



## ACQUISITION RESEARCH PROGRAM SPONSORED REPORT SERIES

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### **Data Analytics: An Integrated Financial Analysis Framework to Measure the Financial Health of Prospective Pakistani Defense Contractors**

June 2023

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Prepared for the Naval Postgraduate School, Monterey, CA 93943

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NAVAL POSTGRADUATE SCHOOL

## ABSTRACT

Pakistan has the sixth-largest military in the world, and its armed services need a consistent and reliable supply of defense stores for daily operations. The Ministry of Defense invests billions of Pakistan rupees in acquisition programs yearly. Yet, contractor defaults result in inefficient utilization of limited financial resources, restricting the warfighter's capabilities. To reduce the possibility of awarding contracts to contractors who may not have the financial capability, this research finds that financial analysis tools are missing in existing Pakistan defense procurement policies.

This research developed an Integrated Financial Analysis Framework based on widely used financial analytical tools, including global, ratio, and multivariate analyses. The framework was applied to selected companies from the Pakistani textile industry to provide an illustration for implementation.

With this framework, Pakistani defense contracting officers are equipped with the financial tools to assess the financial health of prospective contractors before awarding a contract. The framework can also be applied by the DoD/DON acquisition workforce to assess the financial health of any potential defense contractor. Ensuring defense contractors have the financial capability to perform DoD's mission-critical contracts is important for the DoD to accomplish its warfighting mission, as well as to ensure appropriate expenditure of public funds.



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## ABOUT THE AUTHORS

**Wing Commander Syeda Aasma Ali** was commissioned from the Pakistan Air Force Academy in 2000 with distinction. With her specialization in Accounting and Finance, she has held numerous appointments in the areas of Accounts, Internal Control, Audit, and Budget throughout her career. Most recently, she served as Deputy Director Budget, where she was responsible for various fiscal budget functions, including demand preparation, compilation, reconciliation, and closing. In addition, she provided oversight on procurement, contracting, and acquisition processes. Wing Commander Ali holds a master's degree in Business Administration, specializing in Finance, as well as a master's degree in War Studies. She also completed various military service courses with honor. The latest was the senior command and staff course. She has received several awards, including a Professional Excellence Badge, a Commendation Certificate, and Letters of Appreciation. Currently, she is pursuing her Master of Science in System Acquisition Management at the Naval Postgraduate School in Monterey, California. She has also been certified in the Fraud Examination from Association of Certified Fraud Examiners. She recently wrote a thesis in support of the U.S. Congressional Commission to reform the U.S. defense budgetary system. She is the Senior Country Officer and also working as Treasurer in the International Executive Committee at Naval Postgraduate School.

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## LIST OF ACRONYMS AND ABBREVIATIONS

AQI	Asset Quality Index
CFS	Cash Flow Statement
CMA	Controller Military Accounts
COGS	Cost of Goods Sold
CPO	Chief Procurement Officer
DEPI	Depreciation Index
DGDP	Director General Defense Procurement
DoD	Department of Defense
DPPI-35	Defense Purchase Procurement and Instructions 35
FAR	Federal Acquisition Regulation
GAAP	Generally Accepted Accounting Principles
GMI	Gross Margin Index
GSI	General Sales Growth
IFB	Invitation for Bid
IT	Invitation to Tender
JCSC	Joint Chiefs of Staff Committee
LD	Late Delivery
LEVI	Leverage Index
MoD	Ministry of Defense
PP&E	Property, Plant and Equipment
PPRA	Pakistan Public Procurement Regulatory Authority
R&D	Research and Development
RFP	Request for Proposal
RFQ	Request for Quotation
SG&A	Selling, General and Administrative Expenses
SGAI	Sales and General and Administrative Expenses Index
SGI	Sales Growth Index
TATA	Total Accrual to Assets or Accruals



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## I. INTRODUCTION

The background of the research, the purpose of the research, and the research questions are all discussed in this chapter. Furthermore, the methodology, importance of the research, and report structure are presented. The background of this research is covered in the following section.

### A. BACKGROUND

Pakistan's military is the sixth largest in the world with 640,000 active personnel (World Atlas, n.d.). The Pakistan military is comprised of three main service branches: the Army, Navy, and Air Force, which work together with paramilitary forces and the Strategic Plans Division Force (Military Leak, 2017). A sizeable portion of Pakistan military personnel is deployed abroad as part of United Nations peacekeeping missions in addition to guarding national, maritime, and aerial borders. The Pakistan armed services need a steady and dependable supply of defense stores to keep up with their daily operations.

According to *Defense Purchase Procurement and Instructions 35 (DPPI-35)*, defense stores are the items that the contractor is required to provide as stipulated in the contract, such as the required materials, goods, products, and services (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017). In contrast defense stores in the United States are known as materiel. According to DoD Instruction 4140.01, *DoD Supply Chain Materiel Management Policy*, materiel includes "all items necessary to equip, operate, maintain, and support military activities without distinction as to their application for administrative or combat purposes, excluding real property, installations, and utilities. Materiel is either serviceable i.e., in an issuable condition or unserviceable i.e., in need of repair to make it serviceable" (p. 20).

The chairman of the Joint Chiefs of Staff Committee (JCSC), along with the chiefs of staff of the Army, Navy, and Air Force, make up the chain of command for the Pakistan military. During operations and joint tasks, the military services cooperate under the Joint Staff Headquarters (JSHQ; Military Leak, 2017). Protecting Pakistan's national interests and values at home and abroad rests with the Ministry of Defense (MoD), an



executive branch ministry of the Pakistan government. Every year, the JSHQ requests from the MoD the allocation of funds to fill strategic gaps as identified by the respective services. The MoD, therefore, spends billions of Pakistan rupees annually to support acquisition and procurement initiatives aimed at enhancing the capability of warfighters. The term *procurement* means the purchase of defense stores for the government, whereas *acquisition* refers to the entire process of acquiring any defense stores, from conception to their utility and disposal in the organization (Nazir & Nadeem, 2015). Therefore, in this research study, the term procurement corresponds with acquisition. Pakistan Directorate General Defense Procurement (DGDP) is the government organization responsible for the procurement and disposal of defense stores (dgdp.gov.pