without payment of any duties for production in the export sectors.
Back to Back Letter of Credits (L/Cs)	It allowed the exporters to open L/Cs for the required import of raw materials against their export L/Cs in such sectors as RMG and leather goods. The system is considered to be one of the most important incentive scheme for the RMG export.
Cash Subsidy	The scheme was introduced in 1986. This facility is available mainly to exporters of textiles and clothing who choose not to use bonded warehouse or duty drawback facilities. Currently, the cash subsidy is 25 percent of the free on board export value. In recent times, cash subsidies have been offered to agro products exporters.
Interest Rate Subsidy	It allows the exporters to borrow from the banks at lower bands of interest rates of 8-10 percent against 14-16 percent of normal charge.

Tax Holiday	First introduced under the Industrial Policy of 1991-93, this incentive allows a tax holiday for exporter for 5-12 years depending on various conditions.
Income Tax Rebate	Exporters are given rebates on income tax. Recently this benefit has been increased. The advance income tax for the exporters has been reduced from 0.50 percent of export receipts to 0.25 percent.
Retention of Earnings in Foreign Currency	Exporters are now allowed to retain a portion of their export earnings in foreign currency. The entitlement varies in accordance with the local value addition in exportable. The maximum limit is 40 percent of total earnings although for low value added products such as RMG the current ceiling is only at 7.5 percent.
Export Credit Guarantee Scheme	Introduced in 1978 to insure loans in respect of export finance, it provides pre-shipment and post-shipment (and both) guarantee schemes.
Special Facilities for Export Processing Zones (EPZs)	To promote exports, currently a number of EPZs are in operation. The export units located in EPZs enjoy various other incentives such as tax holiday for 10 years, duty free imports of spare parts, exemption from value added taxes and other duties.

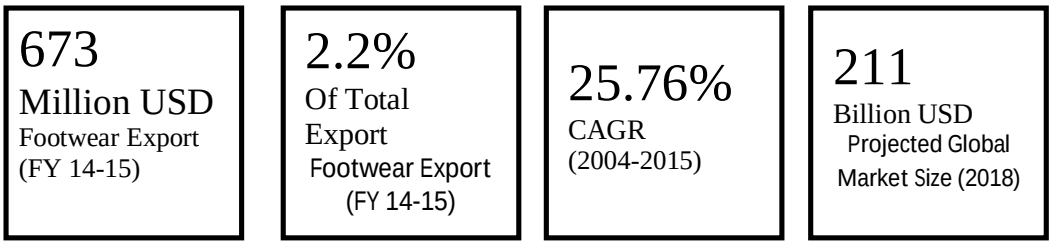
Apart from the incentive schemes, the Government has also provided generous institutional support to the exporters. Various institutions such as the Duty Exemption and Drawback Offices (DEDO), and the Export Promotion Bureau provide promotional, directional, and marketing assistance and particularly the activities of the latter are worth pointing out that include, amongst others, providing input to Government's trade policy, assisting DEDO, disseminating trade information, undertaking national export training programmes, organizing and participating trade fairs, and managing quota allocations for RMG units.

6.1.2. Competitive Edge of Leather Industry

Although RMG provides 80% of Bangladesh's total exports, several sectors have popped up over the last decade which represent potential for greater export diversification. Footwear is one such sector. Footwear exports have grown almost 10

times over the last decade, from 68 million USD in 2004 to 673 million USD in 2015. With eyes set on lucrative markets such as the EU, USA and India, Bangladesh's footwear industry is in a prime position to play a larger role in Bangladesh's export fortunes over the next decade.

Figure 6.1: Growth Rate of Leather Industry Around the World



Sources: EPB, Transparency Market Research on Footwear

Figure 6.2: Footwear Exports

SOURCE: EPB

Figure 6.3: Global Footwear Demand

Source: TRANSPARENCY MARKET RESEARCH ON FOOTWEAR

Bangladesh's footwear industry has experienced a meteoric rise since the last decade. With a CAGR of 25.76% per year, total footwear exports grew from 68 million USD in 2004 to 673 million USD in 2015. This growth parallels the current growth of the global footwear market, which is currently forecasted to grow to 211 billion USD by 2018. At the moment, Bangladesh only holds 0.5% of this market.

6.1.3. Strong Backward linkages to the leather industry

The growth of the local footwear industry is boosted to a large extent by the growth of the overall leather industry. Recently, total export has exceeded USD 1 billion mark in 2014 for the leather sector which has been due to rising global demand and renewed interest amongst local entrepreneurs for manufacturing footwear. Some international investors have forayed in the sector setting up factories in local Export Processing Zones (EPZs).

The strong leather industry in Bangladesh gives unique advantages to the footwear industry, as there is the opportunity of total vertical integration in the value chain, from raw leather to the final product.

For instance, Bangladesh produces superior quality leather from local livestock, which is subsequently processed by tanneries concentrated around the capital city. The annual production of leather hovers around 250 Million square feet each year with supply peaking during the religious festivals of Eid, especially Eid-ul-Adha.

The tanneries in Bangladesh have often come under criticism for being environmentally unfriendly. This has prompted the government to build a 200-acre Leather Industrial Park in Savar at a cost of USD 60 Million.Thepark will include state of art Effluent Treatment Plants (ETPs) to treat the waste generated while processing the leather in the tanneries.

As the majority of leather is exported to the EU (54%), the recent decline in demand in EU market ofleather hides has adversely affected the Bangladesh leather market.

Figure 6.4: Regionwise Markets for Bangladeshi Leather Products

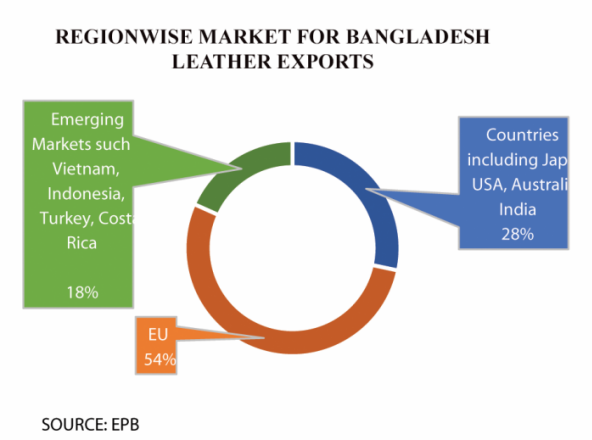


Figure 6.5: Prices of Hides in Global Market

This decline in demand has been reflected in a fall in global hide prices, prompting local buyers being less likely to buy the raw hides as well. As a result, 40% of the hides bought by tannery warehouses since last Eid-ul-Adha is still unsold.

If this global demand deficit persists, then there is an opportunity for the rawhide sellers to shift their focus to local footwear manufacturers, provided that the expanding footwear industry also has matching demand for their excess hide supply.

6.1.4. The Emergence of Non-Leather Footwear as an Export Sector:

The crackdown on compliance in the leather industry, especially the insistence on shifting tanneries from Hazaribagh to Savar, has prompted many footwear manufacturers to try their hand in the non-leather footwear sub-sector, which, at the moment, is free from such regulation.

Over the years, Bangladesh has emerged as a leading exporter of quality, low price non-leather footwear to key global retailers such as H&M, Decathlon, Kappa, Sketchers, Fila, and Puma. Exports from this sector stood at 171.57 million USD in FY 13-14.

This shift is also driven by the comparatively low input costs of non-leather footwear.

While a leather shoe costs $9 to make, a pair of non-leather shoes can cost as low as $3.2.

6.1.5. Opportunities for Growth in Asian Markets

The growing middle class segments in key Asian markets such as China and India means that products such as footwear are going to be increasingly seen as more brand and status-driven instead of being necessities. This will create the opportunity to market higher value products to these regions.

In fact, there is good potential for growth in Bangladesh's domestic market as well. Rising per capita income, along with the growing MAC segment, shows encouraging signs for both entry level and higher value products in the future. Targeting the top Export Destinations:

Figure 6.6: Regionwise Market for Bangladeshi Footwear Exports

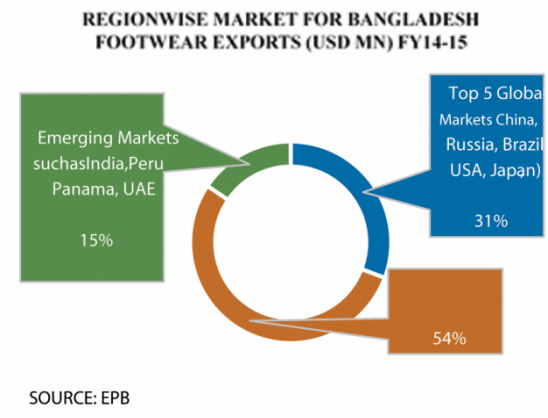


Table 6.2: Top 10 Footwear Markets

TOP 10 FOOTWEAR MARKETS, 2013 AND 2018

Ranking	2013	2018
1	USA	USA
2	China	China
3	Russia	Russia
4	Brazil	Brazil
5	Japan	Mexico
6	Mexico	Japan
7	Germany	United Kingdon
8	France	Germany
9	United Kingdom	Italy
10	Italy	France

SOURCE: EUROMONITOR

A good strategy for footwear manufacturers would be shift their focus to the top export destinations in the long run. At the moment, the EU is the largest export destination of Bangladesh's footwear industry. However, even in 2013 only 4 EU countries

(Germany, France, United Kingdom, Italy) feature in the top 10 global footwear markets (source: Euromonitor).

To gain a greater share of the pie, Bangladeshi footwear manufacturers should target both established top markets such as USA, China and Japan and also emerging markets such as Mexico, which will be thriving by 2018.

6.2 Discussion on Field Survey Findings

Hypothesis 1: There is a strong positive relationship between service and facility and social development.

The study found that service and facility ($t = 15.7547$, $\beta = 0.6599$, $p < 0.05$) strong positive relationship between social facility and social development. According to Hair and Ringle (2013) T value should exceed 1.96. Here, the calculative value of T is 15.754, so Service and facility directly influence the social development of stakeholder of leather industry in Bangladesh. If leather industry provides more facilities to his manager and worker, it will increase their social life. The social development is focused on promoting the service and facility to the worker and manager and their dependents. Integrated Facility Services creates synergies based on management expertise and service delivery experience. Through synergies leather industry can maximize resource-optimization and cost-efficiency. Synergies are obtained through a combination of management and service delivery. It helps to reduce costs and focus on their core business. A partnership develops from Integrated Facility Services ability to combine people, methods and management for optimal resource allocation in the leather industry.

Hypothesis 2: There is a strong positive relationship between working environment and social development

The study found that working environment ($t = 0.6281$, $\beta = 0.0409$, $p > 0.05$) did not find any positive relationship between working environment and social development. According to Hair and Ringle (2013) T value should exceed 1.96. Here, the calculative value of T is 0.6281.Although research shows that social development depends on offering your employees generous salaries and flexible vacation policies, this study did not find any relationship between working environment and social development. The leather industry in Bangladesh failed to ensure the better working environment. Employees in this industry are highly dissatisfied with the working environment. Many social workers and professionals in the developed countries are reluctant to come forward when they witness unsafe practices, because they fear how their employer may react. The leather industry in Bangladesh should make policy which provides guidelines regarding the working environment required foreffective and ethical social work practice alignment of organizational and social work practice objectives; protection of the interests of service.

Hypothesis 3: There is a strong positive relationship between social security and social development

Social security ($t = 5.5610$, $\beta = 0.2730$, $p < 0.05$). This study found strong positive relationship between social security and social development. According to Hair and Ringle (2013) T value should exceed 1.96. Here, the calculative value of T is 5.5610, so the social security system is stronger in economies in which agents of similar age differ significantly with respect to labor earnings and wealth because of idiosyncratic income uncertainty which influence the social development of community.

Hypothesis 4: There is a strong positive relationship between health security and social development

Calculative value of Health security is (t = 0.0264, β = 0.0023, p > 0.05).This study did not find any significant relationship between health security and social development. According to Hair and Ringle (2013) T value should exceed 1.96. Here, the calculative value of T is 0.0264, so the leather industry in Bangladesh failed to ensure the health security of workers. The leather industry in Bangladesh should try to improve the health facilities of worker. Health security is a state in which the organization and its people are prepared for, protected from, and resilient in the face of incidents with health consequences. The threats and risks that communities face are diverse—they can be intentional or naturally occurring and can result from both persistent and emerging threats, including severe weather, infectious diseases, hazardous material exposures, and terrorist attacks. The impact of these incidents can be exacerbated by vulnerabilities that vary from community to community, such as a large number of at-risk individuals, weak social networks, unprotected critical infrastructure, a lack of training and exercising for health security, and a lack of available countermeasures for emerging infectious diseases.

Health security also depends on the ingenuity of individuals and connected, healthy communities. Communities contribute to the health security by building and leveraging local assets and skills, enhancing and protecting their infrastructure, facilitating citizen engagement, fostering interpersonal connections among community members, and cultivating relationships among local organizations. In addition, many communities have contributed to health security by developing and strengthening relationships with

faith-based organizations, academic institutions, and private industry. The Government should maintains a proactive posture, works to build and support a culture of resilience, develops key skills and core capabilities in the federal and nonfederal workforce, partners with private industry to ensure a manufacturing infrastructure to produce medical countermeasures, and acts as a safety net in response to large-scale emergencies.

Hypothesis 5: There is a strong positive relationship between personal income and economic development

Personal income ($t = 2.1532$, $\beta = 0.1561$, $p < 0.05$) had positive influence on economic impact of leather industry in Bangladesh. According to Hair and Ringle (2013) T value should exceed 1.96. Here, the calculative value of T is 2.1532. Personal income is an individual's total earnings from wages, investment interest, and other sources. In our Country the most widely cited personal income statistics are the Bureau of Economic Analysis's personal income and the Census Bureau's per capita money income. The two statistics spring from different traditions of measurement personal income from national economic accounts and money income from household surveys. BEA's statistics relate personal income to measures of production, including GDP, and is considered an indicator of consumer spending. Census's statistics provide detail on income distribution and demographics and are used to produce the nation's official poverty statistics. In Bangladesh, Bureau of Business Statistic (BBS) analyzes the personal income of the citizens. This study found strong positive relationship between personal income and economic development. Income patterns are evident on the basis of age, sex, race and educational characteristics.

Hypothesis 6: There is a strong positive relationship between employment impact and economic development

Employment impact ($t = 14.3071$, $\beta = .6198$, $p < 0.05$) had positive influence on economic impact of leather industry in Bangladesh Economic impacts are effects on the level of economic activity in a given area. According to Hair and Ringle (2013) T value should exceed 1.96. Here, the calculative value of T is 14.3071. They may be viewed in terms of: (1) business output (or sales volume), (2) value added (or gross regional product), (3) wealth (including property values), (4) personal income (including wages), or (5) Jobs. Any of these measures can be an indicator of improvement in the economic well-being of area residents, which is usually the major goal of economic development efforts. This study found strong positive relationship between employment impacts and economic development. Employment impacts the economy in a country.

Hypothesis 7: There is a strong positive relationship between job security and economic development

Job security ($t = 1.4186$, $\beta = 0.0913$, $p > 0.05$) had no significant effect on economic impact of leather industry in Bangladesh. According to Hair and Ringle (2013) T value should exceed 1.96. Here, the calculative value of T is 1.4186. Job security is the probability that an individual will keep his or her job; a job with a high level of job security is such that a person with the job would have a small chance of becoming unemployed. Basic economic theory holds that during periods of economic expansion businesses experience increased demand, which in turn necessitates investment in more capital or labor. When businesses are experiencing growth, job confidence and security

typically increase. The opposite often holds true during a recession: businesses experience reduced demand and look to downsize their workforces in the short term.

Governments and individuals are both motivated to achieve higher levels of job security.

Governments attempt to do this by passing laws which makes it illegal to fire employees for certain reasons. Individuals can influence their degree of job security by increasing their skills through education and experience, or by moving to a more favorable location. The official unemployment rate and employee confidence indexes are good indicators of job security in particular fields. These statistics are closely watched by Economists, Government officials, and banks. Workers facing a high risk of job loss are more vulnerable, especially in countries with smaller social safety nets like Bangladesh. In leather industry, jobs are less secured and study did not find any relationship between job security and economic development. Unions also strongly influence job security. Jobs that traditionally have a strong union presence such as many government jobs and jobs in education, healthcare and law enforcement are considered very secure while many non-unionized private sector jobs are generally believed to offer lower job security, although this varies by industry and country.

Hypothesis 8: There is a strong positive relationship between wages and productivity and economic development

It was also found that wages and productivity ($t = 6.1996$, $\beta = 0.2802$, $p < 0.05$), had positive influence on economic impact of leather industry in Bangladesh. According to Hair and Ringle (2013) T value should exceed 1.96. Here, the calculative value of T is 6.1996. Economic theory says that the wage a worker earns, measured in units of

output, equals the amount of output the worker can produce. Otherwise, competitive firms would have an incentive to alter the number of workers they hire, and these adjustments would bring wages and productivity in line. If the wage were below productivity, firms would find it profitable to hire more workers. This would put upward pressure on wages and, because of diminishing returns, downward pressure on productivity. Conversely, if the wage were above productivity, firms would find it profitable to shed labor, putting downward pressure on wages and upward pressure on productivity. The equilibrium requires the wage of a worker equaling what that worker can produce.

This study found positive relationship between wages and economic development. The relevant measure of wages is total compensation, which includes cash wages and fringe benefits. Some data includes only cash wages. In an era when fringe benefits such as pensions and health care are significant parts of the compensation package, one should not expect cash wages to line up with productivity.

6.3 Proposed Model for Socio Economic Impact of Leather Industry in Bangladesh

Results of the Research clearly fit into the Framework of the proposed Socio Economic Impact model for Leather Industry in Bangladesh. Using the model of Economic Development process by pletcher, walther and Mcconocha, this proposed model was developed. Several components of this model introduced by pletcher et were adapted to support a proposed Socio Economic impact analysis model.

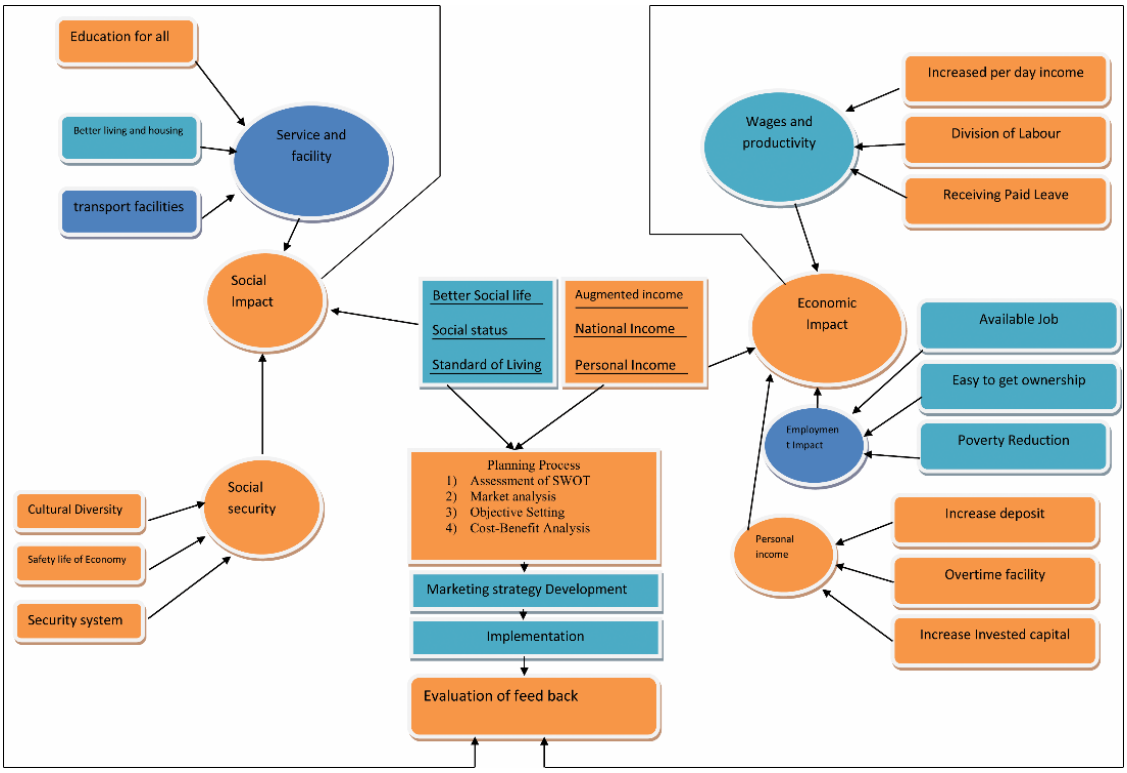


Figure 6.7: Proposed Model for Socio Economic Impact of Leather Industry in Bangladesh

Figure 6.7 Portrays the model and the proposed model uses two major components under social impact analysis and these are service and Facility and social security, and three major components under Economic impact analysis and these are wages and productivity, Employment opportunity and personal income. Based on this model social impact analysis and Economic impact analysis are then channeled into a business support planning process that is Assessment of SWOT, Market analysis, objective setting and cost-benefit analysis. After channeling marketing strategy should be taken to fulfillment of the target of project. The two key components of the planning processes of the proposed model (social and Economic) are carried out through a compatibility check or evaluation of feedback after which emerges either a positive or negative outcome. If there is a negative outcome, where by results of the business

support planning process are not compatible with the business proposal, a Re- working will be necessary. A positive outcome will lead to implementation of the project at hand.

The Model encourages high community participation in the Social and Economic community around Bangladesh surrounding Leather Industry. It facilitates Economic development Planners, Government Officials, Government Development planners and Business developers who wish to expand their knowledge and expertise in the field of building Leather business Sustainability.

Direction of future Research with this model should include its use as a tool for determining specific business levels of compatibility prior to implementing any Business in a Developing Country like Bangladesh where the need for jobs is high and availability of capital for commercial projects is often low.

CHAPTER 7
RECOMMENDATION AND CONCLUSION

7.1 Recommendation

The leather sector is one of the fastest growing sectors of the world economy. In this situation the global market offers extraordinary opportunities for the growth of this sector in developing countries like Bangladesh. Annual production capacity of footwear in Bangladesh was only 22 million pairs in 1997. In 2014, it crossed 300 million. World total footwear production which once again proves that developing countries like Bangladesh should consider the vast potential of the world market and introduce supporting policies for the development of this sector accordingly.

Importers of leather goods such as European Union, USA, Japan and different International trade bodies are now laying importance, on the environment issue in the industrial management. ISO 14000 will be introduced in the year 2000, making mandatory and environment friendly and child labor- free atmosphere at any industry unit. For the export-oriented industries such conditions are gradually becoming a reality. A law has enacted 2005 for making an environment friendly production system compulsory. Enforcement of the proposed legislation is expected to drive industrial products, harmful to the environment, out of the world export market. Therefore, it is necessary to free the Bangladesh's leather industry from environmental hazards for sustaining in the global export market has now become inevitable.

Environment management of the country's leather industry is now in a vulnerable state. NEMAPY Study, conducted by the Ministry of Environment, has identified the leather industry as harmful to the environment more than the textiles, medicine, fertilizer and

paper industries. Presently, the annual production of leather is approximately 180 million square feet. Processing a 175 tone of raw leather a day results in more than 15,000 cubic meters of tannery effluent.

So the present and most common practice in Hazaribagh and which is continuing in last 25 years, that this huge tannery effluent is being discharged to the nature, without treatment and without any care which is deemed to be a big crime against humanity. The embankment in the west part of Hazaribagh and its outside, all these harmful liquid waste goes into the river Buriganga that carries all these effluent to other major rivers of the country. Discharge of tannery effluent without treatment cause serious pollution to our environment. The pollution does not only occur to the air but also to the surface water which spread to the underground water too. So, discharging of tannery effluent without treatment is also a kind of crime and all the countries in South East Asia have been able to stop this type of crime except Bangladesh. If we look in to the number and quantity of Chemicals, which are largely used every day in the tanneries, we could get an idea, how much and what type of pollutant could be present in the effluent.

It is clearly understood that the policy makers, bureaucrats and other relevant government officials have remained reluctant to the magnitude of dangers due to pollution caused by leather industries of Bangladesh. An UNIDO move sponsored by the government of Netherlands was taken in 1992. It could help to establish a modern effluent treatment plant at Hazaribagh without any investment by the Bangladesh government. But it is not happened due to lack of sincerity on the part of local authorities. It took 10 years (from 1988 to 1998) for the government to decide on shifting the tannery from Hazaribagh.

Some of the Cleaner technologies leading to reduced pollution load, introduced and demonstrated by UNIDO and practiced among South Asian Countries like India, China, Nepal and Sri Lanka.

1. Mechanical Desalting of Hides and Skins before soaking: With a view to shake off salt, thus help reduce the load of total dissolved solids and chlorides (practiced in India)

2. Chrome Recovery and Reuse in Leather Processing: This is helping not only prevention of chrome, a heavy metal from going out with the effluent but, equally important, recovery of this valuable chemical for reuse (practiced in India, China, Nepal, Sri Lanka)

3. Direct Recycling of Chrome (practiced in China and India): Waste minimization in small scale Tanneries by above process is almost possible. Many of these demonstration facilities have been created in India because the implementation of this type of project in India with Swiss assistance was started with much of success. Now similar demonstration projects are also coming up in other countries too.

The experiences of China and India indicate that for the development of this sector foreign investment and transfer of know- how it is vital. For this, however, international experiences should be studied and supportive policies worked out and implemented, as well as constantly reviewed and improved. The country's footwear manufacturers see a bright future for their products mainly because of the prospect of procuring hide and skin at cheaper prices this year. The government and policy maker should focus on foreign direct investment and transfer of know-how.

At present the size of the global footwear market is still enormous for even during economic crises people need and buy shoes. Although in periods of economic recessions people might curtail buying higher-price fashion or sports items, the demand for functional shoes remains almost unchanged, if indeed it does not increase with the growth rate of the population. The high purchasing power of the population of the developed countries compensates for the lower purchasing power of the developing nations.

The economic potential of leather in terms of value addition, export earnings and employment is still underutilized for lack of appropriate environmental processing. In view of this, scientists in the leather industry are trying to find ways of overcoming the problem. A significant development has been 'dry-powder' tannage, which does not use water. Besides, there are some methods and technologies which are helpful to reduce environment problems. Environmental pollution caused by tanning industry should be considered in its totality and without controlling the pollution, sustainable export market for leather and leather products are almost impossible. Leather Industry is a manifold multifarious environment polluting industry. The importers of Bangladeshi leather product such as European Union, USA, Japan and different international trade bodies are now laying importance on the environmental issues. For export-oriented industries such issues are gradually becoming a reality.

The export development of leather sector was planned in two phases. Firstly, policies were formulated during the early part of 80's for changing over from wet blue leather to crust and finished leather. Secondly, favorable policies were adopted during the latter part of 80's for the development of this sector through production of leather goods. The important measures adopted by the Government during the middle of 80's

for the development of leather goods are 100% XPB entitlement for export of leather goods, Import facilities of finished leather for export oriented leather goods industry, Inclusion of leather products in the list of Crash Program items for speedy development of the sub-sector .A number of policy incentives were designed by the Government during the early part of 80's for facilitating production of crust/finished leather. Government should develop new rules and regulations and develop new policies.

- Market promotion efforts for leather goods through fielding exposure-cum-marketing missions.
- Organizing leather Fair in Bangladesh.
- Inclusion of leather goods in the UNDP/ITC/EPB export development and promotion project for overall development and growth of the sector.

The above mentioned policy will support with entrepreneurial initiative contributed positively in furthering export of crust/ finished leather as compared to wet-blue leather. Due to extreme nature of competition in the global trade of this product particularly related to leather goods, coupled with price reduction of crust/finished leather in the international market, the progressive growth in export earnings could not be made possible during the last few years. Government, policy maker, and producer should focus on it.

Although export earning of the sector has not been improved remarkably in the recent years falling short of the export target during the above period, yet, one encouraging feature of the statistics is that export of leather goods particularly shoes showing rapid increase-which is a positive indication of the development of this sector especially

relating to leather shoes. Bangladesh is a late entrant in the global trade of leather, leather goods and shoes. But the country possesses a high potentiality of increased export earnings from these items in view of the easy availability of quality raw materials and easily trainable workforce. Considering the immense potentiality of leather and leather goods, the item has been grouped under the 'Thrust Sector' along-with other selected potential items.

The following recommendations should be provided for the development of leather and leather goods sector:

- To take necessary measures for modernizing of leather units to produce finished leather from wet blue leather.
- Measures need to be taken to setup industry related to production of chemicals and other ingredients with a view to reducing cost of production.
- Leather technology institute should modernized for utilizing as a common facilities center.
- Necessary loan should be granted for setting up industries to produce leather goods and its marketing will be strengthened.
- 'Cluster factories' need to set up to create job opportunities through establishment of small production units of leather goods.
- Leather Council should be organized. Yet, Bangladesh is not a member of International Footwear Conference. The country needs to become a member of this platform, like China and India, in order to have a global voice. Overall, the Government should offer adequate policy support and sufficient patronization for swift diversification of leather-footwear industries in the country.

- Units not interested to avail the duty drawback facility and also not in possession of Bonded Warehouse, it is necessary to provide equivalent alternative facilities.

- Uniform system need to be introduced by all the commercial banks as regard sanctioning of loan to the leather units and also regarding policy on interest.

- Considering the overall situation of the leather industry, the time limit of export of crust leather is extended up to the year 2000. During this period, the producers of crust leather will be provided with all the facilities including BMRE for switching over to production of finished leather.

- The annual supply of hides and skins in Bangladesh is about 18 million square meters comprised of mainly cow hides and goatskins. Hardly 15-18% of the this supply is required for domestic consumption and a large surplus, being 82-85% is exported in the form of leather and leather products earning a sizeable amount of foreign exchange for the country.

- Hides and skins of Bangladesh though smaller in size and thinner in substance, have a good demand in international market for their fine fiber structure and good grains and generally used for making high quality leather goods including shoes. Kushtia and Dhaka killed goatskins are well known in leather world for their tight fiber structure and raised good grains and ideal raw material for glace kid leather. Focus should be given in this area.

- The leather industry should ensure the job security, arrange appropriate working environment, provide better salary, provide better health services and generate employment which influence the development of this sectors.

- To encourages young energetic and brilliant business graduates to join this sector.

- Compliance system should be established to all factories.
- Soft loan should provide.
- Effluent Treatment Plants (ETP) should be started at Savar industrial zone very soon.
- By product should be utilized in a systematic way.
- Giving importance on workers' training.
- Introducing Eco-friendly leather system to all factories by avoiding chromium and by using Syntans-based tanning materials.
- Providing subsidy in cash and duty relaxation on crust and finished leather.
- To establish Tax Holidays from beginning of the production and export process at the Savar industrial zone.
- Providing life insurance facilities of all workers of all levels of all factories of Bangladesh.
- Improving First Aid Medical facilities.
- Conversely, the cost of Bangladesh's land and capital is too high compared to China - the world's largest footwear manufacturer with a 60 per cent share of worldwide shoe production. Bangladesh's share in the global market is still below 1(one) per cent. If the Country wants to attract Foreign direct investment (FDI) into the sector, it should reduce the cost of sustaining a business.
- After the RMG sector, local manufacturers are seeing bright prospects for the leather sector due to an amended policy in China. Bangladesh should take the competitive advantage in leather sector from China+1 strategy as there has been

a recent drop in China's leather footwear production, and buyers may shift from China to other Asian countries to minimise their costs. If Bangladesh can overcome all challenges, it can become a global player for leather goods and footwear by addressing social compliance in line with other business skills.

- United States, EU and Japan have become worried over future supply from China as their domestic markets are expanding quickly. Western importers are desperately chasing after fresh sourcing destinations and Bangladesh lies in the latest spotlight. We should negotiate with Japan which has 30 per cent share of our export to retain a duty-free advantage.

- Generally, Bangladesh exports leather products to Italy, New Zealand, Poland, United Kingdom, Belgium, France, Germany, United States, Canada and Spain. In addition, Japan, India, Nepal, and Australia have emerged as the potential importers of Bangladeshi leather goods. Presently, Bangladesh exports only 0.5 per cent of finished leathers and leather products to a market worth $215 billion.

- Bangladesh is set to emerge as the next manufacturing hub for the global footwear industry because the cheap labour is prompting top manufacturers to relocate their factories in the country. The good news is that many foreign investors as well as buyers have already shown interest in Bangladeshi's leather and footwear sector.

- According to HSBC, Bangladesh is currently one of the three countries where China-based factories are planning to relocate, as the manufacturing of low-cost products is becoming expensive in the world's second largest economy.

- Eco- working environment should be established.

- Human value should be considered.

7.2 Limitations of the study

Several limitations of the study should be recognized.

(i) The findings of this study must be taken with great caution due to the inherent limitations of the data used. Since majority of the entrepreneurs do not keep records of their activities, obtaining accurate and reliable tannery level information is one of the major difficulties of the study. The information provided by the tanners was mostly based on memory recall, which might lead to memory bias.

(ii) There may have been some bias due to willful hiding of facts or exaggerations because of fear that the information supplied might be used for taxation purposes or because of expectation of assistance.

(iii) As our questionnaire was lengthy and we had to meet several times to fill up the questionnaire. It was also a pain-striking work.

(iv) The study was undertaken in a protected urban industrial protected area, and such it was very painstaking to collect primary data entering into industries.

(v) Time and Budget constraints are the basic problem during this study period.

(vi) Factories are located at Hazaribagh, chittagong and Bhairob. So, it's a time consuming process and huge formalities are need to follow to collect information.

(Vii) For collecting information from the respondents usually four to five times needed to visit to the factories.

7.3 Conclusion

Leather industry in Bangladesh constitutes a vital section of export segment and plays a very important role in socio-economic life of our country. It is mostly labor-intensive and has concentrated mainly at Hazaribagh area, Dhaka. There is co-existence of conventional and modern units, large, medium small, and cottage units with or without contemporary techniques of the production process. But it has enormous growth potential for sustainable development of the country. It is able to make significant contribution to foreign exchange earnings, economic restoration and prosperity of the economy. Moreover Bangladesh is at marked advantages in leather production since it has the large livestock population within the country. Each and every Leather organization still need to undertake the responsibility to employees, society and environment in the same time creating profit, taking charge in stockholder's benefit, including complying commercial moral, production security, professional health and protecting labor legality rights and interests etc. The Dhaka city dwellers want to get rid of this unhygienic ecology. If this situation goes on, Dhaka will soon be a rejected city. Although government has taken an initiative to relocation of tannery industry from the Bangladesh capital city's Hazaribagh to suburban Savar, it is being delayed for years since the governments yet to set up a Common Effluent Treatment Plant (CETP) the new site. The cost of shifting and the unwillingness of the owner and the mortgage bank are the basic draw backs shifting. Besides a lot of families are now dependent on this industry. It Is difficult for them to be shifted there. We all expect improve leather processing technologies that will cause least pollution because nobody want to breathe in the poisoned air. So the Government should take some pragmatic steps so that environment is saved to save human beings. The focus of this research has been to

bridge the two important domains of any country that is social and economic, so as to forge a process of holistic and meaningful development for even the most Country. The Leather sector in Bangladesh has the potential to raise its earnings of exports of both finished leather and leather goods to US$16 billion from the present level of $1.0 billion in the next decade if it can properly address health, environment and compliance issues in the sector particularly all of the above recommendation that is provided in this research work because each and every Leather Organization has to undertake obligation of protecting and improving Social and Economic benefit in pursuing profit maximums. It is said that, enterprise should take care of more moral value of the Human and comply law regulation in commercial decision-making, as well as respect citizen, benefit community and protect environment.

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Appendix (A)

(Questionnaire)

Dear Owner/ Manager

As a part of my PhD dissertation at the University of Rajshahi, Rajshahi, Bangladesh I am conducting a study to better understand the socio-economic impact of leather industry in Bangladesh. You are among a small number of professionals I am asking to complete the attached questionnaire. Your response is important to the completion of this study. The survey should take no longer than 40 minutes.

Please be assured that the information you provide will be kept confidential. The gathered information will be used only for research purposes. Your participation in this study is voluntary and you may withdraw from the study at any time without explanation and any negative consequences. You are free to refuse to answer any question/s you are not comfortable with.

I will share the result of this study with you if you indicate your interest and I truly appreciate your time and interest.

If you need more information about the study, please do not hesitate to contact the principal investigator, Wahiduzzaman Khan by e-mail: wzk_roence@yahoo.co.uk.

Thank you for your participation.

Mr.. Wahiduzzaman Khan
Department of Marketing
University of Rajshahi
Rajshahi, Bangladesh.

Part A: Personal and Organizational Information

Please tell me a little about your organization: **Please tick (X) the appropriate box for each question.**

1. Name of organization:

2. Year of establishment:

3. How long has your organization been in existence?

( ) Less than 3 years

( ) 3 to 7 years

( ) 7 to 11 years

( ) 11 to 15 years

( ) 15 to 19 years

( ) 19 to 23 years

( ) 23 to 27 years

( ) More than 27 years

4. Please indicate the total number of people that are currently employed in your organization. (Choose only one option).

( ) Less than 25

( ) 25- 50 employees

( ) 51 - 100 employees

( ) 101 - 150 employees

( ) 151 - 200 employees

( ) 201- 250 employees

( ) More than 250 employee

Please tell me a little about yourself: **Please tick (X) the appropriate box for each question.**

5. Your Position in organization:

( ) Manager

( ) Worker

( ) Others (Specify)_____

6. Gender:

( ) Male

( ) Female

7. Marital Status:

( ) Married

( ) Unmarried

( ) Divorced

( ) Separated

8. Age

( ) Less than 20 years

( ) 21-30 years

( ) 31-40 years

( ) 41-50 years

( ) 51- 60 years

( ) More than 60 years

9. Educational Qualification – please indicate the highest level of education.

( ) Illiterate

( ) Primary

( ) High School

( ) Bachelor‘s

( ) Master‘s

( ) Doctoral

( ) Others (Specify)_____

10. Your experience in this organization.

( ) Less than 1 years

( ) 1-3 years

( ) 4-6 years

( ) 7-9 years

( ) More than 10 years

11. What is the role of this organization in your life?

12. What is the role of this organization in economic development?

13. What is the role of this organization in social development?

Part B:

(1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree)

Please put tick (√) mark.

Social Impact Analysis					
Service and Facilities					
My housing facilities are better than before	1	2	3	4	5
I have official transportation facilities	1	2	3	4	5
My education facilities have been increased than before	1	2	3	4	5
Working Environment					
I have had a torture/ harassment free working environment	1	2	3	4	5
Labor union are available in my working places	1	2	3	4	5
I can learn lessons from my friends working with me	1	2	3	4	5
Social Security					
I have more social security now	1	2	3	4	5
It is easy to adapt with cultural values & norms now	1	2	3	4	5
My safety facilities have been increased	1	2	3	4	5
Overall, my social security has been increased	1	2	3	4	5
Health Security					
I can reach health care facilities for preventing my diseases	1	2	3	4	5
I can have medical facility after occurring any accident	1	2	3	4	5
First aid treatment facilities have been increased	1	2	3	4	5
Social Impact					
My standard of living has been increased after joining here	1	2	3	4	5
My Social status has been increased after joining here	1	2	3	4	5
Overall, leather industry have significant social impact on my life	1	2	3	4	5
Economic Impact Analysis					
Wages and Productivity					
Rate of my working hours have been increased	1	2	3	4	5
Distribution of workers according to their skills	1	2	3	4	5

Paid leave facilities are provided to us	1	2	3	4	5
I am satisfied with my wages and salary	1	2	3	4	5
Employment Impact					
My job has helped me to reduce my poverty	1	2	3	4	5
Stock options/ownership are given to us	1	2	3	4	5
Easy accessibility of job	1	2	3	4	5
Job Security					
I have job security here	1	2	3	4	5
I am satisfied with my job	1	2	3	4	5
Working benefits and fringe benefits have been increased	1	2	3	4	5
Personal Income					
My savings have been increased after joining here	1	2	3	4	5
My bank deposits have been increased after joining here	1	2	3	4	5
Rate of overtime has been increased	1	2	3	4	5
Economic Impact					
I have augmented income	1	2	3	4	5
Leather industry have significant contribution in my economic development	1	2	3	4	5
Overall, I am satisfied with my earnings	1	2	3	4	5

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE!

If you would like to receive a summary of the findings of this study, please provide us with the following information:

Company name:

_____

E-mail address:

Appendix (B)

Smart PLS Data (Social Impact and Economic Impact)

Outer Loading

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	Standard Error (STERR)	T Statistics (|O/STERR|)
SS1	**0.8222**	**0.8222**	0.02	0.02	41.1848
SS2	**0.8148**	**0.8152**	0.0184	0.0184	44.2036
SS3	**0.8161**	**0.8151**	0.0224	0.0224	36.451
SS4	**0.8438**	**0.8442**	0.0168	0.0168	50.3733
WE1	**0.9582**	**0.8987**	0.1857	0.1857	5.1606
WE2	**0.9195**	**0.8601**	0.192	0.192	4.7899
WE3	**0.9219**	**0.879**	0.1704	0.1704	5.4096
SI1	**0.8395**	**0.8388**	0.0188	0.0188	44.6219
SI2	**0.9157**	**0.9158**	0.0054	0.0054	170.7736
SI3	**0.9299**	**0.9299**	0.0052	0.0052	179.2478
SF1	**0.8161**	**0.8155**	0.0216	0.0216	37.7326
SF2	**0.8526**	**0.8514**	0.015	0.015	56.777
SF3	**0.9027**	**0.9024**	0.0088	0.0088	102.5457
HS1	**0.9471**	**0.9015**	0.1759	0.1759	5.3839
HS2	**0.8805**	**0.8355**	0.166	0.166	5.3032
HS3	**0.9719**	**0.9211**	0.2153	0.2153	4.5141
SS1	**0.8222**	**0.8222**	0.02	0.02	41.1848
SS2	**0.8148**	**0.8152**	0.0184	0.0184	44.2036
SS3	**0.8161**	**0.8151**	0.0224	0.0224	36.451
SS4	**0.8438**	**0.8442**	0.0168	0.0168	50.3733
WE1	**0.9582**	**0.8987**	0.1857	0.1857	5.1606
WE2	**0.9195**	**0.8601**	0.192	0.192	4.7899
WE3	**0.9219**	**0.879**	0.1704	0.1704	5.4096
SI1	**0.9471**	**0.9015**	0.1759	0.1759	5.3839
SI2	**0.8395**	**0.8388**	0.0188	0.0188	44.6219
SI3	**0.9157**	**0.9158**	0.0054	0.0054	170.7736
SF1	**0.9299**	**0.9299**	0.0052	0.0052	179.2478
SF2	**0.8161**	**0.8155**	0.0216	0.0216	37.7326

SF3	**0.9027**	**0.9024**	0.0088	0.0088	102.5457
HS1	**0.8805**	**0.8355**	0.166	0.166	5.3032
HS2	**0.9719**	**0.9211**	0.2153	0.2153	4.5141
HS3	**0.3739**	**0.3735**	0.0129	0.0129	28.98
SS1	**0.3117**	**0.3115**	0.0153	0.0153	20.3329
SS2	**0.2889**	**0.2896**	0.0153	0.0153	18.9305
SS3	**0.2918**	**0.2907**	0.0162	0.0162	18.0057
SS4	**0.3202**	**0.32**	0.015	0.015	21.345
WE1	**0.5678**	**0.4439**	0.4921	0.4921	1.1537
WE2	**0.4405**	**0.3936**	0.3487	0.3487	1.2633
WE3	**0.0552**	**0.1635**	0.5947	0.5947	0.0928
SI1	**0.1999**	**0.2147**	0.4299	0.4299	0.4649
SI2	**0.3261**	**0.3264**	0.0101	0.0101	32.4415
SI3	**0.388**	**0.3878**	0.0091	0.0091	42.5592
SF1	**0.3989**	**0.3989**	0.0087	0.0087	46.0439
SF2	**0.372**	**0.3724**	0.0116	0.0116	31.9703
SF3	**0.4183**	**0.4189**	0.0116	0.0116	36.2
HS1	**0.3041**	**0.2879**	0.2556	0.2556	1.1897
HS2	**0.5587**	**0.5066**	0.5431	0.5431	1.0287
HS3	**0.9719**	**0.9211**	0.2153	0.2153	4.5141

Latent variable (Social Impact)

	SI	SF	WE	SS	HS
Case 0	2.3491	4.3268	3.5001	1.6864	2.3519
Case 1	2.2876	3.3268	3.0306	3.0369	1.6481
Case 2	4.3381	1.6661	2.2373	4.3505	3.9962
Case 3	4.0362	1.6732	2.2679	3.6864	4.0259
Case 4	4.6619	1.6661	2.4896	4.6864	4.3222
Case 5	1.3129	2.3268	2.4798	1.6495	2.3222
Case 6	4.6509	1	2.2223	4.3136	4.3259
Case 7	2.3381	4.3268	2.9896	1.3136	1.6741
Case 8	1.6871	4.6732	2.4492	1.6864	1.3259
Case 9	4.3381	1.6661	2.2425	4.3505	3.9962
Case 10	4.0362	1.6732	2.7528	3.6864	4.0259
Case 11	4.6619	1.6661	2.2373	4.6864	4.3222
Case 12	1.3129	2	3.7066	2	2.3222
Case 13	4.6509	1	2.2523	4.3136	4.3259
Case 14	2.3381	4.3268	1.5202	1.3136	1.6741
Case 15	1.6871	4.6732	3.4693	1.6864	1.3259
Case 16	2.3491	3.3465	2.0099	1.6864	2.3519
Case 17	2.2876	3.6535	1.2373	3.0369	1.6481
Case 18	4.3381	1.6661	2.2679	4.3505	3.9962
Case 19	4.0362	1.6732	2.0254	3.6864	4.0259
Case 20	4.6619	1.6661	2.2425	4.6864	4.3222
Case 21	1.3129	2.3268	2.7222	2.701	2.3222
Case 22	4.6509	1	3.2269	4.3136	4.3259
Case 23	2.3381	4.3268	3.4948	1.3136	1.3222

Case 24	1.6871	5	3.5202	1.6864	1.6778
Case 25	2.3491	4	2.5202	1.6864	2.3519
Case 26	2.2876	3.3268	3.7171	3.0369	1.6481
Case 27	4.3381	1.9929	3.2829	4.3505	3.9962
Case 28	4.0362	1.6732	3.7321	3.6864	4.0259
Case 29	4.6619	1.6661	1.7627	4.6864	4.3222
Case 30	1.3129	2	2.4798	2.3505	2.3222
Case 31	4.6509	1	2.2367	4.3136	4.3259
Case 32	2.3381	4	4.0099	1.3136	1.6741
Case 33	1.6871	4.6732	4.0099	1.6864	1.6778
Case 34	4.3381	1.6661	2.9844	4.3505	3.9962
Case 35	4.0362	1.6732	3.4948	3.6864	4.0259
Case 36	4.6619	1.6661	3.9694	4.6864	4.3222
Case 37	1.3129	2	2.2322	2.3505	2.3222
Case 38	4.6509	1	3.7627	4.3136	4.3259
Case 39	2.3381	4.3268	1.5052	1.3136	1.3222
Case 40	1.6871	4.6732	3.4648	1.6864	1.6778
Case 41	2.3491	4.3268	2.2523	1.6864	2.3519
Case 42	2.2876	3.3268	3.985	2.6864	1.6481
Case 43	4.3381	1.6661	3.0104	4.3505	3.9962
Case 44	4.0362	1.6732	1.7575	3.6864	4.0259
Case 45	4.6619	1.6661	4.2829	4.6864	4.3222
Case 46	1.3129	2.3268	2.7471	2.3505	2.3222
Case 47	4.6509	1	3.3084	4.3136	4.3259
Case 48	2.3381	4.3268	1.5052	1.3136	1.6741
Case 49	1.6871	4.6732	1.7627	1.6864	1.3259

Case 50	2.3491	4.3268	1.9948	1.6864	2.3519
Case 51	2.2876	3.3268	4.0306	2.6864	1.6481
Case 52	4.3381	1.6661	3.7524	4.3505	3.9962
Case 53	4.0362	1.6732	3.4648	3.6864	4.0259
Case 54	4.6619	1.6661	2.7269	4.6864	4.3222
Case 55	1.3129	2.9803	2.7171	2.3505	2.3222
Case 56	4.6509	1	3.7378	4.3136	4.3259
Case 57	2.3381	4.3268	3.7528	1.3136	1.6741
Case 58	1.6871	4.6732	1.4948	1.6864	1.3259
Case 59	4.3381	1.6661	1.9948	4.3505	3.9962
Case 60	4.0362	1.6732	3.2322	3.6864	4.0259
Case 61	4.6619	1.6661	1.7627	4.6864	4.3222
Case 62	1.3129	2	2.2425	2.3505	2.3222
Case 63	4.6509	1	3.0254	4.3136	4.3259
Case 64	2.3381	4.3268	3.4948	1.3136	1.6741
Case 65	1.6871	4.6732	4.4948	1.6864	1.3259
Case 66	2.3491	3.6732	1.7575	1.6864	2.3519
Case 67	2.2876	3.3268	4.4896	2.6864	1.6481
Case 68	4.3381	1.6661	4.2425	4.3505	3.9962
Case 69	4.0362	1.6732	3.2575	3.6864	4.0259
Case 70	4.6619	1.6661	3.2783	4.6864	4.3222
Case 71	1.3129	2.3268	2.2425	2.3505	2.3222
Case 72	4.6509	1	3.7678	4.3136	4.3259
Case 73	2.3381	4.3268	4.0052	1.3136	1.6741
Case 74	1.6871	4.6732	3.9948	1.6864	1.3259
Case 75	2.3491	3.6732	1.7575	1.6864	2.3519

Case 76	2.2876	3.3268	4.2425	2.6864	2
Case 77	4	1.6661	3.5301	4.3505	3.9962
Case 78	4.0362	1.6732	3.5098	3.6864	4.0259
Case 79	3.6509	1.6661	3.7165	4.6864	4.3222
Case 80	1.3129	2.3268	2.2425	2.3505	2.3222
Case 81	3.011	1	3.0405	4.3136	4.3259
Case 82	2.3381	4.3268	1.7627	1.3136	1.6741
Case 83	1.6871	4.6732	3.7627	1.6864	1.3259
Case 84	2.3491	3.6732	1.7575	1.6864	2.3519
Case 85	2.2876	3.3268	1.4798	2.6864	2
Case 86	4.3381	1.6661	3.7524	4.3505	3.9962
Case 87	4.0362	1.6732	3.9694	3.6864	4.0259
Case 88	3.6871	1.6661	1.7627	4.6864	4.3222
Case 89	1.3129	2.3268	2.4798	2.3505	2.3222
Case 90	3.6619	1	3.5305	4.3136	4.3259
Case 91	2.3381	4.3268	1.7627	1.3136	1.6741
Case 92	1.6871	4.6732	3.9844	1.6864	1.3259
Case 93	2.3491	3.6732	1.9844	1.6864	2.3519
Case 94	2.2876	3.3268	2	2.6864	2
Case 95	4.3381	1.6661	3.7678	4.3505	3.9962
Case 96	4.0362	1.6732	3.4948	3.6864	4.3519
Case 97	4.6619	1.6661	4.0156	4.6864	4.3222
Case 98	1.3129	2.3268	2.4798	2.3505	2.3222
Case 99	3.9748	1	4.0358	4.3136	3.6741
Case 100	2.3381	4.3268	1.7627	1.3136	1.6741
Case 101	1.6871	4.6732	1.7575	1.6864	1.3259

Case 102	2.3491	3.6732	1.4948	1.6864	2.3519
Case 103	2.2876	3.3268	1.7575	2.6864	2
Case 104	4.3381	1.6661	3.7524	4.3505	3.9962
Case 105	3.3381	1.6732	3.2575	3.6864	4.0259
Case 106	3.9638	1.6661	3.4642	4.6864	4.3222
Case 107	1.3129	2.3268	2.2425	2.3505	2.3222
Case 108	4.6509	1	3.7678	4.3136	4.3259
Case 109	2.3381	4.3268	1.5052	1.3136	1.6741
Case 110	1.6871	4.6732	1.7321	1.6864	1.3259
Case 111	2.3491	3.6732	1.7627	1.6864	2.3519
Case 112	2.2876	3.3268	1.5052	2.6864	2
Case 113	4.3381	1.6661	4.4798	4.3505	3.9962
Case 114	4.0362	1.6732	3.2575	3.6864	4.0259
Case 115	3.9638	1.6661	4.2523	4.6864	4.3222
Case 116	1.3129	2.3268	2.2425	2.3505	2.3222
Case 117	3.9528	1	3.7678	4.3136	4.3259
Case 118	2.3381	4.3268	1.7575	1.3136	1.6741
Case 119	1.6871	4.6732	1.4948	1.6864	1.3259
Case 120	2.3491	3.6732	2	1.6864	2.3519
Case 121	2.2876	3.3268	1.7731	2.6864	2
Case 122	4.3381	1.6661	3.7524	4.3505	3.9962
Case 123	4.0362	1.6732	4.0006	3.6864	4.0259
Case 124	3.6147	1.6661	3.7633	4.6864	4.3222
Case 125	1.3129	2.3268	2.2425	2.3505	2.3222
Case 126	4.6509	1	3.7678	4.3136	4.3259
Case 127	2.3381	4.3268	1.5052	1.3136	1.6741

Case 128	1.6871	4.6732	2.0306	1.6864	1.3259
Case 129	2.3491	3.6732	2.2523	1.6864	2.3519
Case 130	2.2876	3.3268	1.7171	2.6864	2
Case 131	4.3381	1.6661	4.4798	4.3505	3.9962
Case 132	3.3601	1.6732	2.7425	3.6864	4.0259
Case 133	4.6619	1.6661	3.7633	4.6864	4.3222
Case 134	1.3129	2.3268	2.2373	2.3505	2.3222
Case 135	3.6367	1	3.7678	4.3136	4.3259
Case 136	2.3381	4.3268	1.7725	1.3136	1.6741
Case 137	2.3491	1.6732	2.2679	4.3136	2.3519
Case 138	1.6509	3.0126	1.5202	3.3136	2.3297
Case 139	3	4.3394	3.9901	1.6641	4.3222
Case 140	4.0362	3.6732	3.0462	1.6864	4.0259
Case 141	4.3381	4.6732	4.5052	1.6641	4.6778
Case 142	2.3381	1.6606	2.2373	2.3136	1.6778
Case 143	3.9638	4.3268	4.0057	1	4.6481
Case 144	1.6871	1.3268	1.2425	4.3136	2.3222
Case 145	1.3129	1.6732	1.9844	4.6864	1.6741
Case 146	3.6762	4.3394	3.9901	1.6641	4.3222
Case 147	4.0362	3.6732	3.2529	1.6864	4.0259
Case 148	3.6619	4.6732	3.7015	1.6641	4.6778
Case 149	2.3381	2	1.9948	2	1.6778
Case 150	4.3129	4.3268	3.4995	1	4.6481
Case 151	1.6871	1.3268	1.7321	4.3136	2.3222
Case 152	1.3129	1.6732	1.5202	4.6864	1.6741
Case 153	2.3491	1.6732	1.7731	3.3727	2.3519

Case 154	1.6509	3.0126	1.2679	3.6273	2.3297
Case 155	3.0362	4.3394	3.5052	1.6641	4.3222
Case 156	4.3491	3.6732	4.0099	1.6864	4.0259
Case 157	3.6619	4.6732	4.2628	1.6641	4.6778
Case 158	2.3381	2.6788	1.5202	2.3136	1.3259
Case 159	4.3129	4.3268	3.959	1	4.6481
Case 160	1.6871	1.3268	1.2425	4.3136	2.3222
Case 161	1.3129	1.6732	1.5202	5	1.6741
Case 162	2.3491	1.6732	2.0156	4	2.3519
Case 163	1.6509	3.0126	1.5202	3.3136	2.3297
Case 164	4.0252	4.3394	3.0203	1.9777	4.3222
Case 165	4.3491	3.6732	3.5352	1.6864	4.0259
Case 166	2.6762	4.6732	3.9694	1.6641	4.6778
Case 167	2.3381	2.3394	1.9948	2	1.3259
Case 168	3.3743	4.3268	4.0099	1	4.6481
Case 169	1.6871	1.3268	1.2523	4	2.3222
Case 170	1.3381	1.6732	1.4948	4.6864	2.3222
Case 171	2.3381	4.3394	2.9694	1.6641	4.3222
Case 172	4.0362	3.6732	4.2778	1.6864	4.0259
Case 173	3.3238	4.6732	3.4845	1.6641	4.6778
Case 174	2.3381	2.3394	2.2373	2	1.3259
Case 175	3.0252	4.3268	3.7165	1	4.6481
Case 176	2.3633	1.3268	1.4798	4.3136	2.3222
Case 177	1.3129	1.6732	1.5202	4.6864	1.6741
Case 178	2.0362	1.6732	2.0306	4.3136	2.3519
Case 179	1.6509	2.6732	1.4948	3.3136	2.3297

Case 180	4.3381	4.3394	3.2119	1.6641	3.6741
Case 181	4.3491	3.6732	3.474	1.6864	4.0259
Case 182	4.3381	4.6732	4.5052	1.6641	3.3778
Case 183	2.6762	2.3394	2.2373	2.3136	1.3259
Case 184	2.6981	4.3268	3.2316	1	4.6481
Case 185	2.3633	1.3268	1.7575	4.3136	2.3222
Case 186	1.3129	1.6732	1.4948	4.6864	1.6741
Case 187	1.6871	1.6732	2.0156	4.3136	2.3519
Case 188	1.6509	2.6732	1.7575	3.3136	2.3297
Case 189	3.6619	4.3394	3.2628	1.6641	4.3222
Case 190	4.6619	3.6732	3.9844	1.6864	4.0259
Case 191	3.6619	3.6716	4.2373	1.6641	4.6778
Case 192	2.3381	2.3394	2.2373	2.9409	1.3259
Case 193	2.9638	4.3268	4.5202	1	4.6481
Case 194	1.6871	1.3268	1.7575	4.3136	2.3222
Case 195	1.3129	1.6732	1.5104	4.6864	1.6741
Case 196	3.6619	4.3394	3.9901	1.6641	3.6703
Case 197	2.989	3.6732	4.0099	1.6864	4.0259
Case 198	3.0252	4.6732	4.5052	1.6641	4.6481
Case 199	2.3381	2.3394	2.4746	2	1.3259
Case 200	2.3491	4.3268	4.7627	1	4.6481
Case 201	1.6871	1.3268	2.2425	4.3136	2.3222
Case 202	1.3129	1.6732	2.1969	4.6864	1.6741
Case 203	2.3491	1.6732	2.0156	3.6864	2.3519
Case 204	1.6509	2.6732	1.9948	3.3136	2.3297
Case 205	3.6729	4.3394	3.2628	1.6641	3.6778

Case 206	3.4105	3.6732	4.0099	1.6864	4.0259
Case 207	2.9638	4.6732	3.7269	1.6641	4.6778
Case 208	2.3381	2.3394	2.2373	2.3136	1.3259
Case 209	3.7234	4.3268	3.5052	1	4.3222
Case 210	1.6871	1.3268	1.5202	4.3136	2.3222
Case 211	1.3129	1.6732	1.4948	4.6864	1.6741
Case 212	2.3491	1.6732	1.7783	3.6864	2.3519
Case 213	3.6367	2.6732	1.5202	3.3136	2.3297
Case 214	2.3491	4.3394	3.7477	1.6641	3.6778
Case 215	3.2876	3.6732	4.2778	1.6864	4.0259
Case 216	3.0252	4.6732	4.5052	1.6641	4.6778
Case 217	2.3381	2.3394	2.2373	2.3136	1.6778
Case 218	3.6871	4.3268	3.2628	1	4.6481
Case 219	1.6871	1.3268	1.7321	4.3136	2.3222
Case 220	1.3129	1.6732	1	4.6864	1.6741
Case 221	2.0362	1.6732	2.0156	3.6864	2.3519
Case 222	1.6509	2.6732	1.5202	3.3136	2.3297
Case 223	3.0252	4.3394	3.9901	1.6641	4.3222
Case 224	3.6729	3.6732	4.0099	1.6864	4.0259
Case 225	3.3238	4.6732	3.2275	1.6641	4.6778
Case 226	2.3381	2.3394	2.2373	2.3136	1.3259
Case 227	3.7234	4.3268	3.2622	1	4.6481
Case 228	1.6871	1.3268	2.2679	4.3136	2.3222
Case 229	1.3129	1.6732	1	4.6864	1.6741
Case 230	2.0362	1.6732	2.2679	3.6864	2.3519
Case 231	1.6509	2.6732	1.5202	3.3136	2.3297

Case 232	4.3743	4.3394	3.9901	1.6641	4.3222
Case 233	3.6367	3.6732	2.4948	1.6864	4.0259
Case 234	3.6367	4.6732	4.5052	1.6641	4.6778
Case 235	2.3381	2.3394	2.2373	2.3136	1.6778
Case 236	3.7124	4.3268	3.2731	1	4.6481
Case 237	1.6871	1.3268	1.2679	4.3136	2.3222
Case 238	1.3129	1.6732	1.2425	4.6864	1.6741
Case 239	2.0362	1.6732	2.0156	3.6864	2.3519
Case 240	1.6509	2.6732	1.5202	3.3136	2.3297
Case 241	3.3491	4.3394	3.9901	1.6641	4.3222
Case 242	4	3.6732	4.0099	1.6864	4.0259
Case 243	4.6619	4.6732	4.5052	1.6641	4.6778
Case 244	2.0252	2.3394	2.2373	2.3136	2.3222
Case 245	2.9748	4.3268	4.7627	1	4.6481
Case 246	1.6871	1.3268	1.7321	4.3136	2.3222
Case 247	1.3129	1.6732	1	4.6864	1.6741
Case 248	2.6981	1.6732	2.0156	3.6864	2.3519
Case 249	1.3381	2.6732	1.2679	3.3136	2.3297
Case 250	3.9748	4.3394	3.9901	1.6641	4.3222
Case 251	3.989	3.6732	3.2217	1.6864	4.3259
Case 252	3	4.6732	4.5052	1.6641	4.6778
Case 253	2.3633	2.3394	2.2373	2.3136	2.0038
Case 254	3.3491	4.3268	2.9948	1	4.6481
Case 255	1.6871	1.3268	1.4798	4.3136	2.3222
Case 256	1.3129	1.6732	1.5202	4.6864	1.6741
Case 257	2.0362	1.6732	1.7783	3.6864	2.6741

Case 258	1.6509	2.6732	1.5202	3.3136	2.3297
Case 259	3.6762	4.3394	3.9901	1.6641	4.3222
Case 260	3.4105	3.6732	4.0099	1.6864	4.0259
Case 261	4.3238	4.6732	3.7015	1.6641	4.6778
Case 262	2.0252	2.3394	2.2373	2.3136	2
Case 263	3.6871	4.3268	3.959	1	4.6481
Case 264	1.6871	1.3268	1.7372	4.3136	2.3222
Case 265	1.3129	1.6732	1.2679	4.6864	1.6741
Case 266	2.3491	1.6732	2.2679	3.6864	2.3519
Case 267	1.6509	2.6732	1.5202	3.3136	2.3297
Case 268	4.0252	4.3394	2.7372	1.6641	4.3222
Case 269	4	3.6732	4.0099	1.6864	4.0259
Case 270	4.011	4.6732	2.4849	1.6641	4.6778
Case 271	2.3381	2.3394	1.985	2.3136	1.3259
Case 272	3.6871	4.3268	3.4995	1	4.6481
Case 273	1.6871	1.3268	1.7321	4.3136	2.3222
Case 274	3.6619	1.6661	3.7321	2	3.9741
Case 275	3.9638	3.0126	3.4792	2.6349	3.9703
Case 276	1.6871	2.0055	1.4948	2.3505	2.3259
Case 277	1.3381	2.6732	1.2679	3.3136	2.3297
Case 278	4.0252	4.3394	3.0052	1.6641	4.3222
Case 279	4.3238	3.6732	3.474	1.6864	4.0259
Case 280	3.6619	4.6732	3.9948	1.6641	4.6778
Case 281	2.3381	2.3394	1.985	2.3136	1.3259
Case 282	4.3129	4.3268	3.4699	1	5
Case 283	1.6871	1.3268	2.2679	4.3136	2.3222

Case 284	3.6871	1.6661	2.2679	2	4.6778
Case 285	3.3381	3.0126	3.4792	2.6349	3.9703
Case 286	1.9748	2.0055	1.2425	2.3505	2.0038
Case 287	1.6509	2.6732	1.7881	3.3136	2.3297
Case 288	3.3491	4.3394	2.7372	1.6641	4.3222
Case 289	3.6509	3.6732	4.0099	1.6864	4.6778
Case 290	4.3381	4.6732	2.4849	1.6641	4.6778
Case 291	2.3381	2.3394	2.2373	2.3136	1.3259
Case 292	3.6509	4.3268	3.7575	1	4.6481
Case 293	1.6871	1.3268	1.2425	4.3136	2.3222
Case 294	3.9748	1.6661	3.7321	2	4.3259
Case 295	3.6762	3.0126	3.4792	2.6349	3.9703
Case 296	1.3491	2.0055	2.0052	2.3505	2.0038
Case 297	2.0362	4.3268	2.7269	1.6864	2.3519
Case 298	2.2876	3.3268	1.2373	3.0369	1.6481
Case 299	3.9638	1.6661	3.4954	4.3505	3.9962
Case 300	4.3381	1.6732	2.985	3.6864	4.0259
Case 301	3.3381	1.6661	4.0156	4.6864	4.3222
Case 302	1.3129	2.3268	2.4798	1.6495	2.3222
Case 303	3.6509	1	4.2425	4.3136	4.3259
Case 304	2.0252	4.3268	1.4746	1.3136	1.6741
Case 305	1.6871	4.6732	1.7627	1.6864	1.3259
Case 306	4	1.6661	4.4798	4.3505	3.9962
Case 307	4.0362	1.6732	3.7171	3.6864	4.0259
Case 308	3.6509	1.6661	2.7269	4.6864	4.3222
Case 309	2.3491	4.3268	2.459	1.6864	2.3519

Case 310	4.3491	3.3268	1.7575	3.0369	1.6481
Case 311	3.6871	1.6661	4.4798	4.3505	3.9962
Case 312	4.0362	1.6732	3.9694	3.6864	4.0259
Case 313	4.6619	1.6661	4.5202	4.6864	4.3222
Case 314	1.3129	2.3268	2.4798	1.6495	2.3222
Case 315	3.6871	1	4.2425	4.3136	4.3259
Case 316	2.3381	4.3268	1.2679	1.3136	1.6741
Case 317	1.6871	4.6732	1.2425	1.6864	1.3259
Case 318	4.6619	1.6661	4.5202	4.6864	4.3222
Case 319	1.3129	2.3268	2.4798	1.6495	2.3222
Case 320	3.6871	1	4.2425	4.3136	4.3259
Case 321	2.3381	4.3268	1.2679	1.3136	1.6741
Case 322	1.6871	4.6732	1.2425	1.6864	1.3259
Case 323	2.3381	4.3268	1.2679	1.3136	1.6741
Case 324	1.6871	4.6732	1.2425	1.6864	1.3259
Case 325	2.3381	4.3268	1.2679	1.3136	1.6741
Case 326	1.6871	4.6732	1.2425	1.6864	1.3259
Case 327	3.6509	3.6732	4.0099	1.6864	4.6778

Latent Variable (Economic Impact)

	EI	WP	EI	JS	PI
Case 0	3.2706	2.352	4.3233	1.6914	2.347
Case 1	1.5079	1.648	3.3233	3.0415	2.2906
Case 2	3.4921	3.9951	1.6648	4.35	4.3385
Case 3	4.0157	4.0255	1.6767	3.6914	4.0324
Case 4	3.2354	4.3215	1.6648	4.6914	4.6615
Case 5	2.2549	2.3215	2.3233	1.65	1.3145
Case 6	4.253	4.3265	1	4.3086	4.653
Case 7	1.7451	1.6735	4.3233	1.3086	2.3385
Case 8	1.2373	1.3265	4.6767	1.6914	1.6855
Case 9	3.9843	3.9951	1.6648	4.35	4.3385
Case 10	4.0157	4.0255	1.6767	3.6914	4.0324
Case 11	4.5098	4.3215	1.6648	4.6914	4.6615
Case 12	2.2549	2.3215	2	2	1.3145
Case 13	4.7451	4.3265	1	4.3086	4.653
Case 14	1.7451	1.6735	4.3233	1.3086	2.3385
Case 15	1	1.3265	4.6767	1.6914	1.6855
Case 16	2.0019	2.352	3.3535	1.6914	2.347
Case 17	1.5079	1.648	3.6465	3.0415	2.2906
Case 18	3.5098	3.9951	1.6648	4.35	4.3385
Case 19	4.0157	4.0255	1.6767	3.6914	4.0324
Case 20	4	4.3215	1.6648	4.6914	4.6615
Case 21	2.2549	2.3215	2.3233	2.7001	1.3145
Case 22	3.9805	4.3265	1	4.3086	4.653

Case 23	1.7451	1.3215	4.3233	1.3086	2.3385
Case 24	1	1.6785	5	1.6914	1.6855
Case 25	2.2568	2.352	4	1.6914	2.347
Case 26	1.5079	1.648	3.3233	3.0415	2.2906
Case 27	3.5098	3.9951	1.988	4.35	4.3385
Case 28	4.0157	4.0255	1.6767	3.6914	4.0324
Case 29	4.0019	4.3215	1.6648	4.6914	4.6615
Case 30	2.2549	2.3215	2	2.35	1.3145
Case 31	4.7451	4.3265	1	4.3086	4.653
Case 32	1.7451	1.6735	4	1.3086	2.3385
Case 33	1	1.6785	4.6767	1.6914	1.6855
Case 34	3.2725	3.9951	1.6648	4.35	4.3385
Case 35	3.506	4.0255	1.6767	3.6914	4.0324
Case 36	4	4.3215	1.6648	4.6914	4.6615
Case 37	2.2549	2.3215	2	2.35	1.3145
Case 38	4.0334	4.3265	1	4.3086	4.653
Case 39	1.7451	1.3215	4.3233	1.3086	2.3385
Case 40	1	1.6785	4.6767	1.6914	1.6855
Case 41	2.2568	2.352	4.3233	1.6914	2.347
Case 42	1.5079	1.648	3.3233	2.6914	2.2906
Case 43	2.7627	3.9951	1.6648	4.35	4.3385
Case 44	4.0157	4.0255	1.6767	3.6914	4.0324
Case 45	3.7451	4.3215	1.6648	4.6914	4.6615
Case 46	2.2549	2.3215	2.3233	2.35	1.3145
Case 47	4.7451	4.3265	1	4.3086	4.653
Case 48	1.7451	1.6735	4.3233	1.3086	2.3385

Case 49	1	1.3265	4.6767	1.6914	1.6855
Case 50	2.2568	2.352	4.3233	1.6914	2.347
Case 51	1.5079	1.648	3.3233	2.6914	2.2906
Case 52	3.5098	3.9951	1.6648	4.35	4.3385
Case 53	4.0157	4.0255	1.6767	3.6914	4.0324
Case 54	3.5293	4.3215	1.6648	4.6914	4.6615
Case 55	2.2549	2.3215	2.9698	2.35	1.3145
Case 56	4.7451	4.3265	1	4.3086	4.653
Case 57	1.7451	1.6735	4.3233	1.3086	2.3385
Case 58	1	1.3265	4.6767	1.6914	1.6855
Case 59	3.9843	3.9951	1.6648	4.35	4.3385
Case 60	4.0157	4.0255	1.6767	3.6914	4.0324
Case 61	2.9805	4.3215	1.6648	4.6914	4.6615
Case 62	2.2549	2.3215	2	2.35	1.3145
Case 63	4.7451	4.3265	1	4.3086	4.653
Case 64	1.7451	1.6735	4.3233	1.3086	2.3385
Case 65	1	1.3265	4.6767	1.6914	1.6855
Case 66	2.2568	2.352	3.6767	1.6914	2.347
Case 67	1.5079	1.648	3.3233	2.6914	2.2906
Case 68	3.9843	3.9951	1.6648	4.35	4.3385
Case 69	3.2568	4.0255	1.6767	3.6914	4.0324
Case 70	4.0352	4.3215	1.6648	4.6914	4.6615
Case 71	2.2549	2.3215	2.3233	2.35	1.3145
Case 72	4.7451	4.3265	1	4.3086	4.653
Case 73	1.7451	1.6735	4.3233	1.3086	2.3385
Case 74	1	1.3265	4.6767	1.6914	1.6855

Case 75	2.0019	2.352	3.6767	1.6914	2.347
Case 76	1.5079	2	3.3233	2.6914	2.2906
Case 77	3.2725	3.9951	1.6648	4.35	4
Case 78	4.0157	4.0255	1.6767	3.6914	4.0324
Case 79	4.5098	4.3215	1.6648	4.6914	3.653
Case 80	2.2549	2.3215	2.3233	2.35	1.3145
Case 81	4.7451	4.3265	1	4.3086	3.0085
Case 82	1.7451	1.6735	4.3233	1.3086	2.3385
Case 83	1	1.3265	4.6767	1.6914	1.6855
Case 84	2.2568	2.352	3.6767	1.6914	2.347
Case 85	1.5079	2	3.3233	2.6914	2.2906
Case 86	3.9843	3.9951	1.6648	4.35	4.3385
Case 87	4.0157	4.0255	1.6767	3.6914	4.0324
Case 88	4	4.3215	1.6648	4.6914	3.6855
Case 89	2.2549	2.3215	2.3233	2.35	1.3145
Case 90	3.9805	4.3265	1	4.3086	3.6615
Case 91	1.7451	1.6735	4.3233	1.3086	2.3385
Case 92	1	1.3265	4.6767	1.6914	1.6855
Case 93	2.0019	2.352	3.6767	1.6914	2.347
Case 94	1.5079	2	3.3233	2.6914	2.2906
Case 95	3.9843	3.9951	1.6648	4.35	4.3385
Case 96	3.7627	4.352	1.6767	3.6914	4.0324
Case 97	4	4.3215	1.6648	4.6914	4.6615
Case 98	2.2549	2.3215	2.3233	2.35	1.3145
Case 99	4.7451	3.6735	1	4.3086	3.976
Case 100	1.7451	1.6735	4.3233	1.3086	2.3385

Case 101	1	1.3265	4.6767	1.6914	1.6855
Case 102	2.0019	2.352	3.6767	1.6914	2.347
Case 103	1.5079	2	3.3233	2.6914	2.2906
Case 104	3.7294	3.9951	1.6648	4.35	4.3385
Case 105	4.4902	4.0255	1.6767	3.6914	3.3385
Case 106	3.7451	4.3215	1.6648	4.6914	3.9676
Case 107	2.2549	2.3215	2.3233	2.35	1.3145
Case 108	4.7451	4.3265	1	4.3086	4.653
Case 109	1.7451	1.6735	4.3233	1.3086	2.3385
Case 110	1	1.3265	4.6767	1.6914	1.6855
Case 111	2.0019	2.352	3.6767	1.6914	2.347
Case 112	1.5079	2	3.3233	2.6914	2.2906
Case 113	3.9843	3.9951	1.6648	4.35	4.3385
Case 114	3.7313	4.0255	1.6767	3.6914	4.0324
Case 115	4.5098	4.3215	1.6648	4.6914	3.9676
Case 116	2.2549	2.3215	2.3233	2.35	1.3145
Case 117	3.9862	4.3265	1	4.3086	3.9591
Case 118	1.7451	1.6735	4.3233	1.3086	2.3385
Case 119	1	1.3265	4.6767	1.6914	1.6855
Case 120	2.0019	2.352	3.6767	1.6914	2.347
Case 121	1.5079	2	3.3233	2.6914	2.2906
Case 122	3.9843	3.9951	1.6648	4.35	4.3385
Case 123	4.0157	4.0255	1.6767	3.6914	4.0324
Case 124	4.5098	4.3215	1.6648	4.6914	3.6206
Case 125	2.2549	2.3215	2.3233	2.35	1.3145
Case 126	4.7451	4.3265	1	4.3086	4.653

Case 127	1.7451	1.6735	4.3233	1.3086	2.3385
Case 128	1	1.3265	4.6767	1.6914	1.6855
Case 129	2.0019	2.352	3.6767	1.6914	2.347
Case 130	1.5079	2	3.3233	2.6914	2.2906
Case 131	3.9843	3.9951	1.6648	4.35	4.3385
Case 132	3.506	4.0255	1.6767	3.6914	3.3555
Case 133	3.7451	4.3215	1.6648	4.6914	4.6615
Case 134	2.2549	2.3215	2.3233	2.35	1.3145
Case 135	4.7451	4.3265	1	4.3086	3.6375
Case 136	1.7451	1.6735	4.3233	1.3086	2.3385
Case 137	2.7627	2.352	1.6767	4.3086	2.347
Case 138	1.2549	2.3314	3.0182	3.3086	1.653
Case 139	4.4921	4.3215	4.3415	1.6586	3
Case 140	3.4902	4.0255	3.6767	1.6914	4.0324
Case 141	4.5079	4.6785	4.6767	1.6586	4.3385
Case 142	2.4921	1.6785	1.6585	2.3086	2.3385
Case 143	3.5255	4.648	4.3233	1	3.9676
Case 144	1.2549	2.3215	1.3233	4.3086	1.6855
Case 145	1.4902	1.6735	1.6767	4.6914	1.3145
Case 146	4.4921	4.3215	4.3415	1.6586	3.677
Case 147	4	4.0255	3.6767	1.6914	4.0324
Case 148	3.2391	4.6785	4.6767	1.6586	3.6615
Case 149	2.2549	1.6785	2	2	2.3385
Case 150	4.2373	4.648	4.3233	1	4.3145
Case 151	1.2549	2.3215	1.3233	4.3086	1.6855
Case 152	1.4902	1.6735	1.6767	4.6914	1.3145

Case 153	2.253	2.352	1.6767	3.3829	2.347
Case 154	1.2549	2.3314	3.0182	3.6171	1.653
Case 155	3.2744	4.3215	4.3415	1.6586	3.0324
Case 156	4	4.0255	3.6767	1.6914	4.347
Case 157	3.5255	4.6785	4.6767	1.6586	3.6615
Case 158	2.7294	1.3265	2.683	2.3086	2.3385
Case 159	3.5255	4.648	4.3233	1	4.3145
Case 160	1.2549	2.3215	1.3233	4.3086	1.6855
Case 161	1.4902	1.6735	1.6767	5	1.3145
Case 162	2.7627	2.352	1.6767	4	2.347
Case 163	1.2549	2.3314	3.0182	3.3086	1.653
Case 164	3.0157	4.3215	4.3415	1.9671	4.024
Case 165	3.4902	4.0255	3.6767	1.6914	4.347
Case 166	2.9843	4.6785	4.6767	1.6586	2.677
Case 167	2.4921	1.3265	2.3415	2	2.3385
Case 168	2.253	4.648	4.3233	1	3.3709
Case 169	1.7646	2.3215	1.3233	4	1.6855
Case 170	1.4902	2.3215	1.6767	4.6914	1.3385
Case 171	3.747	4.3215	4.3415	1.6586	2.3385
Case 172	3.2354	4.0255	3.6767	1.6914	4.0324
Case 173	4.253	4.6785	4.6767	1.6586	3.323
Case 174	1.7451	1.3265	2.3415	2	2.3385
Case 175	3.9824	4.648	4.3233	1	3.024
Case 176	1.5098	2.3215	1.3233	4.3086	2.3625
Case 177	1.7451	1.6735	1.6767	4.6914	1.3145
Case 178	2.253	2.352	1.6767	4.3086	2.0324

Case 179	1	2.3314	2.6767	3.3086	1.653
Case 180	3.7275	3.6735	4.3415	1.6586	4.3385
Case 181	3.2354	4.0255	3.6767	1.6914	4.347
Case 182	4.5079	3.3775	4.6767	1.6586	4.3385
Case 183	2.4921	1.3265	2.3415	2.3086	2.677
Case 184	3.7275	4.648	4.3233	1	2.6939
Case 185	1.2549	2.3215	1.3233	4.3086	2.3625
Case 186	1.4902	1.6735	1.6767	4.6914	1.3145
Case 187	2.253	2.352	1.6767	4.3086	1.6855
Case 188	1.2549	2.3314	2.6767	3.3086	1.653
Case 189	2.2549	4.3215	4.3415	1.6586	3.6615
Case 190	2.7294	4.0255	3.6767	1.6914	4.6615
Case 191	3.0195	4.6785	3.671	1.6586	3.6615
Case 192	2.9666	1.3265	2.3415	2.9257	2.3385
Case 193	3.2568	4.648	4.3233	1	2.9676
Case 194	1.2549	2.3215	1.3233	4.3086	1.6855
Case 195	1.4902	1.6735	1.6767	4.6914	1.3145
Case 196	2.2373	3.6686	4.3415	1.6586	3.6615
Case 197	2.2549	4.0255	3.6767	1.6914	2.9915
Case 198	3.4921	4.648	4.6767	1.6586	3.024
Case 199	2.7294	1.3265	2.3415	2	2.3385
Case 200	3.7275	4.648	4.3233	1	2.347
Case 201	1.2549	2.3215	1.3233	4.3086	1.6855
Case 202	1.4902	1.6735	1.6767	4.6914	1.3145
Case 203	2.253	2.352	1.6767	3.6914	2.347
Case 204	1.2549	2.3314	2.6767	3.3086	1.653

Case 205	3.7804	3.6785	4.3415	1.6586	3.67
Case 206	3.2354	4.0255	3.6767	1.6914	3.4034
Case 207	4.5079	4.6785	4.6767	1.6586	2.9676
Case 208	2.4921	1.3265	2.3415	2.3086	2.3385
Case 209	3.7275	4.3215	4.3233	1	3.7179
Case 210	1.2549	2.3215	1.3233	4.3086	1.6855
Case 211	1.4902	1.6735	1.6767	4.6914	1.3145
Case 212	2.253	2.352	1.6767	3.6914	2.347
Case 213	1.2549	2.3314	2.6767	3.3086	3.6375
Case 214	3.7275	3.6785	4.3415	1.6586	2.347
Case 215	4	4.0255	3.6767	1.6914	3.2906
Case 216	4.0019	4.6785	4.6767	1.6586	3.024
Case 217	2.7294	1.6785	2.3415	2.3086	2.3385
Case 218	3.7275	4.648	4.3233	1	3.6855
Case 219	1.2549	2.3215	1.3233	4.3086	1.6855
Case 220	1.4902	1.6735	1.6767	4.6914	1.3145
Case 221	2.253	2.352	1.6767	3.6914	2.0324
Case 222	1.2549	2.3314	2.6767	3.3086	1.653
Case 223	4.2373	4.3215	4.3415	1.6586	3.024
Case 224	4	4.0255	3.6767	1.6914	3.67
Case 225	4.5079	4.6785	4.6767	1.6586	3.323
Case 226	2.9666	1.3265	2.3415	2.3086	2.3385
Case 227	3.5079	4.648	4.3233	1	3.7179
Case 228	1.2549	2.3215	1.3233	4.3086	1.6855
Case 229	1.4902	1.6735	1.6767	4.6914	1.3145
Case 230	2.253	2.352	1.6767	3.6914	2.0324

Case 231	1.2549	2.3314	2.6767	3.3086	1.653
Case 232	3.7275	4.3215	4.3415	1.6586	4.3709
Case 233	4	4.0255	3.6767	1.6914	3.6375
Case 234	3.9981	4.6785	4.6767	1.6586	3.6375
Case 235	2.4921	1.6785	2.3415	2.3086	2.3385
Case 236	3.7275	4.648	4.3233	1	3.7094
Case 237	1.2549	2.3215	1.3233	4.3086	1.6855
Case 238	1.4902	1.6735	1.6767	4.6914	1.3145
Case 239	2.253	2.352	1.6767	3.6914	2.0324
Case 240	1.2549	2.3314	2.6767	3.3086	1.653
Case 241	4.4921	4.3215	4.3415	1.6586	3.347
Case 242	4.2549	4.0255	3.6767	1.6914	4
Case 243	3.4921	4.6785	4.6767	1.6586	4.6615
Case 244	2.4921	2.3215	2.3415	2.3086	2.024
Case 245	3.7275	4.648	4.3233	1	2.976
Case 246	1.2549	2.3215	1.3233	4.3086	1.6855
Case 247	1.4902	1.6735	1.6767	4.6914	1.3145
Case 248	2.253	2.352	1.6767	3.6914	2.6939
Case 249	1.2549	2.3314	2.6767	3.3086	1.3385
Case 250	4.4921	4.3215	4.3415	1.6586	3.976
Case 251	3.4902	4.3265	3.6767	1.6914	3.9915
Case 252	2.2373	4.6785	4.6767	1.6586	3
Case 253	2.9666	2.0049	2.3415	2.3086	2.3625
Case 254	3.7275	4.648	4.3233	1	3.347
Case 255	1.2549	2.3215	1.3233	4.3086	1.6855
Case 256	4.2373	1.6735	1.6767	4.6914	1.3145

Case 257	2.253	2.6735	1.6767	3.6914	2.0324
Case 258	1.2549	2.3314	2.6767	3.3086	1.653
Case 259	3.4764	4.3215	4.3415	1.6586	3.677
Case 260	3.2354	4.0255	3.6767	1.6914	3.4034
Case 261	1.7451	4.6785	4.6767	1.6586	4.323
Case 262	2.7294	2	2.3415	2.3086	2.024
Case 263	2.2373	4.648	4.3233	1	3.6855
Case 264	1.2549	2.3215	1.3233	4.3086	1.6855
Case 265	1.4902	1.6735	1.6767	4.6914	1.3145
Case 266	2.253	2.352	1.6767	3.6914	2.347
Case 267	1.2549	2.3314	2.6767	3.3086	1.653
Case 268	2.2549	4.3215	4.3415	1.6586	4.024
Case 269	3.2354	4.0255	3.6767	1.6914	4
Case 270	2.9962	4.6785	4.6767	1.6586	4.0085
Case 271	2.4921	1.3265	2.3415	2.3086	2.3385
Case 272	2.2687	4.648	4.3233	1	3.6855
Case 273	1.2549	2.3215	1.3233	4.3086	1.6855
Case 274	3.0195	3.9745	1.6648	2	3.6615
Case 275	2	3.9696	3.0182	2.6414	3.9676
Case 276	1.7627	2.3265	2.0063	2.35	1.6855
Case 277	1.2549	2.3314	2.6767	3.3086	1.3385
Case 278	2.7432	4.3215	4.3415	1.6586	4.024
Case 279	4	4.0255	3.6767	1.6914	4.323
Case 280	2.2373	4.6785	4.6767	1.6586	3.6615
Case 281	2.4921	1.3265	2.3415	2.3086	2.3385
Case 282	3.7275	5	4.3233	1	4.3145

Case 283	1.2549	2.3215	1.3233	4.3086	1.6855
Case 284	3.7785	4.6785	1.6648	2	3.6855
Case 285	2.747	3.9696	3.0182	2.6414	3.3385
Case 286	1.7627	2.0049	2.0063	2.35	1.976
Case 287	1.2549	2.3314	2.6767	3.3086	1.653
Case 288	1.9824	4.3215	4.3415	1.6586	3.347
Case 289	3.2354	4.6785	3.6767	1.6914	3.653
Case 290	2.2373	4.6785	4.6767	1.6586	4.3385
Case 291	2.4921	1.3265	2.3415	2.3086	2.3385
Case 292	3.7275	4.648	4.3233	1	3.653
Case 293	1.2549	2.3215	1.3233	4.3086	1.6855
Case 294	2.2549	4.3265	1.6648	2	3.976
Case 295	3.7489	3.9696	3.0182	2.6414	3.677
Case 296	1.7627	2.0049	2.0063	2.35	1.347
Case 297	2.2568	2.352	4.3233	1.6914	2.0324
Case 298	4.2373	1.648	3.3233	3.0415	2.2906
Case 299	3.9843	3.9951	1.6648	4.35	3.9676
Case 300	4.0157	4.0255	1.6767	3.6914	4.3385
Case 301	1.7627	4.3215	1.6648	4.6914	3.3385
Case 302	2.2549	2.3215	2.3233	1.65	1.3145
Case 303	1.5098	4.3265	1	4.3086	3.653
Case 304	4.0157	1.6735	4.3233	1.3086	2.024
Case 305	3.9843	1.3265	4.6767	1.6914	1.6855
Case 306	1.4902	3.9951	1.6648	4.35	4
Case 307	4.0157	4.0255	1.6767	3.6914	4.0324
Case 308	1.9824	4.3215	1.6648	4.6914	3.653

Case 309	2.0019	2.352	4.3233	1.6914	2.347
Case 310	1.5079	1.648	3.3233	3.0415	4.347
Case 311	3.9843	3.9951	1.6648	4.35	3.6855
Case 312	4.0157	4.0255	1.6767	3.6914	4.0324
Case 313	1.747	4.3215	1.6648	4.6914	4.6615
Case 314	2.2549	2.3215	2.3233	1.65	1.3145
Case 315	2.0157	4.3265	1	4.3086	3.6855
Case 316	4	1.6735	4.3233	1.3086	2.3385
Case 317	3.9843	1.3265	4.6767	1.6914	1.6855
Case 318	1.4902	3.9951	1.6648	4.35	4
Case 319	4.0157	4.0255	1.6767	3.6914	4.0324
Case 320	1.9824	4.3215	1.6648	4.6914	3.653
Case 321	3.9843	3.9951	1.6648	4.35	3.6855
Case 322	4.0157	4.0255	1.6767	3.6914	4.0324
Case 323	1.747	4.3215	1.6648	4.6914	4.6615
Case 324	2.2549	2.3215	2.3233	1.65	1.3145
Case 325	2.0157	4.3265	1	4.3086	3.6855
Case 326	1.2549	2.3215	1.3233	4.3086	1.6855
Case 327	3.7785	4.6785	1.6648	2	3.6855

Outer Loading

	SS1	SS2	SS3	SS4	WE1	WE2	WE3	SI1	SI2	SI3	SF1	SF2	SF3
Sample 0	0.8363	0.889	0.8805	0.7818	0.8783	0.8475	0.8066	0.972	0.9479	0.8386	0.9063	0.9287	0.8077
Sample 1	0.8409	0.8659	0.8751	0.8303	0.8825	0.8953	0.9577	0.8149	0.9031	0.8386	0.9234	0.9208	0.7777
Sample 2	0.8355	0.8982	0.8563	0.8387	0.8898	0.9792	0.8685	0.959	0.9737	0.8056	0.9241	0.928	0.8383
Sample 3	0.874	0.8949	0.8639	0.8289	0.8678	0.9584	0.9168	0.9313	0.9515	0.8423	0.9115	0.9301	0.8157
Sample 4	0.8607	0.8888	0.8578	0.7952	0.8888	0.9765	0.886	0.9003	0.956	0.8562	0.9115	0.9353	0.8342
Sample 5	0.866	0.9059	0.8798	0.8262	0.8869	0.9745	0.8892	0.9531	0.9562	0.8224	0.9066	0.93	0.8155
Sample 6	0.8734	0.8958	0.8389	0.8434	0.8959	0.9645	0.9128	0.9372	0.9576	0.848	0.9117	0.9258	0.8206
Sample 7	0.8442	0.8925	0.8657	0.8109	0.8749	0.9718	0.8976	0.957	0.9588	0.8404	0.9168	0.9314	0.8302
Sample 8	0.8602	0.8903	0.8416	0.8301	0.8812	0.9688	0.8909	0.9525	0.9677	0.8148	0.9115	0.9316	0.8039
Sample 9	0.8658	0.8844	0.8695	0.8024	0.8746	0.9744	0.8888	0.9509	0.9607	0.8543	0.9198	0.9378	0.8196
Sample 10	0.8279	0.8783	0.8602	0.8269	0.8721	0.9882	0.8299	0.8995	0.9504	0.8638	0.9296	0.9221	0.7562
Sample 11	0.8399	0.8684	0.8464	0.8376	0.8636	0.6823	0.9295	0.5362	0.9674	0.8468	0.9086	0.9196	0.8252
Sample 12	0.8586	0.8923	0.8705	0.8179	0.87	0.9807	0.7521	0.8469	0.8855	0.8187	0.9095	0.9352	0.8188
Sample 13	0.8463	0.8626	0.859	0.7967	0.8687	0.9856	0.87	0.9356	0.9671	0.8299	0.922	0.9245	0.7495
Sample 14	0.8402	0.91	0.87	0.8149	0.8922	0.9006	0.785	0.9911	0.9608	0.8551	0.9164	0.9278	0.7969
Sample 15	0.8302	0.8814	0.8573	0.8231	0.8825	0.9738	0.8951	0.9483	0.9612	0.8478	0.9177	0.9275	0.8119
Sample 16	0.8491	0.888	0.823	0.794	0.8694	0.9536	0.9339	0.9256	0.9541	0.8609	0.9177	0.9207	0.8344
Sample 17	0.8605	0.9023	0.8087	0.834	0.8675	0.9747	0.8747	0.9526	0.9656	0.8332	0.9144	0.9286	0.8132
Sample 18	0.843	0.8668	0.8721	0.8092	0.8778	0.9708	0.8978	0.9206	0.9634	0.8568	0.9199	0.9283	0.8131
Sample 19	0.8488	0.8992	0.8522	0.8132	0.8748	0.9812	0.8697	0.9602	0.9706	0.7861	0.9075	0.9376	0.8485
Sample 20	0.8471	0.8737	0.8825	0.7936	0.8958	0.9174	0.959	0.8545	0.9663	0.8183	0.9051	0.9337	0.8371
Sample 21	0.8525	0.8732	0.8493	0.8028	0.8746	0.9585	0.9256	0.9379	0.9549	0.8388	0.914	0.9335	0.8344
Sample 22	0.8718	0.8928	0.8561	0.796	0.8764	0.9615	0.8996	0.915	0.9526	0.8491	0.9149	0.9319	0.827
Sample 23	0.8573	0.8927	0.8384	0.8227	0.8686	0.9779	0.8784	0.9449	0.9552	0.8325	0.9224	0.9288	0.7962

Sample 24	0.8575	0.8676	0.838	0.8433	0.8737	0.9678	0.8868	0.9541	0.9581	0.8366	0.9197	0.9327	0.8138
Sample 25	0.8796	0.8722	0.8827	0.8166	0.8948	0.8856	0.9588	0.814	0.9531	0.8373	0.9113	0.9291	0.8044
Sample 26	0.8616	0.877	0.8555	0.7998	0.8731	0.9315	0.9269	0.8317	0.9744	0.8019	0.9073	0.9319	0.7942
Sample 27	0.8538	0.8573	0.8875	0.7984	0.864	0.919	0.9487	0.8509	0.963	0.8396	0.9086	0.9274	0.7931
Sample 28	0.8579	0.907	0.8408	0.8365	0.9069	0.9969	0.8057	0.9437	0.9651	0.8109	0.919	0.9324	0.8192
Sample 29	0.8333	0.8776	0.8663	0.7923	0.8663	0.9445	0.9201	0.9285	0.9715	0.8119	0.9156	0.9248	0.7902
Sample 30	0.8593	0.8884	0.8661	0.7764	0.8885	0.8916	0.6356	0.989	0.9639	0.8277	0.9	0.9228	0.8204
Sample 31	0.8689	0.8827	0.858	0.821	0.8819	0.957	0.9122	0.9253	0.9725	0.8254	0.9103	0.9326	0.8318
Sample 32	0.8424	0.8968	0.8208	0.8365	0.8779	0.9617	0.9051	0.9314	0.9679	0.8422	0.9181	0.9341	0.7991
Sample 33	0.8585	0.8837	0.8527	0.7936	0.8676	0.979	0.8816	0.9494	0.9541	0.8535	0.9228	0.9324	0.7956
Sample 34	0.8572	0.8861	0.8586	0.7627	0.8899	0.9556	0.909	0.9023	0.9671	0.8281	0.9095	0.9395	0.8086
Sample 35	0.8526	0.9082	0.8727	0.8141	0.8927	0.9739	0.8867	0.9572	0.9628	0.8105	0.9135	0.9279	0.8274
Sample 36	0.862	0.8797	0.8475	0.8395	0.8799	0.9574	0.9146	0.9163	0.9727	0.8496	0.9146	0.9339	0.8076
Sample 37	0.8813	0.8701	0.8722	0.7952	0.8735	0.9732	0.8864	0.9387	0.9668	0.8398	0.9136	0.9248	0.8242
Sample 38	0.8424	0.8707	0.8347	0.8257	0.8609	0.9706	0.9018	0.9221	0.9624	0.8377	0.9017	0.934	0.7943
Sample 39	0.8458	0.8985	0.8797	0.8357	0.866	0.9414	0.9177	0.9241	0.9675	0.8028	0.916	0.9315	0.8148
Sample 40	0.8535	0.8945	0.848	0.8287	0.8864	0.9382	0.9425	0.8857	0.9784	0.8326	0.9156	0.9214	0.7838
Sample 41	0.8646	0.8837	0.8569	0.7887	0.8608	0.9624	0.9013	0.9349	0.9601	0.8247	0.9108	0.9248	0.8186
Sample 42	0.8482	0.8675	0.8619	0.821	0.8625	0.9623	0.9067	0.9332	0.9496	0.8552	0.9172	0.9321	0.807
Sample 43	0.8608	0.8967	0.8621	0.8083	0.9034	0.9969	0.8097	0.9344	0.9527	0.8482	0.9157	0.9371	0.8316
Sample 44	0.8405	0.89	0.8582	0.8205	0.873	0.949	0.8984	0.8363	0.956	0.8568	0.917	0.9257	0.8194
Sample 45	0.8239	0.875	0.862	0.7737	0.8918	0.9226	0.9588	0.8903	0.9674	0.8393	0.9084	0.9296	0.8195
Sample 46	0.8457	0.8912	0.8262	0.7506	0.8912	0.9126	0.9427	0.8339	0.9674	0.8226	0.9028	0.9276	0.8221
Sample 47	0.8455	0.9026	0.8619	0.7982	0.8697	0.952	0.9321	0.9339	0.9465	0.8466	0.9153	0.9152	0.8142
Sample 48	0.8612	0.8974	0.8308	0.7923	0.8834	0.9908	0.7519	0.852	0.9454	0.8421	0.9087	0.9299	0.8024
Sample 49	0.8522	0.8959	0.8504	0.8095	0.8751	0.9908	0.8455	0.9117	0.9451	0.8338	0.9177	0.9236	0.8385
Sample 50	0.8682	0.8837	0.8398	0.7912	0.8732	0.9586	0.8221	0.9853	0.8309	0.8184	0.8979	0.9268	0.7975

Sample 51	0.8733	0.883	0.8601	0.793	0.8733	0.9612	0.9037	0.9336	0.9666	0.8375	0.9117	0.9368	0.8258
Sample 52	0.8747	0.8725	0.8628	0.7563	0.8697	0.9436	0.9272	0.8778	0.9693	0.8302	0.9096	0.9204	0.8458
Sample 53	0.846	0.906	0.8531	0.8347	0.8805	0.9106	0.9367	0.8126	0.9514	0.812	0.9105	0.9335	0.7948
Sample 54	0.8511	0.8931	0.8702	0.8027	0.8751	0.9808	0.8664	0.9567	0.9666	0.8222	0.9162	0.9299	0.8115
Sample 55	0.8719	0.9033	0.8512	0.8193	0.8701	0.9815	0.8663	0.932	0.9577	0.8227	0.9145	0.938	0.8128
Sample 56	0.8452	0.8951	0.8795	0.8166	0.889	0.976	0.8871	0.9094	0.9584	0.8518	0.9175	0.9324	0.7865
Sample 57	0.8381	0.8818	0.8572	0.8193	0.8958	0.9721	0.8882	0.9553	0.9684	0.8324	0.9201	0.9398	0.822
Sample 58	0.848	0.9068	0.8332	0.8369	0.8795	0.9732	0.8994	0.9529	0.9574	0.8542	0.92	0.9361	0.7851
Sample 59	0.8486	0.8801	0.8596	0.8145	0.876	0.9699	0.8988	0.9453	0.9749	0.8357	0.9139	0.9279	0.8312
Sample 60	0.8866	0.8789	0.8561	0.836	0.8583	0.9781	0.873	0.9551	0.9524	0.8315	0.9193	0.93	0.811
Sample 61	0.8389	0.8665	0.8478	0.8035	0.8809	0.9625	0.8992	0.9314	0.9597	0.808	0.9178	0.9262	0.7975
Sample 62	0.8714	0.9029	0.8684	0.8076	0.8802	0.9496	0.8391	0.7987	0.944	0.8386	0.9091	0.9283	0.8288
Sample 63	0.8467	0.8947	0.8547	0.7944	0.8762	0.9729	0.8812	0.9423	0.967	0.8484	0.919	0.9249	0.8217
Sample 64	0.8574	0.8964	0.8628	0.798	0.897	0.9402	0.9391	0.9174	0.9643	0.8318	0.9088	0.9316	0.7931
Sample 65	0.8733	0.8886	0.8322	0.8185	0.8807	0.9605	0.9104	0.9275	0.9792	0.8238	0.9174	0.9315	0.8209
Sample 66	0.8596	0.8939	0.861	0.8	0.8837	0.7697	0.9601	0.653	0.969	0.8603	0.9146	0.9244	0.7963
Sample 67	0.8536	0.8934	0.8587	0.8326	0.8623	0.9739	0.8805	0.9503	0.9761	0.8075	0.9133	0.9329	0.8461
Sample 68	0.8698	0.8756	0.8626	0.7959	0.8869	0.7647	0.8723	0.5684	0.9589	0.8406	0.9083	0.9327	0.7879
Sample 69	0.867	0.8954	0.8735	0.7893	0.8844	0.9661	0.8972	0.9441	0.9699	0.7971	0.9112	0.9259	0.8053
Sample 70	0.8699	0.8839	0.8893	0.8088	0.8727	0.9809	0.8567	0.9077	0.9537	0.828	0.8999	0.929	0.8382
Sample 71	0.8542	0.8823	0.867	0.8083	0.8702	0.9424	0.923	0.8981	0.9686	0.8045	0.9108	0.9275	0.8083
Sample 72	0.8548	0.8857	0.8352	0.8388	0.8729	0.9803	0.8752	0.951	0.954	0.8461	0.9143	0.9272	0.8605
Sample 73	0.852	0.8943	0.8525	0.8245	0.8775	0.9556	0.9237	0.9152	0.9648	0.8309	0.9095	0.9247	0.8321
Sample 74	0.8545	0.8845	0.8314	0.8038	0.8612	0.3397	0.6837	0.1139	0.9714	0.7859	0.899	0.9199	0.8232
Sample 75	0.8543	0.8983	0.8658	0.8448	0.8888	0.9757	0.894	0.9541	0.9672	0.8193	0.9114	0.9384	0.8547
Sample 76	0.8507	0.8638	0.8567	0.7793	0.8802	0.8443	0.9692	0.7672	0.9655	0.8166	0.9066	0.9294	0.8149
Sample 77	0.8589	0.8871	0.8619	0.7919	0.8672	0.9845	0.8727	0.9579	0.9599	0.8226	0.9154	0.9251	0.8202

Sample 78	0.8596	0.8709	0.8518	0.8187	0.8939	0.9261	0.9413	0.9119	0.9637	0.8469	0.9079	0.9275	0.803
Sample 79	0.8477	0.8979	0.8751	0.8198	0.8999	0.9423	0.9446	0.9	0.9667	0.848	0.9116	0.9333	0.7975
Sample 80	0.8259	0.8599	0.8375	0.8093	0.8684	0.962	0.9057	0.935	0.9583	0.842	0.9158	0.9232	0.8248
Sample 81	0.8376	0.8826	0.8462	0.7996	0.887	0.9405	0.9404	0.9024	0.9647	0.8334	0.9083	0.9349	0.8003
Sample 82	0.854	0.8637	0.8924	0.797	0.8887	0.9452	0.9256	0.8924	0.972	0.8535	0.909	0.9371	0.8067
Sample 83	0.871	0.9048	0.8516	0.8325	0.8853	0.9837	0.8723	0.9217	0.9692	0.8244	0.9139	0.9362	0.8147
Sample 84	0.8448	0.8772	0.8562	0.845	0.8742	0.6738	0.8451	0.4643	0.9596	0.8507	0.9103	0.9373	0.8272
Sample 85	0.8597	0.898	0.8726	0.8099	0.8592	0.9895	0.831	0.9497	0.9542	0.8302	0.9159	0.9247	0.7992
Sample 86	0.8544	0.888	0.8651	0.843	0.861	0.9581	0.9138	0.904	0.9707	0.8582	0.917	0.9208	0.8141
Sample 87	0.8813	0.8925	0.8391	0.8422	0.8757	0.9678	0.9003	0.9539	0.9572	0.831	0.9131	0.9289	0.8271
Sample 88	0.8739	0.9035	0.8764	0.8387	0.8989	0.9692	0.9014	0.9501	0.9624	0.8576	0.9156	0.9374	0.8306
Sample 89	0.8537	0.8687	0.8699	0.777	0.8839	0.7703	0.9747	0.6788	0.963	0.856	0.9143	0.932	0.8214
Sample 90	0.8339	0.8888	0.8315	0.8235	0.8794	0.9469	0.9289	0.9261	0.9757	0.8001	0.9177	0.9223	0.764
Sample 91	0.8552	0.8901	0.8449	0.8127	0.8876	0.9765	0.8801	0.949	0.9464	0.8236	0.9146	0.9294	0.8034
Sample 92	0.8561	0.8805	0.8604	0.7889	0.8614	0.9929	0.834	0.9303	0.9652	0.8277	0.9138	0.9248	0.8309
Sample 93	0.8564	0.8806	0.8408	0.8221	0.8766	0.9588	0.9058	0.9367	0.9772	0.8398	0.913	0.924	0.8041
Sample 94	0.8435	0.8685	0.8797	0.822	0.8696	0.9796	0.8817	0.9196	0.9621	0.8459	0.9153	0.936	0.7961
Sample 95	0.8702	0.8722	0.861	0.8372	0.868	0.9721	0.8964	0.9659	0.9641	0.8492	0.9213	0.9317	0.8045
Sample 96	0.8739	0.8684	0.8616	0.8024	0.8926	0.971	0.9013	0.9483	0.9694	0.8033	0.9101	0.9249	0.8375
Sample 97	0.852	0.8755	0.8987	0.8019	0.8749	0.972	0.8837	0.9327	0.9628	0.8558	0.913	0.9225	0.823
Sample 98	0.8588	0.8836	0.8444	0.7991	0.8848	0.9972	0.8022	0.9248	0.9695	0.7959	0.9131	0.9353	0.8019
Sample 99	0.8712	0.9125	0.8621	0.8261	0.902	0.9632	0.9049	0.952	0.9656	0.8392	0.9187	0.9289	0.8266
Sample 100	0.8341	0.8805	0.8859	0.8287	0.8733	0.9407	0.9476	0.9158	0.9649	0.858	0.9129	0.9264	0.8236
Sample 101	0.8265	0.8897	0.8427	0.7987	0.8864	0.9622	0.9243	0.9402	0.9641	0.8089	0.9111	0.918	0.7923
Sample 102	0.8591	0.9002	0.8792	0.8383	0.8764	0.9683	0.8986	0.9493	0.9508	0.8334	0.9151	0.9343	0.7678
Sample 103	0.8438	0.8919	0.8684	0.8003	0.871	0.9736	0.8948	0.9125	0.9563	0.8399	0.9138	0.9305	0.8273
Sample 104	0.892	0.898	0.8835	0.8202	0.8836	0.9553	0.8966	0.9409	0.9661	0.7764	0.9051	0.9239	0.8315

Sample 105	0.8613	0.8662	0.864	0.7896	0.8706	0.964	0.8927	0.8857	0.9693	0.8498	0.9123	0.9277	0.8213
Sample 106	0.8525	0.8783	0.8623	0.8426	0.893	0.9359	0.9337	0.9012	0.9598	0.8691	0.9131	0.9297	0.7947
Sample 107	0.8362	0.8895	0.8389	0.8181	0.8701	0.9587	0.9183	0.9451	0.9575	0.8584	0.9182	0.9231	0.8223
Sample 108	0.8717	0.8905	0.8479	0.8095	0.8689	0.9587	0.9011	0.8808	0.9366	0.8513	0.9137	0.9193	0.789
Sample 109	0.8673	0.8774	0.8751	0.8123	0.8874	0.9827	0.8599	0.9178	0.9688	0.8137	0.9108	0.9307	0.7959
Sample 110	0.8665	0.8971	0.8629	0.84	0.881	0.9619	0.9082	0.9417	0.9618	0.8498	0.9127	0.9317	0.8434
Sample 111	0.856	0.8935	0.8617	0.8142	0.8607	0.9679	0.8992	0.9452	0.9662	0.8476	0.924	0.9312	0.8419
Sample 112	0.8306	0.8742	0.8722	0.8119	0.8532	0.9488	0.92	0.9069	0.9678	0.8307	0.9094	0.9245	0.8258
Sample 113	0.8647	0.8815	0.8345	0.8348	0.8759	0.9793	0.8706	0.9309	0.9454	0.8459	0.9114	0.9246	0.7751
Sample 114	0.8677	0.8595	0.8559	0.8565	0.8611	0.9549	0.908	0.9313	0.9678	0.8394	0.9139	0.92	0.8324
Sample 115	0.8465	0.9109	0.8164	0.7931	0.8781	0.9639	0.909	0.9477	0.97	0.8189	0.9218	0.9383	0.8011
Sample 116	0.851	0.8995	0.8622	0.7715	0.8723	0.9592	0.918	0.9398	0.9673	0.8208	0.9166	0.9273	0.7988
Sample 117	0.8485	0.8905	0.8481	0.8051	0.8599	0.9896	0.8354	0.9028	0.9504	0.8595	0.9154	0.9348	0.7967
Sample 118	0.8493	0.8752	0.8518	0.8006	0.8877	0.9328	0.9538	0.8983	0.9652	0.8211	0.9087	0.9248	0.8183
Sample 119	0.8596	0.8701	0.8665	0.8327	0.8583	0.9605	0.9034	0.9413	0.9742	0.8166	0.9185	0.9197	0.7818
Sample 120	0.8625	0.8963	0.8499	0.8218	0.8524	0.9762	0.8574	0.9641	0.97	0.7916	0.9206	0.9186	0.829
Sample 121	0.8715	0.9017	0.8367	0.8223	0.8874	0.9199	0.9532	0.8538	0.9575	0.8349	0.9034	0.9283	0.8077
Sample 122	0.823	0.8854	0.8712	0.8148	0.8495	0.9577	0.9174	0.925	0.9624	0.8517	0.9169	0.9253	0.803
Sample 123	0.8541	0.8979	0.8589	0.7901	0.8956	0.9345	0.9419	0.9065	0.9567	0.8454	0.9126	0.9326	0.8008
Sample 124	0.8659	0.8893	0.8741	0.7658	0.8778	0.9708	0.9055	0.9457	0.959	0.8343	0.9162	0.933	0.8269
Sample 125	0.8267	0.8862	0.8601	0.8244	0.8798	0.9682	0.9075	0.9492	0.967	0.8258	0.9149	0.9339	0.8121
Sample 126	0.8566	0.8644	0.8784	0.7708	0.8819	0.9742	0.8863	0.9349	0.9731	0.8055	0.9035	0.9289	0.8241
Sample 127	0.8608	0.886	0.8568	0.8063	0.8628	0.9491	0.9173	0.8992	0.9691	0.8483	0.9149	0.9293	0.8041
Sample 128	0.8654	0.8956	0.8488	0.8177	0.8832	0.6006	0.2671	0.8221	0.9627	0.8115	0.9023	0.9314	0.8252
Sample 129	0.8412	0.8888	0.8785	0.8303	0.8918	0.9628	0.9145	0.9406	0.97	0.8356	0.9133	0.9304	0.7902
Sample 130	0.8502	0.8667	0.8748	0.8119	0.8783	0.9585	0.9187	0.9284	0.9591	0.7953	0.9107	0.9306	0.8284
Sample 131	0.8268	0.9015	0.8377	0.8397	0.9005	0.9753	0.884	0.9551	0.9701	0.8354	0.9173	0.9333	0.8034

Sample 132	0.8645	0.8964	0.8587	0.7874	0.8715	0.9779	0.8756	0.8974	0.9559	0.8416	0.9176	0.9299	0.7676
Sample 133	0.8142	0.8481	0.8758	0.8199	0.863	0.8768	0.962	0.7857	0.9598	0.8747	0.9093	0.9294	0.8244
Sample 134	0.8693	0.8761	0.8669	0.8079	0.8822	0.2266	-0.1816	-0.1037	0.472	0.8036	0.9129	0.9363	0.8189
Sample 135	0.8698	0.8873	0.8449	0.8341	0.8583	0.8975	0.9616	0.8621	0.9666	0.839	0.9111	0.9247	0.8116
Sample 136	0.8648	0.8893	0.8567	0.8028	0.8835	0.9496	0.9265	0.9193	0.9702	0.8391	0.9076	0.9271	0.8358
Sample 137	0.872	0.9098	0.8863	0.7997	0.8981	0.978	0.8598	0.9599	0.9598	0.8026	0.9056	0.9345	0.7882
Sample 138	0.8686	0.9044	0.8706	0.8225	0.8725	0.9385	0.9349	0.9157	0.9641	0.8009	0.9093	0.9311	0.8249
Sample 139	0.8544	0.8952	0.8531	0.8331	0.8763	0.6119	0.9337	0.4931	0.9601	0.8534	0.9051	0.9311	0.7491
Sample 140	0.8421	0.8711	0.8695	0.8035	0.884	0.7251	0.9851	0.6526	0.9724	0.8181	0.9096	0.9258	0.8109
Sample 141	0.8745	0.8919	0.8546	0.8175	0.8678	0.9778	0.8759	0.9614	0.97	0.8317	0.917	0.929	0.8318
Sample 142	0.8762	0.8992	0.8696	0.7797	0.8853	0.9807	0.8656	0.9539	0.9686	0.8244	0.9152	0.9332	0.825
Sample 143	0.844	0.8989	0.8383	0.7912	0.8779	0.8586	0.9653	0.7707	0.9615	0.8609	0.9142	0.9359	0.7913
Sample 144	0.882	0.8643	0.8588	0.8406	0.8784	0.9657	0.9149	0.9447	0.9621	0.8474	0.9123	0.9377	0.8639
Sample 145	0.8372	0.8751	0.8505	0.8281	0.8992	0.1845	0.7125	0.0694	0.6766	0.8249	0.9106	0.9286	0.7942
Sample 146	0.8529	0.8915	0.887	0.8446	0.8824	0.973	0.8929	0.9611	0.9555	0.8453	0.9138	0.934	0.8301
Sample 147	0.8566	0.8773	0.8502	0.8086	0.8759	0.958	0.9111	0.9315	0.9708	0.8508	0.9179	0.9251	0.7972
Sample 148	0.8633	0.8873	0.851	0.8058	0.8642	0.9777	0.8698	0.9186	0.967	0.8351	0.9068	0.9379	0.8232
Sample 149	0.86	0.893	0.8395	0.7757	0.8555	0.9753	0.8941	0.947	0.9612	0.8448	0.9163	0.9315	0.8084
Sample 150	0.8485	0.907	0.8708	0.8402	0.8916	0.9471	0.9357	0.9101	0.9639	0.8341	0.9104	0.9323	0.8096
Sample 151	0.8655	0.8798	0.834	0.8155	0.8558	0.9139	0.9615	0.8843	0.9657	0.8292	0.9029	0.9212	0.8127
Sample 152	0.8723	0.8812	0.8456	0.8336	0.8606	0.9184	0.9038	0.9676	0.9488	0.8435	0.9143	0.9255	0.7833
Sample 153	0.8691	0.8964	0.8447	0.795	0.8735	0.9751	0.8862	0.9563	0.9706	0.8339	0.9203	0.9269	0.8081
Sample 154	0.8662	0.8852	0.8523	0.8086	0.8724	0.8552	0.9587	0.7564	0.9706	0.8175	0.9082	0.9275	0.8269
Sample 155	0.8479	0.8712	0.8835	0.819	0.8809	0.9586	0.9068	0.9418	0.9492	0.8555	0.9231	0.9316	0.742
Sample 156	0.8629	0.8951	0.8426	0.7726	0.8841	0.9528	0.9138	0.8795	0.9658	0.8038	0.9111	0.9284	0.8277
Sample 157	0.8815	0.8901	0.8694	0.8011	0.8736	0.9686	0.9146	0.9342	0.9537	0.8424	0.9116	0.9318	0.8151
Sample 158	0.8626	0.8762	0.8714	0.8219	0.8799	0.9625	0.9172	0.9334	0.9537	0.8565	0.9223	0.9258	0.8074

Sample 159	0.8619	0.9041	0.8658	0.838	0.8499	0.9842	0.8693	0.9378	0.9639	0.8215	0.913	0.928	0.8367
Sample 160	0.8515	0.8838	0.8639	0.8537	0.8706	0.7689	0.7997	0.9506	0.9339	0.8408	0.9078	0.9262	0.7979
Sample 161	0.8785	0.8666	0.8708	0.7858	0.8559	0.9807	0.8656	0.948	0.9617	0.8287	0.9196	0.9287	0.8376
Sample 162	0.8608	0.8905	0.8581	0.7958	0.8679	0.9631	0.902	0.9316	0.9669	0.8204	0.9152	0.9252	0.7979
Sample 163	0.8362	0.8901	0.8719	0.802	0.8815	0.9658	0.9065	0.9249	0.9713	0.8124	0.9042	0.934	0.8349
Sample 164	0.84	0.8968	0.8442	0.8147	0.8658	0.9807	0.8893	0.9604	0.9634	0.8354	0.9121	0.9326	0.8444
Sample 165	0.848	0.9021	0.8533	0.8594	0.8834	0.9776	0.8687	0.9647	0.9773	0.7847	0.9268	0.9335	0.8101
Sample 166	0.8562	0.8767	0.8546	0.801	0.8722	0.9575	0.9298	0.9179	0.9682	0.8672	0.9127	0.9353	0.8103
Sample 167	0.8461	0.8611	0.8937	0.7931	0.8899	0.9715	0.8789	0.8919	0.9653	0.8423	0.9145	0.9295	0.8293
Sample 168	0.8379	0.8914	0.8718	0.8293	0.8741	0.9586	0.9289	0.9215	0.9663	0.8525	0.9076	0.9384	0.8185
Sample 169	0.8529	0.8853	0.8778	0.8204	0.8572	0.8184	0.5476	0.9495	0.9125	0.8526	0.9095	0.9283	0.7799
Sample 170	0.8461	0.8898	0.8803	0.8032	0.8716	0.9883	0.8588	0.9302	0.9517	0.8026	0.9062	0.936	0.8252
Sample 171	0.8314	0.8919	0.8358	0.8247	0.8808	0.9552	0.9076	0.8733	0.9413	0.8093	0.9144	0.9318	0.795
Sample 172	0.8449	0.891	0.8434	0.795	0.8631	0.9465	0.9459	0.9013	0.9704	0.8341	0.9168	0.9298	0.8349
Sample 173	0.8735	0.8955	0.8484	0.8433	0.8768	0.9843	0.87	0.9559	0.9621	0.8449	0.9121	0.9412	0.8337
Sample 174	0.8687	0.8909	0.859	0.8372	0.8715	0.991	0.8038	0.901	0.9663	0.8279	0.9128	0.924	0.804
Sample 175	0.8544	0.9007	0.8428	0.8148	0.8618	0.9727	0.886	0.9536	0.9641	0.8399	0.9212	0.9184	0.825
Sample 176	0.8621	0.9018	0.8505	0.787	0.8849	0.9695	0.8961	0.9536	0.9586	0.8341	0.9229	0.9222	0.7837
Sample 177	0.8575	0.8788	0.8444	0.8045	0.88	0.9863	0.8733	0.9606	0.9524	0.8481	0.9098	0.928	0.8423
Sample 178	0.8537	0.8745	0.8291	0.8129	0.8781	0.7236	0.6642	0.923	0.8363	0.8343	0.9135	0.9305	0.8012
Sample 179	0.8622	0.8689	0.8629	0.8382	0.8744	0.9302	0.9261	0.8544	0.7849	0.8098	0.9071	0.9315	0.8222
Sample 180	0.8676	0.8889	0.8339	0.8335	0.879	0.9949	0.8287	0.937	0.9673	0.8196	0.9145	0.9337	0.8107
Sample 181	0.8315	0.8738	0.8583	0.8022	0.8746	0.9566	0.919	0.923	0.9716	0.8098	0.9167	0.9228	0.7859
Sample 182	0.8433	0.902	0.8727	0.805	0.8855	0.965	0.9105	0.9439	0.9695	0.8324	0.9154	0.9295	0.8088
Sample 183	0.8433	0.886	0.8717	0.8315	0.8697	0.95	0.9273	0.934	0.9641	0.8099	0.9115	0.9297	0.8181
Sample 184	0.8503	0.8838	0.848	0.8207	0.8621	0.911	0.9525	0.8452	0.9642	0.8396	0.9045	0.9261	0.841
Sample 185	0.8634	0.8854	0.8827	0.8001	0.8826	0.9559	0.8473	0.8097	0.9691	0.8144	0.9139	0.9285	0.7952

Sample 186	0.8698	0.9067	0.8782	0.8732	0.8906	0.9592	0.9153	0.9334	0.9677	0.8387	0.9143	0.9305	0.7757
Sample 187	0.864	0.909	0.8329	0.8246	0.8717	0.987	0.8508	0.9308	0.9701	0.7892	0.9115	0.9367	0.8097
Sample 188	0.8462	0.887	0.8678	0.7958	0.8593	0.9748	0.9012	0.9209	0.9675	0.8428	0.9166	0.9359	0.8341
Sample 189	0.8515	0.888	0.8172	0.8384	0.8623	0.9764	0.8865	0.9237	0.9719	0.8454	0.9091	0.9329	0.839
Sample 190	0.8788	0.8926	0.8739	0.8123	0.884	0.9826	0.8669	0.9509	0.9452	0.8363	0.9195	0.9272	0.7893
Sample 191	0.8883	0.9054	0.8651	0.8206	0.8711	0.9653	0.896	0.9491	0.954	0.8343	0.9123	0.9202	0.8386
Sample 192	0.8511	0.8697	0.8691	0.8134	0.8654	0.8872	0.9659	0.8592	0.9584	0.8462	0.9034	0.9178	0.824
Sample 193	0.8582	0.879	0.8519	0.7733	0.879	0.9641	0.8927	0.893	0.9725	0.8295	0.9168	0.9384	0.8333
Sample 194	0.847	0.8798	0.8719	0.8091	0.8815	0.9488	0.9343	0.9179	0.9623	0.826	0.9118	0.9304	0.8412
Sample 195	0.8867	0.8953	0.8637	0.7876	0.8855	0.9919	0.8145	0.8929	0.9661	0.826	0.9074	0.9226	0.824
Sample 196	0.8443	0.9019	0.8651	0.8153	0.8853	0.9772	0.9004	0.9497	0.9563	0.8471	0.9176	0.9362	0.8291
Sample 197	0.8493	0.8766	0.8677	0.8284	0.8613	0.9553	0.8019	0.9935	0.6184	0.836	0.9198	0.9179	0.7999
Sample 198	0.8515	0.8971	0.8551	0.835	0.8846	0.9577	0.9263	0.9374	0.9656	0.8186	0.9145	0.9286	0.8408
Sample 199	0.868	0.8827	0.8646	0.8037	0.8775	0.9489	0.9184	0.8857	0.9637	0.809	0.9135	0.9291	0.7953
Sample 200	0.8398	0.8901	0.8651	0.8406	0.8753	0.9407	0.9405	0.9144	0.9645	0.8067	0.9103	0.9243	0.8168
Sample 201	0.8737	0.8757	0.8402	0.8442	0.8795	0.9538	0.9179	0.9251	0.9668	0.8291	0.9046	0.9299	0.8068
Sample 202	0.8592	0.881	0.8458	0.8055	0.8567	0.9665	0.8897	0.947	0.9641	0.835	0.9212	0.927	0.8145
Sample 203	0.8617	0.8881	0.8475	0.8409	0.8866	0.968	0.9105	0.9485	0.9663	0.8284	0.9119	0.9309	0.8368
Sample 204	0.8618	0.891	0.8752	0.7928	0.8821	0.9692	0.9003	0.9271	0.964	0.8277	0.9077	0.9335	0.8352
Sample 205	0.8314	0.8943	0.8448	0.8067	0.8945	0.9307	0.9352	0.899	0.9722	0.8154	0.9083	0.9328	0.8008
Sample 206	0.8494	0.9042	0.8349	0.7965	0.8649	0.9607	0.92	0.9144	0.9567	0.8248	0.9136	0.9211	0.8141
Sample 207	0.8696	0.9013	0.8497	0.8061	0.8805	0.9851	0.8597	0.9386	0.9615	0.8317	0.9144	0.9302	0.7807
Sample 208	0.8826	0.8979	0.8527	0.7952	0.8882	0.9753	0.8776	0.9566	0.9626	0.7874	0.9131	0.9258	0.8407
Sample 209	0.8578	0.8602	0.8612	0.7979	0.8793	0.8713	0.9177	0.7229	0.9641	0.8305	0.9145	0.9284	0.8319
Sample 210	0.8725	0.8738	0.8642	0.807	0.83	0.9148	0.9167	0.8058	0.9598	0.8469	0.9082	0.9271	0.801
Sample 211	0.8604	0.8703	0.871	0.8339	0.8807	0.9759	0.8941	0.9315	0.9508	0.8531	0.9166	0.9249	0.8315
Sample 212	0.8535	0.8851	0.893	0.7812	0.8754	0.3602	0.378	0.6852	0.8348	0.848	0.914	0.9282	0.8251

Sample 213	0.8701	0.9069	0.8423	0.8361	0.89	0.9739	0.885	0.9499	0.965	0.8275	0.9138	0.93	0.8158
Sample 214	0.8575	0.8854	0.8803	0.8222	0.8612	0.9726	0.8707	0.9567	0.9614	0.8037	0.9129	0.9273	0.8255
Sample 215	0.8309	0.8644	0.8655	0.8249	0.8799	0.9308	0.9434	0.8781	0.9688	0.8525	0.9156	0.9306	0.7848
Sample 216	0.8766	0.8955	0.8909	0.8371	0.8749	0.957	0.9061	0.9291	0.9436	0.81	0.9074	0.9334	0.7746
Sample 217	0.8488	0.8934	0.8787	0.8172	0.8909	0.9531	0.9138	0.9342	0.975	0.8412	0.915	0.9348	0.8434
Sample 218	0.872	0.9001	0.8478	0.8314	0.8693	0.9453	0.9407	0.8933	0.9506	0.8612	0.9123	0.9294	0.7783
Sample 219	0.8643	0.8871	0.8873	0.851	0.8849	0.9618	0.9061	0.928	0.9567	0.8518	0.9113	0.9257	0.8103
Sample 220	0.8853	0.8693	0.8515	0.7847	0.872	0.9525	0.9171	0.9231	0.9672	0.8385	0.905	0.921	0.8318
Sample 221	0.8412	0.8891	0.8574	0.785	0.886	0.9575	0.9166	0.9307	0.9526	0.8038	0.9086	0.9321	0.8096
Sample 222	0.8709	0.8883	0.8775	0.7853	0.8451	0.9479	0.9178	0.9238	0.9583	0.8063	0.9012	0.931	0.8477
Sample 223	0.8288	0.8794	0.8396	0.786	0.886	0.9017	0.8038	0.9966	0.9222	0.8099	0.9023	0.9329	0.8407
Sample 224	0.8546	0.8873	0.8677	0.7998	0.8905	0.956	0.9163	0.9251	0.9624	0.8334	0.9136	0.9302	0.8168
Sample 225	0.834	0.8765	0.8142	0.8183	0.8759	0.9612	0.9133	0.9408	0.9689	0.8553	0.922	0.9387	0.8254
Sample 226	0.8626	0.893	0.872	0.8117	0.8883	0.835	0.7208	0.9774	0.8947	0.8172	0.9015	0.9307	0.8104
Sample 227	0.8392	0.8824	0.8544	0.773	0.8897	0.9131	0.9567	0.8869	0.9764	0.8265	0.9086	0.9249	0.8062
Sample 228	0.8581	0.8876	0.8812	0.8274	0.8835	0.9897	0.8391	0.9128	0.9737	0.7964	0.9148	0.9365	0.8086
Sample 229	0.8271	0.8928	0.864	0.8187	0.8938	0.9586	0.9081	0.9408	0.9725	0.8251	0.9119	0.9346	0.8255
Sample 230	0.8449	0.8927	0.8382	0.8376	0.8595	0.9782	0.8808	0.9427	0.9615	0.8098	0.9039	0.9381	0.8233
Sample 231	0.8835	0.8808	0.8736	0.8243	0.8712	0.8022	0.7269	0.966	0.9385	0.8307	0.9134	0.9111	0.818
Sample 232	0.8529	0.9017	0.828	0.8293	0.8888	0.9543	0.9236	0.9342	0.9574	0.8358	0.9128	0.9261	0.8532
Sample 233	0.8383	0.8801	0.8745	0.8017	0.8633	0.9816	0.8643	0.9432	0.9677	0.8318	0.9199	0.9317	0.8145
Sample 234	0.8611	0.9026	0.8606	0.8118	0.8883	0.9847	0.8864	0.9506	0.9491	0.8483	0.9179	0.9304	0.828
Sample 235	0.8501	0.9021	0.851	0.8292	0.8881	0.4219	0.3467	0.7102	0.9389	0.8115	0.9036	0.941	0.8299
Sample 236	0.854	0.9098	0.8575	0.8201	0.8932	0.954	0.9253	0.9384	0.9547	0.8457	0.9156	0.9298	0.8085
Sample 237	0.8814	0.8897	0.8325	0.8093	0.8559	0.8903	0.7673	0.6785	0.9333	0.8553	0.9108	0.9304	0.8095
Sample 238	0.8678	0.8805	0.858	0.8206	0.8811	0.978	0.8849	0.9351	0.9579	0.8307	0.9169	0.921	0.8126
Sample 239	0.8744	0.9044	0.8765	0.8176	0.876	0.9724	0.8993	0.9424	0.95	0.8516	0.9194	0.9323	0.7971

Sample 240	0.8612	0.8802	0.8632	0.8408	0.8628	0.7313	0.2391	0.8277	0.9621	0.8436	0.9054	0.9186	0.7974
Sample 241	0.8283	0.8776	0.8763	0.8041	0.8664	0.983	0.8649	0.9636	0.9653	0.8423	0.9162	0.9287	0.8483
Sample 242	0.8626	0.8777	0.8431	0.8564	0.8604	0.9737	0.9071	0.9411	0.9571	0.8516	0.9151	0.9296	0.8017
Sample 243	0.8563	0.8822	0.8724	0.8003	0.8864	0.9633	0.9012	0.947	0.9584	0.7901	0.9075	0.9353	0.8512
Sample 244	0.8625	0.8861	0.883	0.8382	0.8953	0.8041	0.991	0.7528	0.9492	0.8502	0.906	0.9368	0.8157
Sample 245	0.8532	0.8843	0.8517	0.7801	0.8674	0.9703	0.9111	0.9242	0.9681	0.8281	0.9164	0.9372	0.8295
Sample 246	0.861	0.9043	0.8819	0.7896	0.8828	0.784	0.8333	0.5868	0.9624	0.8468	0.9128	0.9345	0.7996
Sample 247	0.8588	0.8966	0.8544	0.8084	0.8761	0.9624	0.915	0.9334	0.9596	0.8464	0.9156	0.932	0.8275
Sample 248	0.8498	0.8839	0.8265	0.8203	0.8739	0.9665	0.9111	0.9319	0.9544	0.8659	0.9201	0.9381	0.8293
Sample 249	0.8418	0.8671	0.8841	0.8296	0.8899	0.9268	0.6701	0.9972	0.8376	0.8281	0.9074	0.9221	0.7615
Sample 250	0.8423	0.8902	0.8712	0.822	0.8846	0.9405	0.9276	0.8625	0.953	0.8177	0.9049	0.9365	0.7521
Sample 251	0.8671	0.9033	0.8654	0.8221	0.8651	0.9772	0.8687	0.9606	0.9635	0.8098	0.9149	0.9347	0.834
Sample 252	0.8397	0.8988	0.8561	0.8303	0.9023	0.9785	0.8616	0.9357	0.957	0.8057	0.9032	0.9424	0.8411
Sample 253	0.8637	0.8782	0.8656	0.8255	0.8716	0.9687	0.8843	0.9395	0.9695	0.8137	0.9201	0.9226	0.8176
Sample 254	0.8798	0.8976	0.864	0.8303	0.8794	0.9563	0.9188	0.924	0.9666	0.844	0.9096	0.9324	0.8363
Sample 255	0.8645	0.8872	0.8509	0.8492	0.8968	0.9607	0.9142	0.949	0.9562	0.857	0.9148	0.9305	0.8279
Sample 256	0.8701	0.8963	0.8325	0.8299	0.8731	0.9814	0.8722	0.9102	0.9646	0.8358	0.9161	0.9272	0.8145
Sample 257	0.8509	0.904	0.8347	0.8366	0.8796	0.9601	0.8902	0.8986	0.9679	0.8277	0.911	0.9301	0.7889
Sample 258	0.8394	0.8847	0.8629	0.8227	0.8719	0.9658	0.9158	0.9432	0.9597	0.8727	0.9221	0.9287	0.8151
Sample 259	0.8476	0.8949	0.8486	0.8083	0.8844	0.9706	0.8994	0.9448	0.972	0.8608	0.9155	0.9278	0.8279
Sample 260	0.8511	0.8984	0.853	0.8013	0.8644	0.9818	0.8659	0.9521	0.9577	0.85	0.9195	0.9251	0.7922
Sample 261	0.8473	0.9055	0.8755	0.8312	0.8792	0.9772	0.888	0.8978	0.9458	0.8295	0.9112	0.9321	0.8081
Sample 262	0.8561	0.8737	0.8484	0.8042	0.8622	0.9526	0.9211	0.9471	0.9561	0.8438	0.9135	0.9207	0.7844
Sample 263	0.8553	0.8785	0.8698	0.8184	0.8745	0.9595	0.9043	0.9233	0.9745	0.8243	0.9078	0.929	0.7956
Sample 264	0.8695	0.8827	0.8691	0.7839	0.8744	0.9304	0.9422	0.874	0.9678	0.8495	0.9179	0.9178	0.7871
Sample 265	0.8504	0.8829	0.8571	0.8238	0.8725	0.9664	0.8986	0.9521	0.9601	0.8174	0.9123	0.9338	0.8182
Sample 266	0.8676	0.8726	0.8641	0.8222	0.8851	0.8941	0.9585	0.8177	0.953	0.8345	0.9004	0.9369	0.8575

Sample 267	0.8367	0.8891	0.8665	0.7864	0.8807	0.9598	0.9219	0.9198	0.971	0.8476	0.9127	0.9398	0.8379
Sample 268	0.8833	0.8971	0.8671	0.8581	0.861	0.9667	0.895	0.9326	0.9596	0.8005	0.9051	0.9278	0.8082
Sample 269	0.8416	0.9084	0.8456	0.7994	0.8895	0.7425	0.807	0.5282	0.9698	0.8318	0.9116	0.9303	0.7818
Sample 270	0.8486	0.8827	0.8414	0.8205	0.8817	0.9579	0.911	0.9419	0.9549	0.8373	0.9192	0.9254	0.8244
Sample 271	0.8587	0.881	0.8312	0.8218	0.8755	-0.1167	0.199	-0.406	0.883	0.8536	0.9113	0.9334	0.7898
Sample 272	0.8686	0.8958	0.8575	0.8175	0.8772	0.8022	0.7636	0.5687	0.9464	0.828	0.9083	0.9275	0.7828
Sample 273	0.8606	0.8859	0.8685	0.8372	0.8583	0.9655	0.9038	0.9582	0.9627	0.8338	0.9119	0.9263	0.8149
Sample 274	0.8659	0.8845	0.8745	0.8237	0.8712	0.9772	0.8889	0.9547	0.9556	0.8253	0.9112	0.9291	0.804
Sample 275	0.8698	0.8848	0.8523	0.8359	0.875	0.9679	0.8951	0.9523	0.9671	0.8186	0.9159	0.9356	0.8308
Sample 276	0.8541	0.8877	0.8332	0.7916	0.8859	0.958	0.9107	0.9342	0.9713	0.83	0.9132	0.9258	0.8066
Sample 277	0.8621	0.8883	0.8501	0.7952	0.8635	0.9514	0.9226	0.9354	0.9617	0.8114	0.9139	0.9325	0.8269
Sample 278	0.8391	0.8817	0.8494	0.7922	0.8747	0.8971	0.9287	0.7811	0.9678	0.8403	0.9139	0.9324	0.7993
Sample 279	0.8612	0.8863	0.8537	0.828	0.8783	0.9627	0.9179	0.9444	0.9474	0.8504	0.9164	0.9311	0.8182
Sample 280	0.8558	0.8787	0.865	0.8291	0.8634	0.6645	0.8724	0.8391	0.7758	0.8541	0.9105	0.934	0.8131
Sample 281	0.8617	0.8629	0.8602	0.8406	0.8467	0.9949	0.7074	0.8888	0.9429	0.8433	0.9149	0.9276	0.8273
Sample 282	0.8789	0.8884	0.8736	0.8172	0.8791	0.9613	0.9052	0.9461	0.9553	0.818	0.9089	0.9332	0.8321
Sample 283	0.8872	0.9017	0.8897	0.8313	0.8939	0.9878	0.7654	0.8916	0.9686	0.806	0.9038	0.9292	0.8273
Sample 284	0.857	0.9024	0.87	0.8413	0.888	0.9573	0.9306	0.9436	0.9658	0.8161	0.9135	0.9334	0.831
Sample 285	0.8782	0.8782	0.8458	0.7925	0.8548	0.4392	0.6537	0.7454	0.9528	0.8102	0.9029	0.9297	0.8083
Sample 286	0.8593	0.8823	0.8359	0.8651	0.8688	0.9594	0.9136	0.9556	0.9574	0.845	0.9184	0.9281	0.7711
Sample 287	0.8632	0.8822	0.8477	0.8055	0.8565	0.9946	0.8165	0.9148	0.9616	0.8222	0.9183	0.926	0.8118
Sample 288	0.8572	0.8786	0.8547	0.8024	0.8655	0.9526	0.9224	0.9054	0.9698	0.8395	0.9081	0.9303	0.8311
Sample 289	0.8801	0.915	0.8588	0.7954	0.9077	0.9781	0.8836	0.9497	0.961	0.8238	0.9143	0.9407	0.8299
Sample 290	0.8368	0.8805	0.8565	0.8102	0.8759	0.5325	0.8887	0.4407	0.9578	0.8404	0.9025	0.9179	0.8302
Sample 291	0.8671	0.8867	0.8153	0.8187	0.8608	0.8948	0.9094	0.7415	0.9527	0.8235	0.8926	0.9414	0.834
Sample 292	0.8563	0.8822	0.8777	0.795	0.8742	0.3964	0.5113	0.0709	0.9716	0.8283	0.9047	0.9341	0.7889
Sample 293	0.8439	0.8927	0.8573	0.8128	0.8848	0.8746	0.5355	0.9597	0.8938	0.8259	0.9121	0.9347	0.7742

Sample 294	0.8672	0.8875	0.8377	0.776	0.8677	0.9248	0.8549	0.7478	0.9555	0.8444	0.9084	0.9356	0.8037
Sample 295	0.8467	0.8858	0.8392	0.8071	0.8568	0.9572	0.9158	0.9326	0.9719	0.8233	0.9084	0.925	0.8325
Sample 296	0.8665	0.9002	0.8657	0.8047	0.8873	0.9912	0.8412	0.9611	0.9528	0.8521	0.9218	0.9294	0.8097
Sample 297	0.8432	0.8623	0.8424	0.8243	0.8858	0.9722	0.8923	0.9485	0.9441	0.8481	0.9102	0.9357	0.8382
Sample 298	0.8616	0.8883	0.8524	0.793	0.8716	0.9239	0.9526	0.8765	0.9719	0.8246	0.9154	0.9186	0.8123
Sample 299	0.8714	0.8912	0.8588	0.8054	0.8685	0.9754	0.8578	0.9484	0.9758	0.77	0.9145	0.9291	0.849
Sample 300	0.8538	0.889	0.8547	0.8162	0.8789	0.9718	0.8838	0.9462	0.9591	0.8068	0.9081	0.9296	0.7871
Sample 301	0.8479	0.8746	0.8593	0.8163	0.8811	0.9611	0.9183	0.921	0.9728	0.8336	0.9144	0.9335	0.8238
Sample 302	0.843	0.869	0.8252	0.8413	0.8873	0.9607	0.9101	0.9421	0.967	0.8516	0.9146	0.9298	0.8204
Sample 303	0.8434	0.9009	0.875	0.8256	0.8758	0.9668	0.8968	0.9546	0.9567	0.8348	0.9164	0.9333	0.8172
Sample 304	0.8464	0.8744	0.856	0.8018	0.8665	0.9488	0.8465	0.7944	0.9584	0.8326	0.9099	0.9308	0.7687
Sample 305	0.8731	0.8916	0.8745	0.7817	0.8678	0.983	0.8523	0.9084	0.9545	0.8266	0.9129	0.9154	0.7997
Sample 306	0.8511	0.8927	0.8677	0.8454	0.8726	0.9399	0.9296	0.9275	0.9643	0.8199	0.9139	0.9292	0.8037
Sample 307	0.8446	0.8859	0.8324	0.8247	0.863	0.9662	0.9013	0.9492	0.9631	0.8259	0.9161	0.9296	0.8152
Sample 308	0.8641	0.8738	0.854	0.855	0.8726	0.9796	0.8757	0.9452	0.9735	0.8152	0.9181	0.9236	0.7621
Sample 309	0.8499	0.8845	0.8663	0.8032	0.8865	0.9604	0.9059	0.9358	0.9671	0.799	0.9118	0.9316	0.8096
Sample 310	0.8537	0.8737	0.8413	0.8155	0.8965	0.8809	0.7097	0.9893	0.9374	0.8684	0.9108	0.9324	0.8474
Sample 311	0.8489	0.8844	0.8725	0.8345	0.8837	0.9958	0.8039	0.9211	0.9725	0.8238	0.9161	0.9304	0.8203
Sample 312	0.8543	0.9044	0.8732	0.8058	0.8803	0.4199	0.6543	0.7368	0.9669	0.8157	0.9076	0.9359	0.8006
Sample 313	0.8665	0.8998	0.837	0.8374	0.8804	0.965	0.8952	0.892	0.9732	0.8485	0.9163	0.9335	0.7915
Sample 314	0.8461	0.8829	0.8676	0.7962	0.8704	0.9695	0.9006	0.9309	0.9555	0.8339	0.9186	0.9229	0.7986
Sample 315	0.8732	0.8907	0.8717	0.8477	0.8687	0.9697	0.8763	0.9576	0.9603	0.8141	0.9148	0.9327	0.8276
Sample 316	0.8311	0.8842	0.8782	0.8076	0.8818	0.977	0.8899	0.9471	0.9676	0.8461	0.9124	0.9335	0.8112
Sample 317	0.8753	0.8696	0.8883	0.8236	0.8637	0.9163	0.9501	0.8735	0.9643	0.8058	0.9012	0.9303	0.8228
Sample 318	0.8686	0.8887	0.8592	0.7994	0.8996	0.9419	0.9334	0.9198	0.9737	0.8099	0.9041	0.9195	0.8304
Sample 319	0.8625	0.8878	0.8402	0.8258	0.8748	0.9632	0.8995	0.9413	0.9677	0.8186	0.9095	0.9259	0.8386
Sample 320	0.8469	0.8646	0.8565	0.7747	0.8741	0.9667	0.9117	0.9401	0.9574	0.8367	0.9131	0.932	0.8112

Sample 321	0.8601	0.9002	0.8474	0.8073	0.8789	0.9856	0.8694	0.9527	0.9609	0.8473	0.9227	0.9368	0.8363
Sample 322	0.8559	0.8932	0.8595	0.7913	0.859	0.9795	0.8645	0.9116	0.948	0.8455	0.9144	0.9207	0.8067
Sample 323	0.8624	0.8671	0.8832	0.8113	0.8863	0.9562	0.9186	0.9333	0.9623	0.8203	0.9161	0.9262	0.8563
Sample 324	0.8508	0.8904	0.8474	0.8156	0.8756	0.9463	0.9311	0.911	0.9671	0.8043	0.9085	0.9335	0.7959
Sample 325	0.8783	0.8975	0.8706	0.8021	0.87	0.9568	0.9161	0.9465	0.957	0.8694	0.9133	0.9277	0.814
Sample 326	0.8457	0.8873	0.8655	0.8	0.8765	0.9605	0.9187	0.9458	0.9586	0.8288	0.9133	0.9283	0.8212
Sample 327	0.8673	0.8974	0.8681	0.81	0.8791	0.9516	0.9236	0.9253	0.9634	0.8218	0.917	0.9241	0.778
Sample 328	0.8358	0.8989	0.8478	0.8088	0.8683	0.9537	0.9129	0.9231	0.9744	0.818	0.9175	0.9233	0.7714
Sample 329	0.8559	0.8711	0.8779	0.8187	0.8932	0.9917	0.8434	0.9038	0.9511	0.8336	0.9095	0.9214	0.8085
Sample 330	0.8991	0.902	0.8545	0.8262	0.8777	0.4836	0.2301	0.1391	0.9496	0.877	0.9163	0.9243	0.8348
Sample 331	0.8267	0.8997	0.853	0.7805	0.871	0.9777	0.8621	0.9464	0.9689	0.8055	0.9178	0.9347	0.7904
Sample 332	0.8492	0.863	0.8588	0.7951	0.8628	0.9244	0.9547	0.883	0.959	0.8324	0.9035	0.9219	0.8144
Sample 333	0.8641	0.8727	0.869	0.7991	0.8822	0.9661	0.9024	0.9414	0.9612	0.8285	0.9153	0.9338	0.7964
Sample 334	0.8731	0.8575	0.8657	0.8215	0.8583	0.9878	0.8527	0.9026	0.9762	0.8484	0.9155	0.9222	0.8091
Sample 335	0.844	0.8823	0.8482	0.7635	0.8856	0.9326	0.9323	0.8735	0.967	0.8186	0.9201	0.9287	0.7575
Sample 336	0.8595	0.8732	0.8734	0.8301	0.8967	0.9735	0.8791	0.9163	0.9613	0.8287	0.9005	0.9322	0.8342
Sample 337	0.8575	0.8943	0.8597	0.8312	0.8775	0.967	0.9036	0.9516	0.9604	0.8449	0.9128	0.9328	0.803
Sample 338	0.8649	0.883	0.8575	0.8174	0.8706	0.9399	0.938	0.9141	0.961	0.8282	0.9109	0.933	0.8334
Sample 339	0.8587	0.8869	0.8615	0.8305	0.866	0.9342	0.9463	0.9156	0.9595	0.8405	0.9192	0.9162	0.7805
Sample 340	0.8429	0.8946	0.8219	0.7723	0.8612	0.9502	0.8438	0.9924	0.7893	0.8557	0.9177	0.9244	0.7824
Sample 341	0.8662	0.8984	0.8333	0.8132	0.8591	0.9306	0.9308	0.8753	0.9397	0.8139	0.907	0.9271	0.7514
Sample 342	0.8478	0.8853	0.8516	0.8326	0.848	0.9718	0.9004	0.9492	0.9597	0.8493	0.9172	0.933	0.8341
Sample 343	0.8457	0.9017	0.8422	0.8263	0.8809	0.9273	0.945	0.8693	0.9574	0.8321	0.9035	0.9317	0.8035
Sample 344	0.8367	0.8995	0.8626	0.7894	0.896	0.9565	0.9189	0.9429	0.964	0.8193	0.9141	0.9336	0.8284
Sample 345	0.8511	0.9056	0.835	0.8301	0.8747	0.9621	0.9174	0.94	0.9616	0.8634	0.9217	0.9294	0.8012
Sample 346	0.8511	0.908	0.8626	0.7809	0.8774	0.9846	0.8607	0.9431	0.9717	0.8174	0.909	0.9302	0.8442
Sample 347	0.8592	0.8789	0.8451	0.7862	0.8899	0.9302	0.9549	0.867	0.943	0.871	0.9155	0.9291	0.813

Sample 348	0.8202	0.8941	0.8602	0.8194	0.8693	0.9735	0.9004	0.9344	0.9752	0.8444	0.9103	0.9356	0.8435
Sample 349	0.8584	0.8835	0.8645	0.7978	0.8814	0.9688	0.8806	0.9463	0.9718	0.8195	0.9172	0.9337	0.8194
Sample 350	0.8674	0.881	0.8794	0.8144	0.8908	0.8703	0.9686	0.7991	0.9472	0.8543	0.9162	0.929	0.7718
Sample 351	0.8576	0.8742	0.8435	0.7877	0.8771	0.9805	0.8651	0.9398	0.9723	0.8061	0.9134	0.9321	0.8066
Sample 352	0.8702	0.8844	0.869	0.7982	0.8921	0.9647	0.9027	0.9425	0.9722	0.8163	0.9153	0.9345	0.841
Sample 353	0.8473	0.8801	0.8696	0.8048	0.8593	0.8747	0.6571	0.5876	0.9724	0.8334	0.9159	0.9345	0.8171
Sample 354	0.8567	0.8935	0.8766	0.8313	0.8852	0.9626	0.9029	0.9428	0.9607	0.8444	0.9121	0.9325	0.8054
Sample 355	0.8469	0.8947	0.8795	0.8212	0.8769	0.9739	0.8851	0.9521	0.9674	0.8102	0.91	0.9292	0.7938
Sample 356	0.8511	0.8833	0.8191	0.8015	0.881	0.7654	0.4974	0.9192	0.9522	0.8666	0.908	0.9334	0.845
Sample 357	0.8777	0.8965	0.8534	0.8436	0.8924	0.9817	0.869	0.96	0.9705	0.8053	0.9117	0.9326	0.8255
Sample 358	0.8751	0.9098	0.8411	0.8237	0.8931	0.9682	0.9008	0.9522	0.9626	0.8383	0.9183	0.9301	0.8298
Sample 359	0.8548	0.8629	0.8705	0.8312	0.8531	0.963	0.8953	0.937	0.9675	0.8505	0.9193	0.9316	0.8229
Sample 360	0.8855	0.8947	0.8627	0.8134	0.8893	0.964	0.8977	0.936	0.964	0.8057	0.9057	0.9243	0.822
Sample 361	0.8565	0.8757	0.8681	0.8013	0.8725	0.9815	0.8785	0.9534	0.9523	0.8422	0.9169	0.931	0.8055
Sample 362	0.8798	0.896	0.8542	0.7962	0.8831	0.9632	0.9082	0.936	0.9745	0.8071	0.907	0.9295	0.8304
Sample 363	0.8367	0.8864	0.8458	0.856	0.8686	0.9726	0.8746	0.8786	0.9525	0.8419	0.9101	0.9274	0.7922
Sample 364	0.8829	0.8789	0.8141	0.8143	0.854	0.9803	0.8415	0.9407	0.9656	0.8048	0.9173	0.9328	0.8277
Sample 365	0.8767	0.8673	0.8751	0.8093	0.8733	0.9515	0.9269	0.9008	0.967	0.8556	0.9157	0.9357	0.8304
Sample 366	0.8582	0.8627	0.8683	0.8497	0.8844	0.9569	0.8982	0.944	0.9628	0.8552	0.9144	0.9267	0.8236
Sample 367	0.8326	0.9038	0.8634	0.8172	0.896	0.9908	0.8368	0.9014	0.9675	0.8402	0.9259	0.9235	0.7702
Sample 368	0.8514	0.8824	0.8672	0.8167	0.8883	0.9537	0.9139	0.9369	0.9546	0.84	0.9068	0.9277	0.7856
Sample 369	0.8515	0.9064	0.8538	0.7968	0.888	0.9193	0.8712	0.9773	0.9165	0.8231	0.9072	0.9247	0.8225
Sample 370	0.8607	0.8641	0.8344	0.8109	0.8837	0.9648	0.9077	0.9513	0.9743	0.8419	0.9151	0.9286	0.819
Sample 371	0.8364	0.889	0.879	0.8444	0.9009	0.9614	0.9093	0.9287	0.964	0.8286	0.8999	0.929	0.8477
Sample 372	0.8623	0.875	0.831	0.8213	0.8741	0.9558	0.9252	0.9199	0.9723	0.8317	0.9162	0.9229	0.7969
Sample 373	0.8426	0.8868	0.8427	0.7897	0.8824	0.854	0.9434	0.7494	0.975	0.8119	0.9123	0.9245	0.8097
Sample 374	0.8101	0.8697	0.8626	0.7822	0.8775	0.9674	0.9025	0.9362	0.9627	0.8231	0.9159	0.9255	0.8221

Sample 375	0.8612	0.8891	0.8579	0.8151	0.8612	0.964	0.9033	0.9257	0.9641	0.8304	0.911	0.9366	0.8286
Sample 376	0.8626	0.8856	0.8329	0.8191	0.85	0.8929	0.9447	0.7931	0.9724	0.8046	0.9009	0.9306	0.8342
Sample 377	0.8485	0.8971	0.8583	0.8279	0.8917	0.934	0.9525	0.8995	0.9688	0.8409	0.9082	0.9313	0.8049
Sample 378	0.86	0.8834	0.8493	0.823	0.8672	0.9446	0.9406	0.8946	0.963	0.8609	0.9124	0.9308	0.8249
Sample 379	0.8567	0.9047	0.8628	0.8331	0.8725	0.9701	0.8998	0.9488	0.9498	0.8431	0.9197	0.9316	0.7831
Sample 380	0.8555	0.8919	0.8436	0.8314	0.878	0.9676	0.9102	0.9388	0.9588	0.8675	0.9139	0.9331	0.8315
Sample 381	0.8697	0.8732	0.8535	0.8041	0.8642	0.9692	0.8744	0.9582	0.9634	0.8077	0.9131	0.9187	0.8223
Sample 382	0.854	0.8945	0.8295	0.7952	0.8865	0.9437	0.9449	0.9151	0.9626	0.861	0.9109	0.9299	0.8462
Sample 383	0.8322	0.881	0.8683	0.8033	0.8825	0.947	0.8949	0.8448	0.9746	0.7978	0.913	0.9289	0.8101
Sample 384	0.8516	0.9064	0.8678	0.8322	0.8859	0.96	0.9107	0.9389	0.9632	0.8396	0.917	0.9357	0.8028
Sample 385	0.8357	0.8971	0.8401	0.7738	0.8773	0.9553	0.9218	0.9224	0.9692	0.8341	0.9206	0.9317	0.7993
Sample 386	0.8464	0.8771	0.8566	0.806	0.868	0.9832	0.869	0.9327	0.9666	0.8329	0.9186	0.9279	0.8002
Sample 387	0.8291	0.8933	0.8515	0.7575	0.8828	0.8087	0.937	0.6576	0.9756	0.8052	0.9048	0.9387	0.8204
Sample 388	0.8366	0.8604	0.8673	0.7897	0.8797	0.4811	0.3781	0.768	0.9664	0.8419	0.9173	0.9281	0.8062
Sample 389	0.8377	0.8707	0.8633	0.8093	0.899	0.8161	0.9892	0.7632	0.9718	0.8283	0.9071	0.9271	0.8296
Sample 390	0.8559	0.8799	0.8683	0.8329	0.8665	0.9213	0.9426	0.8478	0.9607	0.8399	0.9143	0.9278	0.8134
Sample 391	0.8326	0.8932	0.8886	0.7963	0.863	0.9755	0.8895	0.9481	0.9521	0.8724	0.9194	0.9325	0.8096
Sample 392	0.8575	0.9096	0.8626	0.843	0.8702	0.9716	0.8913	0.9549	0.9634	0.8326	0.9214	0.9295	0.7614
Sample 393	0.8702	0.9146	0.8693	0.7941	0.8704	0.9595	0.8996	0.9345	0.9792	0.8111	0.9161	0.9271	0.8234
Sample 394	0.8668	0.8772	0.8911	0.8367	0.8919	0.9472	0.9366	0.9253	0.9672	0.8355	0.9129	0.9215	0.8077
Sample 395	0.8542	0.8937	0.8252	0.8343	0.8886	0.9595	0.9122	0.9256	0.9697	0.8346	0.9174	0.9307	0.7958
Sample 396	0.8415	0.8886	0.8419	0.8514	0.8706	0.9537	0.9126	0.9237	0.9613	0.8408	0.9162	0.9251	0.8002
Sample 397	0.856	0.8949	0.8396	0.8679	0.8857	0.9607	0.9124	0.9471	0.9533	0.8416	0.9173	0.9259	0.8237
Sample 398	0.8378	0.8933	0.8697	0.807	0.8882	0.9396	0.9319	0.8991	0.9687	0.7956	0.9061	0.9352	0.7996
Sample 399	0.8857	0.8983	0.8771	0.8225	0.8937	0.9146	0.952	0.8653	0.9524	0.8238	0.9044	0.9157	0.8329
Sample 400	0.8408	0.8987	0.8849	0.8627	0.8883	0.9644	0.9029	0.9446	0.9689	0.8319	0.9063	0.9291	0.8344
Sample 401	0.8581	0.8906	0.862	0.8489	0.8783	0.9768	0.8695	0.9503	0.9531	0.8318	0.9078	0.9322	0.7931

Sample 402	0.845	0.8698	0.8639	0.8077	0.8733	0.972	0.8941	0.944	0.9663	0.8633	0.9117	0.9362	0.8244
Sample 403	0.8549	0.895	0.8686	0.8122	0.8675	0.963	0.9033	0.9385	0.9619	0.8552	0.9132	0.923	0.8041
Sample 404	0.8425	0.886	0.8253	0.8165	0.8797	0.9624	0.913	0.9214	0.9578	0.835	0.921	0.9294	0.7776
Sample 405	0.8819	0.8996	0.8632	0.8455	0.8751	0.9652	0.9008	0.9157	0.9751	0.8068	0.9128	0.92	0.8039
Sample 406	0.8556	0.8694	0.8521	0.838	0.8783	0.5055	0.5993	0.1973	0.9744	0.8563	0.9095	0.9333	0.7947
Sample 407	0.875	0.9012	0.8668	0.8623	0.8626	0.9704	0.9041	0.951	0.9498	0.8461	0.9156	0.9348	0.8082
Sample 408	0.861	0.8928	0.8478	0.8017	0.8625	0.9925	0.8381	0.9394	0.9643	0.8067	0.9095	0.9339	0.8165
Sample 409	0.8619	0.873	0.8654	0.7995	0.8461	0.9942	0.8056	0.9565	0.9533	0.85	0.9157	0.9196	0.8003
Sample 410	0.8677	0.8771	0.8551	0.8156	0.8503	0.9223	0.9562	0.8771	0.9646	0.8506	0.9084	0.9293	0.8108
Sample 411	0.8473	0.8908	0.8592	0.8387	0.893	0.9508	0.9267	0.9296	0.9661	0.8243	0.9123	0.9226	0.8051
Sample 412	0.8532	0.8938	0.862	0.8534	0.8607	0.9627	0.9205	0.9535	0.9645	0.8349	0.9181	0.9237	0.8053
Sample 413	0.8601	0.8936	0.8705	0.8251	0.8852	0.9578	0.9272	0.929	0.9627	0.833	0.9166	0.9308	0.8152
Sample 414	0.8486	0.8969	0.8567	0.7763	0.8849	0.969	0.9032	0.9381	0.9661	0.8417	0.9129	0.9197	0.8321
Sample 415	0.8718	0.8728	0.8695	0.8064	0.8707	0.9592	0.9043	0.9053	0.9577	0.8246	0.9093	0.9251	0.8419
Sample 416	0.8705	0.8976	0.8585	0.7938	0.8907	0.9878	0.8426	0.9073	0.963	0.8109	0.9082	0.9312	0.8018
Sample 417	0.8559	0.8839	0.8575	0.8028	0.8915	0.9617	0.8981	0.9449	0.9655	0.843	0.9086	0.9301	0.8179
Sample 418	0.8441	0.882	0.8712	0.7893	0.8764	0.9802	0.8846	0.9461	0.9658	0.8108	0.9099	0.934	0.8424
Sample 419	0.8409	0.88	0.8389	0.7966	0.8857	0.9625	0.9135	0.8892	0.9608	0.8566	0.9125	0.938	0.8258
Sample 420	0.8316	0.8977	0.8216	0.7914	0.8755	0.9318	0.8281	0.9968	0.2831	0.8233	0.9045	0.9327	0.8141
Sample 421	0.8499	0.878	0.8822	0.8155	0.8784	0.9707	0.8869	0.8884	0.9688	0.8165	0.8996	0.9384	0.8597
Sample 422	0.8123	0.881	0.8588	0.8189	0.8713	0.9632	0.9115	0.9435	0.9694	0.8047	0.9199	0.9368	0.8188
Sample 423	0.8707	0.8811	0.8742	0.7757	0.8781	0.9742	0.848	0.8585	0.9651	0.845	0.9098	0.9263	0.8262
Sample 424	0.8721	0.8912	0.8544	0.8488	0.8729	0.974	0.89	0.9653	0.9576	0.8301	0.9268	0.9276	0.813
Sample 425	0.8504	0.8817	0.8606	0.8125	0.8544	0.9613	0.912	0.9445	0.9666	0.8327	0.9149	0.9292	0.8158
Sample 426	0.87	0.8745	0.8385	0.8111	0.8663	0.989	0.8456	0.9349	0.9656	0.8406	0.9177	0.9255	0.7981
Sample 427	0.8179	0.8841	0.8403	0.8188	0.8771	0.4717	0.1693	0.6876	0.9129	0.816	0.9081	0.9264	0.7885
Sample 428	0.8619	0.8805	0.8404	0.8363	0.8592	0.947	0.9341	0.9212	0.96	0.8305	0.9136	0.9255	0.7753

Sample 429	0.8649	0.8799	0.8853	0.7882	0.8648	0.9933	0.8432	0.954	0.9584	0.8329	0.9125	0.9324	0.7832
Sample 430	0.853	0.8776	0.8579	0.825	0.8987	0.9231	0.9447	0.8919	0.9675	0.8454	0.9088	0.9218	0.7754
Sample 431	0.8668	0.883	0.8564	0.7803	0.8708	0.9693	0.8998	0.9271	0.9573	0.8057	0.91	0.9286	0.811
Sample 432	0.8426	0.8879	0.8572	0.8388	0.8896	0.9655	0.8888	0.9303	0.9764	0.8457	0.9176	0.9317	0.7808
Sample 433	0.8622	0.9071	0.8574	0.8186	0.8776	0.9573	0.9093	0.8772	0.9691	0.8479	0.9098	0.9304	0.7834
Sample 434	0.884	0.8565	0.8611	0.7968	0.8757	0.7773	0.4747	0.9275	0.9691	0.8223	0.899	0.9296	0.8322
Sample 435	0.8437	0.8711	0.866	0.805	0.8682	0.9711	0.9016	0.951	0.9602	0.8409	0.9239	0.9301	0.8042
Sample 436	0.8496	0.9007	0.8709	0.7972	0.8961	0.9743	0.8986	0.9389	0.9699	0.8421	0.912	0.9376	0.8102
Sample 437	0.8688	0.8858	0.85	0.7766	0.8639	0.9596	0.9102	0.9123	0.9647	0.8449	0.9127	0.9352	0.8198
Sample 438	0.8779	0.8865	0.8815	0.8021	0.8903	0.972	0.8771	0.95	0.964	0.8001	0.914	0.933	0.8131
Sample 439	0.8135	0.8841	0.8473	0.8041	0.88	0.965	0.9141	0.9372	0.9683	0.8623	0.9248	0.931	0.8232
Sample 440	0.8522	0.8815	0.8465	0.8024	0.8872	0.9608	0.9192	0.9301	0.9706	0.8364	0.9148	0.9308	0.8063
Sample 441	0.8662	0.8939	0.8691	0.8066	0.8876	0.9452	0.9348	0.9183	0.9627	0.8448	0.9169	0.9328	0.8294
Sample 442	0.851	0.8953	0.8536	0.7836	0.8763	0.9982	0.7937	0.914	0.9726	0.7644	0.9078	0.9325	0.8072
Sample 443	0.8437	0.8885	0.8633	0.8016	0.8783	0.9653	0.9098	0.9262	0.9722	0.8367	0.9156	0.9339	0.8464
Sample 444	0.8357	0.8812	0.8695	0.8465	0.8756	0.9488	0.9391	0.9127	0.9571	0.8306	0.9058	0.9296	0.8177
Sample 445	0.8773	0.9029	0.8544	0.7913	0.8844	0.9605	0.8858	0.8548	0.9751	0.8072	0.91	0.9224	0.822
Sample 446	0.8224	0.8855	0.8693	0.8317	0.8916	0.9648	0.9177	0.94	0.9749	0.8534	0.9111	0.9348	0.8626
Sample 447	0.8403	0.9026	0.8611	0.8209	0.8871	0.9545	0.9125	0.9341	0.9648	0.8247	0.9189	0.9303	0.7786
Sample 448	0.8429	0.8993	0.8554	0.8459	0.8806	0.9439	0.9276	0.8706	0.9627	0.8655	0.9096	0.936	0.792
Sample 449	0.8619	0.891	0.8598	0.8099	0.8792	0.9754	0.8811	0.952	0.9534	0.8306	0.915	0.9349	0.8353
Sample 450	0.8384	0.8777	0.8693	0.8376	0.8792	0.9685	0.8822	0.9437	0.9639	0.8386	0.916	0.9255	0.7947
Sample 451	0.8191	0.8716	0.8469	0.7782	0.8677	0.9275	0.8941	0.7884	0.956	0.8537	0.9195	0.9292	0.7632
Sample 452	0.8507	0.8913	0.8492	0.8032	0.8855	0.9778	0.8782	0.9645	0.9633	0.8139	0.9163	0.9262	0.8375
Sample 453	0.8128	0.8767	0.8427	0.8152	0.8722	0.9596	0.9211	0.9323	0.9628	0.8616	0.9248	0.9298	0.8127
Sample 454	0.8269	0.8716	0.8521	0.8161	0.8871	0.942	0.9372	0.8903	0.9636	0.8402	0.9155	0.9195	0.7955
Sample 455	0.8608	0.897	0.8444	0.8341	0.8823	0.9801	0.8864	0.9258	0.9724	0.8458	0.919	0.9364	0.8045

Sample 456	0.8556	0.8824	0.8715	0.832	0.8688	0.9793	0.88	0.9531	0.9626	0.8641	0.9207	0.93	0.855
Sample 457	0.8406	0.8846	0.8838	0.7866	0.8794	0.3607	-0.0545	0.0514	0.9713	0.8292	0.9041	0.9383	0.8377
Sample 458	0.8494	0.882	0.8562	0.8334	0.8705	0.9002	0.9207	0.9597	0.0483	0.8135	0.9147	0.9231	0.8482
Sample 459	0.8527	0.8837	0.8459	0.789	0.8662	0.96	0.9112	0.9403	0.9688	0.8247	0.9135	0.9183	0.8511
Sample 460	0.8552	0.8627	0.8555	0.7799	0.8708	0.9406	0.9344	0.9009	0.9598	0.8444	0.9136	0.9283	0.8071
Sample 461	0.8555	0.8808	0.8705	0.8016	0.883	0.923	0.9527	0.8947	0.962	0.8151	0.9111	0.9267	0.8005
Sample 462	0.8517	0.8948	0.8359	0.8366	0.8612	0.9623	0.915	0.9202	0.9635	0.8282	0.9165	0.9267	0.8327
Sample 463	0.843	0.886	0.8847	0.7849	0.885	0.9709	0.9148	0.9562	0.9577	0.8752	0.9152	0.9309	0.8276
Sample 464	0.8781	0.8972	0.8533	0.8293	0.8592	0.9672	0.8999	0.9532	0.9459	0.8388	0.9068	0.9229	0.8118
Sample 465	0.854	0.9045	0.8531	0.8392	0.8846	0.9868	0.8533	0.9692	0.9652	0.8109	0.9202	0.9367	0.8179
Sample 466	0.8716	0.8854	0.8542	0.7971	0.8701	0.9511	0.9296	0.8951	0.9694	0.8357	0.9092	0.9231	0.84
Sample 467	0.8649	0.9004	0.8823	0.8355	0.8914	0.9586	0.9166	0.9433	0.9585	0.849	0.9206	0.9222	0.7975
Sample 468	0.8438	0.8964	0.8336	0.8133	0.8884	0.9539	0.9311	0.9103	0.9569	0.8555	0.9215	0.9327	0.8105
Sample 469	0.8604	0.8968	0.869	0.8076	0.8855	0.8828	0.9557	0.7968	0.9688	0.8267	0.9011	0.9281	0.8497
Sample 470	0.8714	0.8618	0.8701	0.8062	0.8577	0.9764	0.8992	0.9271	0.9492	0.8438	0.9171	0.9346	0.8064
Sample 471	0.8614	0.8847	0.8308	0.8396	0.8637	0.9688	0.8811	0.905	0.9603	0.8494	0.9112	0.9254	0.8016
Sample 472	0.8771	0.9118	0.866	0.7871	0.8625	0.7218	0.7844	0.9054	0.9322	0.8289	0.9105	0.938	0.8308
Sample 473	0.8603	0.8941	0.8467	0.7995	0.8843	0.9613	0.9065	0.9399	0.9716	0.8293	0.906	0.9328	0.8383
Sample 474	0.8626	0.8705	0.8697	0.8256	0.8719	0.9613	0.9024	0.9418	0.9671	0.7959	0.9076	0.9274	0.8014
Sample 475	0.8488	0.8988	0.8732	0.8347	0.8899	0.9549	0.9251	0.8964	0.9582	0.8655	0.9159	0.9248	0.7935
Sample 476	0.8428	0.8829	0.8664	0.808	0.8758	0.9824	0.8688	0.9364	0.9481	0.8408	0.9184	0.9325	0.8077
Sample 477	0.8558	0.8945	0.8451	0.8374	0.8708	0.97	0.8658	0.9507	0.9563	0.8071	0.9095	0.9373	0.8462
Sample 478	0.8524	0.8807	0.8549	0.8114	0.862	0.9672	0.9016	0.9431	0.9562	0.8224	0.9095	0.9343	0.8357
Sample 479	0.8257	0.8766	0.833	0.805	0.8721	0.9947	0.8285	0.949	0.9688	0.8003	0.9214	0.928	0.7822
Sample 480	0.854	0.9034	0.8877	0.8137	0.8908	0.924	0.9531	0.8958	0.9694	0.8196	0.9076	0.93	0.804
Sample 481	0.8737	0.9035	0.8755	0.8432	0.9015	0.7356	0.5225	0.909	0.9478	0.816	0.9019	0.9332	0.8156
Sample 482	0.8591	0.8834	0.8497	0.8195	0.8882	0.9747	0.8858	0.9047	0.9815	0.8479	0.9132	0.9231	0.8174

Sample 483	0.8532	0.8588	0.816	0.8191	0.8506	0.9674	0.8974	0.9533	0.9572	0.8253	0.9176	0.9182	0.7835
Sample 484	0.8173	0.8953	0.8425	0.8248	0.8754	0.7485	0.5965	0.9462	0.9447	0.8461	0.9065	0.9303	0.8033
Sample 485	0.8296	0.8779	0.8422	0.7813	0.873	0.9444	0.9399	0.9127	0.9644	0.8323	0.9113	0.9255	0.835
Sample 486	0.8633	0.8904	0.809	0.7861	0.8781	0.7216	0.9831	0.6372	0.944	0.8158	0.9079	0.9207	0.7655
Sample 487	0.8335	0.8663	0.8353	0.8044	0.8826	0.9041	0.9647	0.8064	0.966	0.8755	0.9271	0.9192	0.8063
Sample 488	0.8704	0.8825	0.8348	0.8088	0.8702	0.9219	0.9521	0.8634	0.9516	0.8223	0.9117	0.9216	0.8266
Sample 489	0.8465	0.8795	0.8759	0.8336	0.8662	0.9115	0.9357	0.8149	0.9532	0.8503	0.9046	0.9277	0.822
Sample 490	0.8711	0.889	0.8681	0.847	0.8743	0.966	0.9023	0.9482	0.958	0.8436	0.914	0.9233	0.8161
Sample 491	0.8602	0.8948	0.8671	0.7661	0.8852	0.9571	0.9029	0.9321	0.9695	0.8249	0.9141	0.9253	0.7957
Sample 492	0.8673	0.8461	0.8463	0.8273	0.8835	0.9586	0.9272	0.9175	0.9764	0.8487	0.9154	0.9298	0.8342
Sample 493	0.8869	0.9014	0.8429	0.8318	0.8837	0.9683	0.8998	0.9449	0.9583	0.8291	0.908	0.9276	0.8571
Sample 494	0.8816	0.894	0.8654	0.7905	0.8561	0.9635	0.9174	0.9284	0.9515	0.8333	0.9102	0.9292	0.8113
Sample 495	0.8496	0.8905	0.8691	0.839	0.8822	0.9615	0.914	0.9442	0.9588	0.8339	0.9168	0.9266	0.822
Sample 496	0.8606	0.898	0.864	0.8211	0.8606	0.9746	0.8917	0.9487	0.9499	0.8618	0.9193	0.936	0.7905
Sample 497	0.8495	0.9054	0.8564	0.8113	0.8838	0.983	0.8807	0.93	0.9653	0.8459	0.9177	0.9415	0.8005
Sample 498	0.8379	0.8896	0.8615	0.7683	0.8731	0.9562	0.9226	0.9302	0.9577	0.8506	0.9108	0.9232	0.7973
Sample 499	0.8458	0.8844	0.862	0.81	0.8442	0.9438	0.9327	0.9014	0.9591	0.8214	0.913	0.9195	0.7872

Path Coefficient

	SF ->SI	WE ->SI	SS ->SI	HS ->SI
Sample 0	0.2573	0.6172	0.2038	0.2511
Sample 1	0.2503	0.6694	0.0069	0.0308
Sample 2	0.2923	0.5784	0.0585	0.1405
Sample 3	0.2544	0.6176	0.0904	0.1785
Sample 4	0.2798	0.6188	0.083	0.1634
Sample 5	0.1711	0.682	0.1309	0.2033
Sample 6	0.3534	0.5746	0.087	0.1538
Sample 7	0.3081	0.6089	0.1743	0.2253
Sample 8	0.2858	0.6057	0.12	0.1749
Sample 9	0.2784	0.6126	0.0568	0.1586
Sample 10	0.2056	0.6927	-0.0911	-0.0329
Sample 11	0.2911	0.6107	0.0067	0.0878
Sample 12	0.2784	0.6392	-0.0143	0.0308
Sample 13	0.2569	0.6155	-0.0122	0.078
Sample 14	0.2612	0.6122	0.1357	0.1594
Sample 15	0.3152	0.5798	-0.0044	0.0889
Sample 16	0.2135	0.681	0.1629	0.2691
Sample 17	0.2831	0.6475	0.0997	0.1653
Sample 18	0.2561	0.6624	0.0495	0.0836
Sample 19	0.3195	0.5992	0.0807	0.1524
Sample 20	0.2785	0.6026	0.1871	0.245
Sample 21	0.3137	0.6037	0.0698	0.1205
Sample 22	0.2601	0.6414	-0.0023	0.0587
Sample 23	0.2504	0.6258	0.1161	0.1762

Sample 24	0.2659	0.6703	-0.0638	-0.0014
Sample 25	0.3134	0.6048	0.0021	0.09
Sample 26	0.3147	0.5651	0.1723	0.327
Sample 27	0.2772	0.6194	0.2073	0.2643
Sample 28	0.2412	0.6412	0.0456	0.1279
Sample 29	0.3066	0.6014	0.1865	0.2821
Sample 30	0.273	0.61	0.1579	0.1936
Sample 31	0.2985	0.6527	0.1197	0.1472
Sample 32	0.2906	0.6149	0.1474	0.2123
Sample 33	0.3144	0.5812	0.0874	0.1878
Sample 34	0.3165	0.5848	0.0845	0.1614
Sample 35	0.2442	0.663	0.1588	0.2016
Sample 36	0.2917	0.6015	0.1407	0.1953
Sample 37	0.3026	0.5922	0.1233	0.2336
Sample 38	0.3254	0.5664	0.1659	0.2394
Sample 39	0.251	0.6481	0.0178	0.0595
Sample 40	0.3702	0.5325	0.0979	0.1471
Sample 41	0.2599	0.6459	0.0465	0.1308
Sample 42	0.2659	0.6327	0.0719	0.1608
Sample 43	0.2366	0.6631	0.027	0.0934
Sample 44	0.2778	0.6402	0.0407	0.0853
Sample 45	0.371	0.5031	0.168	0.2746
Sample 46	0.2581	0.6448	0.0681	0.1749
Sample 47	0.2935	0.6012	0.0517	0.1746
Sample 48	0.389	0.5456	-0.0018	0.0741
Sample 49	0.2812	0.6541	0.0298	0.108

Sample 50	0.3928	0.4988	0.1121	0.1018
Sample 51	0.3231	0.58	0.1428	0.2104
Sample 52	0.322	0.6033	0.1462	0.1953
Sample 53	0.2683	0.6462	0.026	0.0731
Sample 54	0.3168	0.5936	0.0712	0.111
Sample 55	0.256	0.6529	0.071	0.1604
Sample 56	0.3103	0.5979	-0.0536	-0.0362
Sample 57	0.3766	0.5032	0.1973	0.251
Sample 58	0.2688	0.6672	0.18	0.2486
Sample 59	0.3433	0.5634	0.0861	0.1619
Sample 60	0.2698	0.6639	0.098	0.1438
Sample 61	0.2621	0.6046	0.1427	0.2828
Sample 62	0.3296	0.5843	0.0462	0.0998
Sample 63	0.2783	0.6339	0.0211	0.043
Sample 64	0.2709	0.6224	0.1862	0.238
Sample 65	0.3062	0.5895	0.12	0.1784
Sample 66	0.3012	0.5922	0.0107	0.1169
Sample 67	0.2693	0.6317	0.0805	0.1369
Sample 68	0.2576	0.6318	0.0223	0.1058
Sample 69	0.2276	0.6743	0.164	0.2717
Sample 70	0.222	0.6993	-0.0044	0.0627
Sample 71	0.242	0.6619	0.1436	0.1853
Sample 72	0.2985	0.5995	0.1921	0.2581
Sample 73	0.3046	0.5897	0.1659	0.2525
Sample 74	0.2566	0.6545	-0.0808	0.0283
Sample 75	0.2755	0.644	-0.0255	0.0394

Sample 76	0.1764	0.7108	-0.053	-0.0171
Sample 77	0.3026	0.6052	0.0429	0.1364
Sample 78	0.1676	0.7081	0.0644	0.0943
Sample 79	0.3284	0.5842	0.0706	0.1381
Sample 80	0.3254	0.586	0.0851	0.1653
Sample 81	0.2831	0.5858	0.1352	0.231
Sample 82	0.1899	0.6853	0.0969	0.1643
Sample 83	0.2461	0.6636	0.0259	0.0847
Sample 84	0.2069	0.7038	-0.0573	0.0006
Sample 85	0.2457	0.6575	0.0138	0.0789
Sample 86	0.2544	0.6504	0.1482	0.1811
Sample 87	0.2421	0.6521	0.0389	0.1762
Sample 88	0.2767	0.6764	0.1238	0.1428
Sample 89	0.2646	0.6451	-0.0429	0.0321
Sample 90	0.3305	0.5847	0.1977	0.2656
Sample 91	0.2266	0.6479	0.016	0.0785
Sample 92	0.2603	0.6435	-0.0137	0.0496
Sample 93	0.2658	0.5968	0.1986	0.2732
Sample 94	0.1911	0.6671	0.0776	0.1897
Sample 95	0.3016	0.5824	0.0264	0.1266
Sample 96	0.3621	0.5758	0.1261	0.1746
Sample 97	0.2336	0.6551	0.057	0.1364
Sample 98	0.2282	0.6636	-0.0356	0.0122
Sample 99	0.2859	0.5979	0.049	0.1459
Sample 100	0.2513	0.6483	0.1605	0.1745
Sample 101	0.2078	0.6629	0.1682	0.2698

Sample 102	0.3237	0.5974	0.0553	0.0943
Sample 103	0.3053	0.596	0.1778	0.2342
Sample 104	0.2747	0.6234	0.2046	0.2571
Sample 105	0.2204	0.6618	0.0751	0.1589
Sample 106	0.3008	0.6145	0.1532	0.1848
Sample 107	0.2854	0.5834	0.1259	0.2189
Sample 108	0.2189	0.7018	-0.0356	0.0071
Sample 109	0.2456	0.6518	0.0579	0.11
Sample 110	0.3366	0.5741	0.0829	0.1263
Sample 111	0.2599	0.5965	0.162	0.2325
Sample 112	0.2603	0.6727	0.0038	0.0748
Sample 113	0.3307	0.5774	0.0804	0.1472
Sample 114	0.3084	0.5906	0.0556	0.1563
Sample 115	0.3014	0.5965	0.1365	0.2354
Sample 116	0.3088	0.5564	0.2035	0.2904
Sample 117	0.1793	0.7006	-0.0773	0.015
Sample 118	0.3604	0.5336	0.1353	0.2092
Sample 119	0.3207	0.5681	0.0757	0.1374
Sample 120	0.2977	0.6056	0.1306	0.1944
Sample 121	0.3002	0.6198	0.2456	0.2698
Sample 122	0.1935	0.6555	0.1085	0.1704
Sample 123	0.2007	0.6876	0.108	0.1966
Sample 124	0.3279	0.5728	0.1309	0.2385
Sample 125	0.2501	0.6215	0.1315	0.1899
Sample 126	0.2929	0.5878	0.1491	0.2641
Sample 127	0.3432	0.5524	0.228	0.2481

Sample 128	0.2117	0.6558	0.1615	0.1221
Sample 129	0.2666	0.612	0.0148	0.0731
Sample 130	0.2499	0.6534	-0.0109	0.0553
Sample 131	0.2788	0.6498	0.0872	0.1419
Sample 132	0.2505	0.651	0.1576	0.2762
Sample 133	0.2142	0.6878	0.021	0.0776
Sample 134	0.319	0.5766	-0.1064	0.0194
Sample 135	0.3086	0.6089	0.2377	0.2901
Sample 136	0.3349	0.5372	0.1808	0.3023
Sample 137	0.374	0.5175	0.1972	0.2734
Sample 138	0.2993	0.6302	0.2482	0.2858
Sample 139	0.2772	0.6155	0.0399	0.0934
Sample 140	0.2712	0.6335	0.0046	0.0379
Sample 141	0.2204	0.6914	0.1554	0.1809
Sample 142	0.2815	0.6162	0.1428	0.2649
Sample 143	0.2436	0.6455	0.1072	0.1679
Sample 144	0.3365	0.5565	0.1906	0.2396
Sample 145	0.3554	0.5754	0.0072	0.005
Sample 146	0.2941	0.6174	0.0442	0.0646
Sample 147	0.2945	0.6103	0.1718	0.2316
Sample 148	0.1777	0.7089	0.1335	0.2268
Sample 149	0.2834	0.6287	0.1795	0.2494
Sample 150	0.2872	0.6528	0.0501	0.0574
Sample 151	0.291	0.6376	0.1514	0.1767
Sample 152	0.335	0.6009	0.1559	0.1947
Sample 153	0.3348	0.5705	0.1782	0.2283

Sample 154	0.2741	0.6491	0.0915	0.1527
Sample 155	0.2182	0.6776	0.1006	0.1586
Sample 156	0.2112	0.691	0.111	0.1468
Sample 157	0.3491	0.5584	0.184	0.2568
Sample 158	0.3476	0.5733	0.1376	0.176
Sample 159	0.2946	0.6352	0.0067	0.0522
Sample 160	0.281	0.6055	0.1657	0.2021
Sample 161	0.2944	0.5879	0.1735	0.2516
Sample 162	0.2845	0.6257	0.1345	0.2161
Sample 163	0.3076	0.5428	0.1821	0.2584
Sample 164	0.2501	0.6811	0.1963	0.2635
Sample 165	0.2931	0.6169	0.0212	0.0609
Sample 166	0.3305	0.5703	0.1101	0.1763
Sample 167	0.3209	0.5763	0.0551	0.1741
Sample 168	0.2021	0.6639	0.1626	0.231
Sample 169	0.2646	0.6286	0.0689	0.0757
Sample 170	0.245	0.6704	0.1348	0.191
Sample 171	0.296	0.6124	0.0179	0.0793
Sample 172	0.3394	0.5781	0.0142	0.0925
Sample 173	0.211	0.7019	-0.0152	0.0502
Sample 174	0.284	0.6221	-0.003	0.0579
Sample 175	0.2571	0.6437	-0.0473	0.0507
Sample 176	0.3034	0.5739	0.0657	0.151
Sample 177	0.2667	0.6402	0.1281	0.2158
Sample 178	0.3086	0.5668	0.1082	0.1146
Sample 179	0.1997	0.6891	-0.0364	0.0442

Sample 180	0.2632	0.6453	0.059	0.0693
Sample 181	0.2874	0.6202	0.0076	0.1193
Sample 182	0.2604	0.6154	0.0952	0.1985
Sample 183	0.2975	0.5845	0.1239	0.1703
Sample 184	0.2676	0.6433	0.0602	0.1237
Sample 185	0.2645	0.6262	0.0067	0.0575
Sample 186	0.3291	0.6088	0.2019	0.2263
Sample 187	0.298	0.6072	0.0564	0.1405
Sample 188	0.3719	0.5572	0.1289	0.1798
Sample 189	0.2378	0.6788	0.0256	0.0565
Sample 190	0.325	0.6173	0.0559	0.0859
Sample 191	0.2629	0.6292	0.0879	0.1565
Sample 192	0.2406	0.6627	0.0986	0.1955
Sample 193	0.2733	0.608	0.0505	0.1676
Sample 194	0.3399	0.5946	0.1408	0.1587
Sample 195	0.2296	0.6784	0.0196	0.1179
Sample 196	0.2573	0.6342	0.0658	0.1911
Sample 197	0.2766	0.627	-0.0102	-0.0599
Sample 198	0.2906	0.6408	0.1147	0.1617
Sample 199	0.3543	0.5521	0.0748	0.1166
Sample 200	0.2403	0.63	0.2131	0.2704
Sample 201	0.3463	0.562	0.2147	0.2898
Sample 202	0.321	0.5784	0.192	0.2586
Sample 203	0.3523	0.5695	0.1426	0.2211
Sample 204	0.2869	0.5988	0.0873	0.1688
Sample 205	0.2924	0.6262	0.1411	0.19

Sample 206	0.3257	0.6167	-0.0211	0.0366
Sample 207	0.2914	0.6435	0.064	0.1294
Sample 208	0.2942	0.6311	0.1053	0.1606
Sample 209	0.2614	0.6464	-0.0324	0.0291
Sample 210	0.2688	0.6097	0.071	0.1414
Sample 211	0.2806	0.6146	0.084	0.1733
Sample 212	0.2744	0.6016	0.0704	0.0981
Sample 213	0.316	0.6071	0.0909	0.1662
Sample 214	0.2799	0.5775	0.0553	0.1665
Sample 215	0.3307	0.5727	0.1446	0.2039
Sample 216	0.2705	0.6591	0.2006	0.2607
Sample 217	0.269	0.63	0.1896	0.2177
Sample 218	0.2997	0.6223	0.1482	0.1921
Sample 219	0.1997	0.6609	0.1867	0.2693
Sample 220	0.2934	0.6045	0.1457	0.2746
Sample 221	0.3011	0.6117	0.0906	0.1391
Sample 222	0.2215	0.6474	0.1471	0.2583
Sample 223	0.2957	0.6175	0.0893	0.0571
Sample 224	0.291	0.5905	0.1414	0.2106
Sample 225	0.2682	0.6464	0.0053	0.1072
Sample 226	0.2302	0.635	0.1404	0.1434
Sample 227	0.3298	0.5761	0.0913	0.1518
Sample 228	0.2828	0.6022	0.0999	0.1346
Sample 229	0.3399	0.5138	0.1781	0.3266
Sample 230	0.2613	0.6192	0.1214	0.2154
Sample 231	0.2809	0.6175	0.1083	0.1458

Sample 232	0.3081	0.5882	0.3224	0.3809
Sample 233	0.316	0.5711	0.0839	0.1537
Sample 234	0.2227	0.6894	0.0754	0.1533
Sample 235	0.2686	0.5816	0.1193	0.1108
Sample 236	0.2626	0.6285	0.1097	0.1841
Sample 237	0.2527	0.6723	-0.078	0.0227
Sample 238	0.295	0.611	0.0616	0.148
Sample 239	0.3214	0.6031	0.1337	0.179
Sample 240	0.2951	0.609	0.1471	0.1462
Sample 241	0.2042	0.6769	0.1144	0.155
Sample 242	0.2444	0.636	0.0749	0.1181
Sample 243	0.3368	0.5636	0.1871	0.2409
Sample 244	0.2624	0.622	-0.0089	0.0208
Sample 245	0.2252	0.6945	-0.0103	0.0123
Sample 246	0.212	0.6603	-0.1099	-0.012
Sample 247	0.2846	0.602	0.2469	0.3108
Sample 248	0.2829	0.6198	0.1783	0.2329
Sample 249	0.2045	0.644	0.1252	0.1884
Sample 250	0.285	0.5976	0.0495	0.1138
Sample 251	0.2925	0.6092	0.0263	0.154
Sample 252	0.2621	0.624	0.1669	0.23
Sample 253	0.2971	0.6082	0.1018	0.1783
Sample 254	0.268	0.6612	0.1392	0.148
Sample 255	0.2466	0.6554	0.0858	0.1695
Sample 256	0.2698	0.6748	0.0495	0.1055
Sample 257	0.2597	0.6652	-0.0309	0.0092

Sample 258	0.2517	0.616	0.0589	0.1722
Sample 259	0.3357	0.5586	0.0586	0.1263
Sample 260	0.2522	0.6415	0.0413	0.0749
Sample 261	0.2144	0.6696	-0.0271	0.0683
Sample 262	0.2165	0.6666	0.107	0.2052
Sample 263	0.3243	0.5723	0.152	0.2257
Sample 264	0.3001	0.6174	0.1172	0.1928
Sample 265	0.2848	0.6109	0.1211	0.2089
Sample 266	0.4203	0.4748	0.0801	0.1412
Sample 267	0.342	0.5332	0.1143	0.1753
Sample 268	0.2631	0.646	0.1163	0.1595
Sample 269	0.2191	0.6653	-0.089	0.0429
Sample 270	0.3694	0.5277	0.1789	0.2912
Sample 271	0.2639	0.6292	-0.0996	0.0142
Sample 272	0.2336	0.6648	-0.0814	-0.0074
Sample 273	0.2194	0.6417	0.0782	0.223
Sample 274	0.2301	0.6705	0.0201	0.1223
Sample 275	0.3356	0.5853	0.1393	0.2237
Sample 276	0.27	0.6354	0.0865	0.1452
Sample 277	0.3406	0.5534	0.0767	0.1751
Sample 278	0.2285	0.6639	0.0264	0.1264
Sample 279	0.3153	0.6012	0.0811	0.156
Sample 280	0.2539	0.6207	0.0443	0.0923
Sample 281	0.2623	0.6486	-0.0401	0.0139
Sample 282	0.2797	0.639	0.1718	0.2216
Sample 283	0.1917	0.7059	-0.0481	0.0104

Sample 284	0.3357	0.6	0.0827	0.1419
Sample 285	0.3242	0.5356	0.2011	0.1964
Sample 286	0.2112	0.6749	0.0151	0.1405
Sample 287	0.2456	0.6615	0.0425	0.096
Sample 288	0.2484	0.6551	0.1028	0.1599
Sample 289	0.2658	0.6368	0.1016	0.1564
Sample 290	0.2685	0.6342	0.0217	0.133
Sample 291	0.3668	0.5521	0.0097	0.0843
Sample 292	0.2961	0.5716	-0.0884	0.0504
Sample 293	0.2999	0.6142	0.0765	0.0571
Sample 294	0.2339	0.6651	-0.0024	0.0931
Sample 295	0.257	0.6472	0.1283	0.1885
Sample 296	0.2373	0.6691	-0.0834	0.0036
Sample 297	0.2737	0.6546	0.0714	0.1124
Sample 298	0.2671	0.6502	0.2198	0.2932
Sample 299	0.2123	0.6668	0.1268	0.2157
Sample 300	0.3263	0.5896	0.0891	0.157
Sample 301	0.2792	0.6401	0.0334	0.0695
Sample 302	0.3216	0.5893	0.0959	0.1433
Sample 303	0.2383	0.6341	0.1382	0.2571
Sample 304	0.2726	0.6299	0.0238	0.0958
Sample 305	0.3068	0.5911	0.0996	0.1474
Sample 306	0.2745	0.6365	0.1149	0.1885
Sample 307	0.2596	0.631	0.1029	0.1471
Sample 308	0.3485	0.5523	0.0638	0.0977
Sample 309	0.3215	0.604	0.1031	0.1848

Sample 310	0.2519	0.6512	0.1773	0.1694
Sample 311	0.2853	0.5985	0.0204	0.0931
Sample 312	0.2874	0.5521	0.1482	0.1614
Sample 313	0.2769	0.623	0.0579	0.0853
Sample 314	0.3282	0.5702	0.0968	0.1476
Sample 315	0.2937	0.6213	0.0587	0.1205
Sample 316	0.3401	0.5527	0.1943	0.2736
Sample 317	0.3149	0.6124	0.0324	0.0906
Sample 318	0.2678	0.6427	0.2385	0.3073
Sample 319	0.318	0.576	0.2672	0.3349
Sample 320	0.3735	0.5325	0.0865	0.1601
Sample 321	0.3178	0.5974	0.051	0.094
Sample 322	0.2467	0.6358	0.0775	0.1303
Sample 323	0.2346	0.6827	0.027	0.0337
Sample 324	0.286	0.5983	0.2299	0.2563
Sample 325	0.2762	0.6172	0.1457	0.2343
Sample 326	0.2478	0.6705	0.1733	0.2577
Sample 327	0.2387	0.6254	0.0905	0.1895
Sample 328	0.2509	0.6527	0.1574	0.2483
Sample 329	0.1622	0.7141	0.0623	0.1416
Sample 330	0.2356	0.6454	-0.0447	0.053
Sample 331	0.2762	0.6231	0.1055	0.182
Sample 332	0.3068	0.6069	0.1649	0.2347
Sample 333	0.3135	0.6035	0.1248	0.1958
Sample 334	0.3014	0.6004	0.036	0.1076
Sample 335	0.3096	0.5394	0.1142	0.2616

Sample 336	0.3292	0.5608	0.1059	0.1862
Sample 337	0.2796	0.6393	0.1471	0.1896
Sample 338	0.3423	0.56	0.205	0.2279
Sample 339	0.1982	0.6949	0.1336	0.2022
Sample 340	0.3181	0.6148	0.0003	0.0576
Sample 341	0.2661	0.6448	0.0309	0.0993
Sample 342	0.2725	0.6359	0.0791	0.1498
Sample 343	0.2788	0.6418	0.1244	0.1411
Sample 344	0.2549	0.6225	0.2477	0.3473
Sample 345	0.3379	0.6021	0.1276	0.1528
Sample 346	0.2317	0.6544	0.0557	0.1714
Sample 347	0.2926	0.612	0.1379	0.2592
Sample 348	0.2853	0.6211	0.1007	0.1339
Sample 349	0.2864	0.6359	0.0626	0.0926
Sample 350	0.3096	0.6115	-0.0032	0.0346
Sample 351	0.2417	0.6535	-0.038	0.0734
Sample 352	0.2999	0.5616	0.2801	0.3891
Sample 353	0.229	0.655	-0.0659	0.0283
Sample 354	0.3019	0.6001	0.2278	0.3053
Sample 355	0.361	0.5394	0.1256	0.1827
Sample 356	0.2548	0.6296	0.1498	0.1503
Sample 357	0.3062	0.6228	0.0468	0.0782
Sample 358	0.2041	0.6696	0.1984	0.3031
Sample 359	0.2502	0.6496	0.0599	0.1263
Sample 360	0.2968	0.6563	0.2058	0.2116
Sample 361	0.3478	0.5838	0.0959	0.0691

Sample 362	0.2568	0.6416	0.1657	0.2173
Sample 363	0.2262	0.7031	0.1373	0.1488
Sample 364	0.2791	0.6598	0.0408	0.1011
Sample 365	0.3027	0.6024	0.1446	0.2013
Sample 366	0.3399	0.5077	0.1064	0.2117
Sample 367	0.3155	0.5816	0.1069	0.1272
Sample 368	0.2806	0.6086	0.0859	0.1994
Sample 369	0.3373	0.5367	0.2074	0.2321
Sample 370	0.3454	0.5616	0.21	0.2997
Sample 371	0.2739	0.6302	0.1683	0.2051
Sample 372	0.3035	0.6438	0.002	0.0445
Sample 373	0.2573	0.673	-0.0291	0.0066
Sample 374	0.3915	0.5242	0.118	0.234
Sample 375	0.3125	0.5983	0.2424	0.314
Sample 376	0.2425	0.67	0.0023	0.0312
Sample 377	0.4022	0.5086	0.1235	0.1563
Sample 378	0.2781	0.6333	0.0961	0.1855
Sample 379	0.2856	0.6199	0.094	0.1443
Sample 380	0.3116	0.6062	0.1221	0.1652
Sample 381	0.2746	0.6173	0.1003	0.2212
Sample 382	0.3184	0.5693	0.2247	0.2768
Sample 383	0.2725	0.6134	0.1011	0.2207
Sample 384	0.2444	0.668	0.1466	0.1931
Sample 385	0.4282	0.4667	0.1784	0.2484
Sample 386	0.1777	0.6602	0.1421	0.2641
Sample 387	0.2865	0.618	-0.0536	0.038

Sample 388	0.2775	0.6148	0.1179	0.1179
Sample 389	0.3526	0.5278	0.1617	0.2016
Sample 390	0.2878	0.62	0.0212	0.057
Sample 391	0.217	0.6575	0.0303	0.1416
Sample 392	0.2855	0.6283	0.0665	0.1139
Sample 393	0.2795	0.6103	0.0442	0.1575
Sample 394	0.2994	0.6206	0.222	0.273
Sample 395	0.3376	0.565	0.1238	0.1968
Sample 396	0.2942	0.6032	0.121	0.1937
Sample 397	0.2619	0.6705	-0.0047	0.0897
Sample 398	0.1971	0.6702	0.1356	0.2001
Sample 399	0.3235	0.6065	0.0628	0.135
Sample 400	0.2643	0.6139	0.1133	0.2225
Sample 401	0.2618	0.6371	0.0051	0.0263
Sample 402	0.3122	0.5631	0.2028	0.2734
Sample 403	0.131	0.707	0.1633	0.2243
Sample 404	0.4156	0.5004	0.1345	0.2136
Sample 405	0.2682	0.6536	0.1893	0.2025
Sample 406	0.2395	0.6554	-0.0536	0.0055
Sample 407	0.2661	0.6233	0.0388	0.1086
Sample 408	0.2866	0.6198	0.0767	0.1294
Sample 409	0.2206	0.6344	0.1062	0.1993
Sample 410	0.3345	0.5826	0.0347	0.1388
Sample 411	0.2931	0.6032	0.1483	0.1984
Sample 412	0.2949	0.6142	0.1496	0.2047
Sample 413	0.2654	0.6442	0.1146	0.1473

Sample 414	0.2751	0.6253	0.1711	0.2385
Sample 415	0.2844	0.6152	0.2001	0.2574
Sample 416	0.2055	0.6649	0.0161	0.0806
Sample 417	0.2385	0.6592	0.094	0.1959
Sample 418	0.2542	0.6589	0.0074	0.1153
Sample 419	0.2959	0.6126	0.0586	0.1425
Sample 420	0.3001	0.6018	-0.0432	-0.048
Sample 421	0.2791	0.6236	-0.0064	0.0157
Sample 422	0.2432	0.6746	0.0756	0.127
Sample 423	0.2273	0.667	-0.0312	0.0775
Sample 424	0.351	0.5488	0.1255	0.1718
Sample 425	0.2126	0.6651	0.1452	0.2286
Sample 426	0.2779	0.604	0.1349	0.2158
Sample 427	0.2595	0.6288	0.1145	0.1021
Sample 428	0.3085	0.6312	0.1103	0.1206
Sample 429	0.3284	0.5912	0.0595	0.0994
Sample 430	0.2756	0.6079	0.079	0.1742
Sample 431	0.3154	0.5936	0.1099	0.1693
Sample 432	0.1924	0.6712	0.0983	0.2086
Sample 433	0.3144	0.6168	0.1282	0.1996
Sample 434	0.3358	0.5549	0.1418	0.175
Sample 435	0.2618	0.6144	0.0202	0.114
Sample 436	0.3493	0.5582	0.1226	0.1865
Sample 437	0.2273	0.6458	0.1297	0.1993
Sample 438	0.3084	0.5826	0.1237	0.184
Sample 439	0.1965	0.7112	-0.0129	0.0403

Sample 440	0.2725	0.6275	0.1046	0.2157
Sample 441	0.3125	0.5458	0.1101	0.18
Sample 442	0.2678	0.6419	0.1388	0.2285
Sample 443	0.2704	0.6491	0.049	0.107
Sample 444	0.2302	0.6704	0.0498	0.1055
Sample 445	0.2739	0.6122	0.0303	0.1296
Sample 446	0.3218	0.5674	0.2091	0.2476
Sample 447	0.309	0.5786	0.0658	0.1636
Sample 448	0.1963	0.6818	0.0451	0.0827
Sample 449	0.2788	0.6211	0.1102	0.1252
Sample 450	0.2185	0.6829	0.1911	0.2524
Sample 451	0.2307	0.6749	-0.0973	-0.0066
Sample 452	0.2537	0.6416	0.0283	0.1593
Sample 453	0.3057	0.6011	0.0445	0.1002
Sample 454	0.2982	0.6108	0.1083	0.2018
Sample 455	0.1992	0.7092	-0.0143	0.0051
Sample 456	0.2449	0.6429	0.0388	0.1209
Sample 457	0.185	0.674	-0.152	0.0356
Sample 458	0.3442	0.5761	0.0482	-0.028
Sample 459	0.3395	0.5724	0.0695	0.16
Sample 460	0.2563	0.6242	0.1746	0.2638
Sample 461	0.3431	0.549	0.1105	0.25
Sample 462	0.2813	0.6239	0.1115	0.1827
Sample 463	0.3661	0.5019	0.2092	0.2999
Sample 464	0.2678	0.6242	0.0606	0.1391
Sample 465	0.2654	0.645	-0.0489	-0.0044

Sample 466	0.3053	0.584	0.0902	0.157
Sample 467	0.3037	0.6186	0.0359	0.0458
Sample 468	0.2681	0.6412	0.0328	0.0717
Sample 469	0.2757	0.6354	0.0523	0.1342
Sample 470	0.2825	0.6266	-0.0075	0.0631
Sample 471	0.2628	0.6236	0.0956	0.1748
Sample 472	0.2413	0.6446	0.1707	0.1501
Sample 473	0.3412	0.5588	0.1247	0.2096
Sample 474	0.3227	0.6011	0.1111	0.1901
Sample 475	0.2199	0.6735	0.1193	0.1809
Sample 476	0.2945	0.6102	0.0723	0.1375
Sample 477	0.2852	0.6332	0.1503	0.2019
Sample 478	0.2609	0.6073	0.2426	0.3013
Sample 479	0.2499	0.6696	-0.0021	0.0498
Sample 480	0.2036	0.692	0.0808	0.0967
Sample 481	0.2646	0.6526	0.0735	0.0606
Sample 482	0.179	0.7043	0.0746	0.1092
Sample 483	0.2675	0.6454	0.0876	0.1419
Sample 484	0.2173	0.6681	0.1792	0.1661
Sample 485	0.3428	0.5266	0.2173	0.3195
Sample 486	0.2705	0.6106	-0.0449	0.0719
Sample 487	0.2631	0.648	-0.0528	0.0393
Sample 488	0.3214	0.5785	0.0882	0.1822
Sample 489	0.2456	0.6614	0.0775	0.135
Sample 490	0.3324	0.5934	0.0666	0.1206
Sample 491	0.2765	0.629	0.1034	0.1897

Sample 492	0.3505	0.576	0.1091	0.1578
Sample 493	0.3636	0.5659	0.1805	0.2262
Sample 494	0.2808	0.5967	0.1865	0.2521
Sample 495	0.2711	0.6512	0.0724	0.0937
Sample 496	0.2409	0.6963	0.2017	0.2089
Sample 497	0.2059	0.6766	0.0657	0.1428
Sample 498	0.2363	0.6277	0.1522	0.2519
Sample 499	0.3161	0.5948	0.1125	0.1957

Total Effect

	WP ->EI	EM ->EI	JS ->EI	PI ->EI
Sample 0	0.2573	0.6172	0.2038	0.2511
Sample 1	0.2503	0.6694	0.0069	0.0308
Sample 2	0.2923	0.5784	0.0585	0.1405
Sample 3	0.2544	0.6176	0.0904	0.1785
Sample 4	0.2798	0.6188	0.083	0.1634
Sample 5	0.1711	0.682	0.1309	0.2033
Sample 6	0.3534	0.5746	0.087	0.1538
Sample 7	0.3081	0.6089	0.1743	0.2253
Sample 8	0.2858	0.6057	0.12	0.1749
Sample 9	0.2784	0.6126	0.0568	0.1586
Sample 10	0.2056	0.6927	-0.0911	-0.0329
Sample 11	0.2911	0.6107	0.0067	0.0878
Sample 12	0.2784	0.6392	-0.0143	0.0308
Sample 13	0.2569	0.6155	-0.0122	0.078
Sample 14	0.2612	0.6122	0.1357	0.1594
Sample 15	0.3152	0.5798	-0.0044	0.0889
Sample 16	0.2135	0.681	0.1629	0.2691
Sample 17	0.2831	0.6475	0.0997	0.1653
Sample 18	0.2561	0.6624	0.0495	0.0836
Sample 19	0.3195	0.5992	0.0807	0.1524
Sample 20	0.2785	0.6026	0.1871	0.245
Sample 21	0.3137	0.6037	0.0698	0.1205
Sample 22	0.2601	0.6414	-0.0023	0.0587
Sample 23	0.2504	0.6258	0.1161	0.1762

Sample 24	0.2659	0.6703	-0.0638	-0.0014
Sample 25	0.3134	0.6048	0.0021	0.09
Sample 26	0.3147	0.5651	0.1723	0.327
Sample 27	0.2772	0.6194	0.2073	0.2643
Sample 28	0.2412	0.6412	0.0456	0.1279
Sample 29	0.3066	0.6014	0.1865	0.2821
Sample 30	0.273	0.61	0.1579	0.1936
Sample 31	0.2985	0.6527	0.1197	0.1472
Sample 32	0.2906	0.6149	0.1474	0.2123
Sample 33	0.3144	0.5812	0.0874	0.1878
Sample 34	0.3165	0.5848	0.0845	0.1614
Sample 35	0.2442	0.663	0.1588	0.2016
Sample 36	0.2917	0.6015	0.1407	0.1953
Sample 37	0.3026	0.5922	0.1233	0.2336
Sample 38	0.3254	0.5664	0.1659	0.2394
Sample 39	0.251	0.6481	0.0178	0.0595
Sample 40	0.3702	0.5325	0.0979	0.1471
Sample 41	0.2599	0.6459	0.0465	0.1308
Sample 42	0.2659	0.6327	0.0719	0.1608
Sample 43	0.2366	0.6631	0.027	0.0934
Sample 44	0.2778	0.6402	0.0407	0.0853
Sample 45	0.371	0.5031	0.168	0.2746
Sample 46	0.2581	0.6448	0.0681	0.1749
Sample 47	0.2935	0.6012	0.0517	0.1746
Sample 48	0.389	0.5456	-0.0018	0.0741
Sample 49	0.2812	0.6541	0.0298	0.108

Sample 50	0.3928	0.4988	0.1121	0.1018
Sample 51	0.3231	0.58	0.1428	0.2104
Sample 52	0.322	0.6033	0.1462	0.1953
Sample 53	0.2683	0.6462	0.026	0.0731
Sample 54	0.3168	0.5936	0.0712	0.111
Sample 55	0.256	0.6529	0.071	0.1604
Sample 56	0.3103	0.5979	-0.0536	-0.0362
Sample 57	0.3766	0.5032	0.1973	0.251
Sample 58	0.2688	0.6672	0.18	0.2486
Sample 59	0.3433	0.5634	0.0861	0.1619
Sample 60	0.2698	0.6639	0.098	0.1438
Sample 61	0.2621	0.6046	0.1427	0.2828
Sample 62	0.3296	0.5843	0.0462	0.0998
Sample 63	0.2783	0.6339	0.0211	0.043
Sample 64	0.2709	0.6224	0.1862	0.238
Sample 65	0.3062	0.5895	0.12	0.1784
Sample 66	0.3012	0.5922	0.0107	0.1169
Sample 67	0.2693	0.6317	0.0805	0.1369
Sample 68	0.2576	0.6318	0.0223	0.1058
Sample 69	0.2276	0.6743	0.164	0.2717
Sample 70	0.222	0.6993	-0.0044	0.0627
Sample 71	0.242	0.6619	0.1436	0.1853
Sample 72	0.2985	0.5995	0.1921	0.2581
Sample 73	0.3046	0.5897	0.1659	0.2525
Sample 74	0.2566	0.6545	-0.0808	0.0283
Sample 75	0.2755	0.644	-0.0255	0.0394

Sample 76	0.1764	0.7108	-0.053	-0.0171
Sample 77	0.3026	0.6052	0.0429	0.1364
Sample 78	0.1676	0.7081	0.0644	0.0943
Sample 79	0.3284	0.5842	0.0706	0.1381
Sample 80	0.3254	0.586	0.0851	0.1653
Sample 81	0.2831	0.5858	0.1352	0.231
Sample 82	0.1899	0.6853	0.0969	0.1643
Sample 83	0.2461	0.6636	0.0259	0.0847
Sample 84	0.2069	0.7038	-0.0573	0.0006
Sample 85	0.2457	0.6575	0.0138	0.0789
Sample 86	0.2544	0.6504	0.1482	0.1811
Sample 87	0.2421	0.6521	0.0389	0.1762
Sample 88	0.2767	0.6764	0.1238	0.1428
Sample 89	0.2646	0.6451	-0.0429	0.0321
Sample 90	0.3305	0.5847	0.1977	0.2656
Sample 91	0.2266	0.6479	0.016	0.0785
Sample 92	0.2603	0.6435	-0.0137	0.0496
Sample 93	0.2658	0.5968	0.1986	0.2732
Sample 94	0.1911	0.6671	0.0776	0.1897
Sample 95	0.3016	0.5824	0.0264	0.1266
Sample 96	0.3621	0.5758	0.1261	0.1746
Sample 97	0.2336	0.6551	0.057	0.1364
Sample 98	0.2282	0.6636	-0.0356	0.0122
Sample 99	0.2859	0.5979	0.049	0.1459
Sample 100	0.2513	0.6483	0.1605	0.1745
Sample 101	0.2078	0.6629	0.1682	0.2698

Sample 102	0.3237	0.5974	0.0553	0.0943
Sample 103	0.3053	0.596	0.1778	0.2342
Sample 104	0.2747	0.6234	0.2046	0.2571
Sample 105	0.2204	0.6618	0.0751	0.1589
Sample 106	0.3008	0.6145	0.1532	0.1848
Sample 107	0.2854	0.5834	0.1259	0.2189
Sample 108	0.2189	0.7018	-0.0356	0.0071
Sample 109	0.2456	0.6518	0.0579	0.11
Sample 110	0.3366	0.5741	0.0829	0.1263
Sample 111	0.2599	0.5965	0.162	0.2325
Sample 112	0.2603	0.6727	0.0038	0.0748
Sample 113	0.3307	0.5774	0.0804	0.1472
Sample 114	0.3084	0.5906	0.0556	0.1563
Sample 115	0.3014	0.5965	0.1365	0.2354
Sample 116	0.3088	0.5564	0.2035	0.2904
Sample 117	0.1793	0.7006	-0.0773	0.015
Sample 118	0.3604	0.5336	0.1353	0.2092
Sample 119	0.3207	0.5681	0.0757	0.1374
Sample 120	0.2977	0.6056	0.1306	0.1944
Sample 121	0.3002	0.6198	0.2456	0.2698
Sample 122	0.1935	0.6555	0.1085	0.1704
Sample 123	0.2007	0.6876	0.108	0.1966
Sample 124	0.3279	0.5728	0.1309	0.2385
Sample 125	0.2501	0.6215	0.1315	0.1899
Sample 126	0.2929	0.5878	0.1491	0.2641
Sample 127	0.3432	0.5524	0.228	0.2481

Sample 128	0.2117	0.6558	0.1615	0.1221
Sample 129	0.2666	0.612	0.0148	0.0731
Sample 130	0.2499	0.6534	-0.0109	0.0553
Sample 131	0.2788	0.6498	0.0872	0.1419
Sample 132	0.2505	0.651	0.1576	0.2762
Sample 133	0.2142	0.6878	0.021	0.0776
Sample 134	0.319	0.5766	-0.1064	0.0194
Sample 135	0.3086	0.6089	0.2377	0.2901
Sample 136	0.3349	0.5372	0.1808	0.3023
Sample 137	0.374	0.5175	0.1972	0.2734
Sample 138	0.2993	0.6302	0.2482	0.2858
Sample 139	0.2772	0.6155	0.0399	0.0934
Sample 140	0.2712	0.6335	0.0046	0.0379
Sample 141	0.2204	0.6914	0.1554	0.1809
Sample 142	0.2815	0.6162	0.1428	0.2649
Sample 143	0.2436	0.6455	0.1072	0.1679
Sample 144	0.3365	0.5565	0.1906	0.2396
Sample 145	0.3554	0.5754	0.0072	0.005
Sample 146	0.2941	0.6174	0.0442	0.0646
Sample 147	0.2945	0.6103	0.1718	0.2316
Sample 148	0.1777	0.7089	0.1335	0.2268
Sample 149	0.2834	0.6287	0.1795	0.2494
Sample 150	0.2872	0.6528	0.0501	0.0574
Sample 151	0.291	0.6376	0.1514	0.1767
Sample 152	0.335	0.6009	0.1559	0.1947
Sample 153	0.3348	0.5705	0.1782	0.2283

Sample 154	0.2741	0.6491	0.0915	0.1527
Sample 155	0.2182	0.6776	0.1006	0.1586
Sample 156	0.2112	0.691	0.111	0.1468
Sample 157	0.3491	0.5584	0.184	0.2568
Sample 158	0.3476	0.5733	0.1376	0.176
Sample 159	0.2946	0.6352	0.0067	0.0522
Sample 160	0.281	0.6055	0.1657	0.2021
Sample 161	0.2944	0.5879	0.1735	0.2516
Sample 162	0.2845	0.6257	0.1345	0.2161
Sample 163	0.3076	0.5428	0.1821	0.2584
Sample 164	0.2501	0.6811	0.1963	0.2635
Sample 165	0.2931	0.6169	0.0212	0.0609
Sample 166	0.3305	0.5703	0.1101	0.1763
Sample 167	0.3209	0.5763	0.0551	0.1741
Sample 168	0.2021	0.6639	0.1626	0.231
Sample 169	0.2646	0.6286	0.0689	0.0757
Sample 170	0.245	0.6704	0.1348	0.191
Sample 171	0.296	0.6124	0.0179	0.0793
Sample 172	0.3394	0.5781	0.0142	0.0925
Sample 173	0.211	0.7019	-0.0152	0.0502
Sample 174	0.284	0.6221	-0.003	0.0579
Sample 175	0.2571	0.6437	-0.0473	0.0507
Sample 176	0.3034	0.5739	0.0657	0.151
Sample 177	0.2667	0.6402	0.1281	0.2158
Sample 178	0.3086	0.5668	0.1082	0.1146
Sample 179	0.1997	0.6891	-0.0364	0.0442

Sample 180	0.2632	0.6453	0.059	0.0693
Sample 181	0.2874	0.6202	0.0076	0.1193
Sample 182	0.2604	0.6154	0.0952	0.1985
Sample 183	0.2975	0.5845	0.1239	0.1703
Sample 184	0.2676	0.6433	0.0602	0.1237
Sample 185	0.2645	0.6262	0.0067	0.0575
Sample 186	0.3291	0.6088	0.2019	0.2263
Sample 187	0.298	0.6072	0.0564	0.1405
Sample 188	0.3719	0.5572	0.1289	0.1798
Sample 189	0.2378	0.6788	0.0256	0.0565
Sample 190	0.325	0.6173	0.0559	0.0859
Sample 191	0.2629	0.6292	0.0879	0.1565
Sample 192	0.2406	0.6627	0.0986	0.1955
Sample 193	0.2733	0.608	0.0505	0.1676
Sample 194	0.3399	0.5946	0.1408	0.1587
Sample 195	0.2296	0.6784	0.0196	0.1179
Sample 196	0.2573	0.6342	0.0658	0.1911
Sample 197	0.2766	0.627	-0.0102	-0.0599
Sample 198	0.2906	0.6408	0.1147	0.1617
Sample 199	0.3543	0.5521	0.0748	0.1166
Sample 200	0.2403	0.63	0.2131	0.2704
Sample 201	0.3463	0.562	0.2147	0.2898
Sample 202	0.321	0.5784	0.192	0.2586
Sample 203	0.3523	0.5695	0.1426	0.2211
Sample 204	0.2869	0.5988	0.0873	0.1688
Sample 205	0.2924	0.6262	0.1411	0.19

Sample 206	0.3257	0.6167	-0.0211	0.0366
Sample 207	0.2914	0.6435	0.064	0.1294
Sample 208	0.2942	0.6311	0.1053	0.1606
Sample 209	0.2614	0.6464	-0.0324	0.0291
Sample 210	0.2688	0.6097	0.071	0.1414
Sample 211	0.2806	0.6146	0.084	0.1733
Sample 212	0.2744	0.6016	0.0704	0.0981
Sample 213	0.316	0.6071	0.0909	0.1662
Sample 214	0.2799	0.5775	0.0553	0.1665
Sample 215	0.3307	0.5727	0.1446	0.2039
Sample 216	0.2705	0.6591	0.2006	0.2607
Sample 217	0.269	0.63	0.1896	0.2177
Sample 218	0.2997	0.6223	0.1482	0.1921
Sample 219	0.1997	0.6609	0.1867	0.2693
Sample 220	0.2934	0.6045	0.1457	0.2746
Sample 221	0.3011	0.6117	0.0906	0.1391
Sample 222	0.2215	0.6474	0.1471	0.2583
Sample 223	0.2957	0.6175	0.0893	0.0571
Sample 224	0.291	0.5905	0.1414	0.2106
Sample 225	0.2682	0.6464	0.0053	0.1072
Sample 226	0.2302	0.635	0.1404	0.1434
Sample 227	0.3298	0.5761	0.0913	0.1518
Sample 228	0.2828	0.6022	0.0999	0.1346
Sample 229	0.3399	0.5138	0.1781	0.3266
Sample 230	0.2613	0.6192	0.1214	0.2154
Sample 231	0.2809	0.6175	0.1083	0.1458

Sample 232	0.3081	0.5882	0.3224	0.3809
Sample 233	0.316	0.5711	0.0839	0.1537
Sample 234	0.2227	0.6894	0.0754	0.1533
Sample 235	0.2686	0.5816	0.1193	0.1108
Sample 236	0.2626	0.6285	0.1097	0.1841
Sample 237	0.2527	0.6723	-0.078	0.0227
Sample 238	0.295	0.611	0.0616	0.148
Sample 239	0.3214	0.6031	0.1337	0.179
Sample 240	0.2951	0.609	0.1471	0.1462
Sample 241	0.2042	0.6769	0.1144	0.155
Sample 242	0.2444	0.636	0.0749	0.1181
Sample 243	0.3368	0.5636	0.1871	0.2409
Sample 244	0.2624	0.622	-0.0089	0.0208
Sample 245	0.2252	0.6945	-0.0103	0.0123
Sample 246	0.212	0.6603	-0.1099	-0.012
Sample 247	0.2846	0.602	0.2469	0.3108
Sample 248	0.2829	0.6198	0.1783	0.2329
Sample 249	0.2045	0.644	0.1252	0.1884
Sample 250	0.285	0.5976	0.0495	0.1138
Sample 251	0.2925	0.6092	0.0263	0.154
Sample 252	0.2621	0.624	0.1669	0.23
Sample 253	0.2971	0.6082	0.1018	0.1783
Sample 254	0.268	0.6612	0.1392	0.148
Sample 255	0.2466	0.6554	0.0858	0.1695
Sample 256	0.2698	0.6748	0.0495	0.1055
Sample 257	0.2597	0.6652	-0.0309	0.0092

Sample 258	0.2517	0.616	0.0589	0.1722
Sample 259	0.3357	0.5586	0.0586	0.1263
Sample 260	0.2522	0.6415	0.0413	0.0749
Sample 261	0.2144	0.6696	-0.0271	0.0683
Sample 262	0.2165	0.6666	0.107	0.2052
Sample 263	0.3243	0.5723	0.152	0.2257
Sample 264	0.3001	0.6174	0.1172	0.1928
Sample 265	0.2848	0.6109	0.1211	0.2089
Sample 266	0.4203	0.4748	0.0801	0.1412
Sample 267	0.342	0.5332	0.1143	0.1753
Sample 268	0.2631	0.646	0.1163	0.1595
Sample 269	0.2191	0.6653	-0.089	0.0429
Sample 270	0.3694	0.5277	0.1789	0.2912
Sample 271	0.2639	0.6292	-0.0996	0.0142
Sample 272	0.2336	0.6648	-0.0814	-0.0074
Sample 273	0.2194	0.6417	0.0782	0.223
Sample 274	0.2301	0.6705	0.0201	0.1223
Sample 275	0.3356	0.5853	0.1393	0.2237
Sample 276	0.27	0.6354	0.0865	0.1452
Sample 277	0.3406	0.5534	0.0767	0.1751
Sample 278	0.2285	0.6639	0.0264	0.1264
Sample 279	0.3153	0.6012	0.0811	0.156
Sample 280	0.2539	0.6207	0.0443	0.0923
Sample 281	0.2623	0.6486	-0.0401	0.0139
Sample 282	0.2797	0.639	0.1718	0.2216
Sample 283	0.1917	0.7059	-0.0481	0.0104

Sample 284	0.3357	0.6	0.0827	0.1419
Sample 285	0.3242	0.5356	0.2011	0.1964
Sample 286	0.2112	0.6749	0.0151	0.1405
Sample 287	0.2456	0.6615	0.0425	0.096
Sample 288	0.2484	0.6551	0.1028	0.1599
Sample 289	0.2658	0.6368	0.1016	0.1564
Sample 290	0.2685	0.6342	0.0217	0.133
Sample 291	0.3668	0.5521	0.0097	0.0843
Sample 292	0.2961	0.5716	-0.0884	0.0504
Sample 293	0.2999	0.6142	0.0765	0.0571
Sample 294	0.2339	0.6651	-0.0024	0.0931
Sample 295	0.257	0.6472	0.1283	0.1885
Sample 296	0.2373	0.6691	-0.0834	0.0036
Sample 297	0.2737	0.6546	0.0714	0.1124
Sample 298	0.2671	0.6502	0.2198	0.2932
Sample 299	0.2123	0.6668	0.1268	0.2157
Sample 300	0.3263	0.5896	0.0891	0.157
Sample 301	0.2792	0.6401	0.0334	0.0695
Sample 302	0.3216	0.5893	0.0959	0.1433
Sample 303	0.2383	0.6341	0.1382	0.2571
Sample 304	0.2726	0.6299	0.0238	0.0958
Sample 305	0.3068	0.5911	0.0996	0.1474
Sample 306	0.2745	0.6365	0.1149	0.1885
Sample 307	0.2596	0.631	0.1029	0.1471
Sample 308	0.3485	0.5523	0.0638	0.0977
Sample 309	0.3215	0.604	0.1031	0.1848

Sample 310	0.2519	0.6512	0.1773	0.1694
Sample 311	0.2853	0.5985	0.0204	0.0931
Sample 312	0.2874	0.5521	0.1482	0.1614
Sample 313	0.2769	0.623	0.0579	0.0853
Sample 314	0.3282	0.5702	0.0968	0.1476
Sample 315	0.2937	0.6213	0.0587	0.1205
Sample 316	0.3401	0.5527	0.1943	0.2736
Sample 317	0.3149	0.6124	0.0324	0.0906
Sample 318	0.2678	0.6427	0.2385	0.3073
Sample 319	0.318	0.576	0.2672	0.3349
Sample 320	0.3735	0.5325	0.0865	0.1601
Sample 321	0.3178	0.5974	0.051	0.094
Sample 322	0.2467	0.6358	0.0775	0.1303
Sample 323	0.2346	0.6827	0.027	0.0337
Sample 324	0.286	0.5983	0.2299	0.2563
Sample 325	0.2762	0.6172	0.1457	0.2343
Sample 326	0.2478	0.6705	0.1733	0.2577
Sample 327	0.2387	0.6254	0.0905	0.1895
Sample 328	0.2509	0.6527	0.1574	0.2483
Sample 329	0.1622	0.7141	0.0623	0.1416
Sample 330	0.2356	0.6454	-0.0447	0.053
Sample 331	0.2762	0.6231	0.1055	0.182
Sample 332	0.3068	0.6069	0.1649	0.2347
Sample 333	0.3135	0.6035	0.1248	0.1958
Sample 334	0.3014	0.6004	0.036	0.1076
Sample 335	0.3096	0.5394	0.1142	0.2616

Sample 336	0.3292	0.5608	0.1059	0.1862
Sample 337	0.2796	0.6393	0.1471	0.1896
Sample 338	0.3423	0.56	0.205	0.2279
Sample 339	0.1982	0.6949	0.1336	0.2022
Sample 340	0.3181	0.6148	0.0003	0.0576
Sample 341	0.2661	0.6448	0.0309	0.0993
Sample 342	0.2725	0.6359	0.0791	0.1498
Sample 343	0.2788	0.6418	0.1244	0.1411
Sample 344	0.2549	0.6225	0.2477	0.3473
Sample 345	0.3379	0.6021	0.1276	0.1528
Sample 346	0.2317	0.6544	0.0557	0.1714
Sample 347	0.2926	0.612	0.1379	0.2592
Sample 348	0.2853	0.6211	0.1007	0.1339
Sample 349	0.2864	0.6359	0.0626	0.0926
Sample 350	0.3096	0.6115	-0.0032	0.0346
Sample 351	0.2417	0.6535	-0.038	0.0734
Sample 352	0.2999	0.5616	0.2801	0.3891
Sample 353	0.229	0.655	-0.0659	0.0283
Sample 354	0.3019	0.6001	0.2278	0.3053
Sample 355	0.361	0.5394	0.1256	0.1827
Sample 356	0.2548	0.6296	0.1498	0.1503
Sample 357	0.3062	0.6228	0.0468	0.0782
Sample 358	0.2041	0.6696	0.1984	0.3031
Sample 359	0.2502	0.6496	0.0599	0.1263
Sample 360	0.2968	0.6563	0.2058	0.2116
Sample 361	0.3478	0.5838	0.0959	0.0691

Sample 362	0.2568	0.6416	0.1657	0.2173
Sample 363	0.2262	0.7031	0.1373	0.1488
Sample 364	0.2791	0.6598	0.0408	0.1011
Sample 365	0.3027	0.6024	0.1446	0.2013
Sample 366	0.3399	0.5077	0.1064	0.2117
Sample 367	0.3155	0.5816	0.1069	0.1272
Sample 368	0.2806	0.6086	0.0859	0.1994
Sample 369	0.3373	0.5367	0.2074	0.2321
Sample 370	0.3454	0.5616	0.21	0.2997
Sample 371	0.2739	0.6302	0.1683	0.2051
Sample 372	0.3035	0.6438	0.002	0.0445
Sample 373	0.2573	0.673	-0.0291	0.0066
Sample 374	0.3915	0.5242	0.118	0.234
Sample 375	0.3125	0.5983	0.2424	0.314
Sample 376	0.2425	0.67	0.0023	0.0312
Sample 377	0.4022	0.5086	0.1235	0.1563
Sample 378	0.2781	0.6333	0.0961	0.1855
Sample 379	0.2856	0.6199	0.094	0.1443
Sample 380	0.3116	0.6062	0.1221	0.1652
Sample 381	0.2746	0.6173	0.1003	0.2212
Sample 382	0.3184	0.5693	0.2247	0.2768
Sample 383	0.2725	0.6134	0.1011	0.2207
Sample 384	0.2444	0.668	0.1466	0.1931
Sample 385	0.4282	0.4667	0.1784	0.2484
Sample 386	0.1777	0.6602	0.1421	0.2641
Sample 387	0.2865	0.618	-0.0536	0.038

Sample 388	0.2775	0.6148	0.1179	0.1179
Sample 389	0.3526	0.5278	0.1617	0.2016
Sample 390	0.2878	0.62	0.0212	0.057
Sample 391	0.217	0.6575	0.0303	0.1416
Sample 392	0.2855	0.6283	0.0665	0.1139
Sample 393	0.2795	0.6103	0.0442	0.1575
Sample 394	0.2994	0.6206	0.222	0.273
Sample 395	0.3376	0.565	0.1238	0.1968
Sample 396	0.2942	0.6032	0.121	0.1937
Sample 397	0.2619	0.6705	-0.0047	0.0897
Sample 398	0.1971	0.6702	0.1356	0.2001
Sample 399	0.3235	0.6065	0.0628	0.135
Sample 400	0.2643	0.6139	0.1133	0.2225
Sample 401	0.2618	0.6371	0.0051	0.0263
Sample 402	0.3122	0.5631	0.2028	0.2734
Sample 403	0.131	0.707	0.1633	0.2243
Sample 404	0.4156	0.5004	0.1345	0.2136
Sample 405	0.2682	0.6536	0.1893	0.2025
Sample 406	0.2395	0.6554	-0.0536	0.0055
Sample 407	0.2661	0.6233	0.0388	0.1086
Sample 408	0.2866	0.6198	0.0767	0.1294
Sample 409	0.2206	0.6344	0.1062	0.1993
Sample 410	0.3345	0.5826	0.0347	0.1388
Sample 411	0.2931	0.6032	0.1483	0.1984
Sample 412	0.2949	0.6142	0.1496	0.2047
Sample 413	0.2654	0.6442	0.1146	0.1473

Sample 414	0.2751	0.6253	0.1711	0.2385
Sample 415	0.2844	0.6152	0.2001	0.2574
Sample 416	0.2055	0.6649	0.0161	0.0806
Sample 417	0.2385	0.6592	0.094	0.1959
Sample 418	0.2542	0.6589	0.0074	0.1153
Sample 419	0.2959	0.6126	0.0586	0.1425
Sample 420	0.3001	0.6018	-0.0432	-0.048
Sample 421	0.2791	0.6236	-0.0064	0.0157
Sample 422	0.2432	0.6746	0.0756	0.127
Sample 423	0.2273	0.667	-0.0312	0.0775
Sample 424	0.351	0.5488	0.1255	0.1718
Sample 425	0.2126	0.6651	0.1452	0.2286
Sample 426	0.2779	0.604	0.1349	0.2158
Sample 427	0.2595	0.6288	0.1145	0.1021
Sample 428	0.3085	0.6312	0.1103	0.1206
Sample 429	0.3284	0.5912	0.0595	0.0994
Sample 430	0.2756	0.6079	0.079	0.1742
Sample 431	0.3154	0.5936	0.1099	0.1693
Sample 432	0.1924	0.6712	0.0983	0.2086
Sample 433	0.3144	0.6168	0.1282	0.1996
Sample 434	0.3358	0.5549	0.1418	0.175
Sample 435	0.2618	0.6144	0.0202	0.114
Sample 436	0.3493	0.5582	0.1226	0.1865
Sample 437	0.2273	0.6458	0.1297	0.1993
Sample 438	0.3084	0.5826	0.1237	0.184
Sample 439	0.1965	0.7112	-0.0129	0.0403

Sample 440	0.2725	0.6275	0.1046	0.2157
Sample 441	0.3125	0.5458	0.1101	0.18
Sample 442	0.2678	0.6419	0.1388	0.2285
Sample 443	0.2704	0.6491	0.049	0.107
Sample 444	0.2302	0.6704	0.0498	0.1055
Sample 445	0.2739	0.6122	0.0303	0.1296
Sample 446	0.3218	0.5674	0.2091	0.2476
Sample 447	0.309	0.5786	0.0658	0.1636
Sample 448	0.1963	0.6818	0.0451	0.0827
Sample 449	0.2788	0.6211	0.1102	0.1252
Sample 450	0.2185	0.6829	0.1911	0.2524
Sample 451	0.2307	0.6749	-0.0973	-0.0066
Sample 452	0.2537	0.6416	0.0283	0.1593
Sample 453	0.3057	0.6011	0.0445	0.1002
Sample 454	0.2982	0.6108	0.1083	0.2018
Sample 455	0.1992	0.7092	-0.0143	0.0051
Sample 456	0.2449	0.6429	0.0388	0.1209
Sample 457	0.185	0.674	-0.152	0.0356
Sample 458	0.3442	0.5761	0.0482	-0.028
Sample 459	0.3395	0.5724	0.0695	0.16
Sample 460	0.2563	0.6242	0.1746	0.2638
Sample 461	0.3431	0.549	0.1105	0.25
Sample 462	0.2813	0.6239	0.1115	0.1827
Sample 463	0.3661	0.5019	0.2092	0.2999
Sample 464	0.2678	0.6242	0.0606	0.1391
Sample 465	0.2654	0.645	-0.0489	-0.0044

Sample 466	0.3053	0.584	0.0902	0.157
Sample 467	0.3037	0.6186	0.0359	0.0458
Sample 468	0.2681	0.6412	0.0328	0.0717
Sample 469	0.2757	0.6354	0.0523	0.1342
Sample 470	0.2825	0.6266	-0.0075	0.0631
Sample 471	0.2628	0.6236	0.0956	0.1748
Sample 472	0.2413	0.6446	0.1707	0.1501
Sample 473	0.3412	0.5588	0.1247	0.2096
Sample 474	0.3227	0.6011	0.1111	0.1901
Sample 475	0.2199	0.6735	0.1193	0.1809
Sample 476	0.2945	0.6102	0.0723	0.1375
Sample 477	0.2852	0.6332	0.1503	0.2019
Sample 478	0.2609	0.6073	0.2426	0.3013
Sample 479	0.2499	0.6696	-0.0021	0.0498
Sample 480	0.2036	0.692	0.0808	0.0967
Sample 481	0.2646	0.6526	0.0735	0.0606
Sample 482	0.179	0.7043	0.0746	0.1092
Sample 483	0.2675	0.6454	0.0876	0.1419
Sample 484	0.2173	0.6681	0.1792	0.1661
Sample 485	0.3428	0.5266	0.2173	0.3195
Sample 486	0.2705	0.6106	-0.0449	0.0719
Sample 487	0.2631	0.648	-0.0528	0.0393
Sample 488	0.3214	0.5785	0.0882	0.1822
Sample 489	0.2456	0.6614	0.0775	0.135
Sample 490	0.3324	0.5934	0.0666	0.1206
Sample 491	0.2765	0.629	0.1034	0.1897

Sample 492	0.3505	0.576	0.1091	0.1578
Sample 493	0.3636	0.5659	0.1805	0.2262
Sample 494	0.2808	0.5967	0.1865	0.2521
Sample 495	0.2711	0.6512	0.0724	0.0937
Sample 496	0.2409	0.6963	0.2017	0.2089
Sample 497	0.2059	0.6766	0.0657	0.1428
Sample 498	0.2363	0.6277	0.1522	0.2519
Sample 499	0.3161	0.5948	0.1125	0.1957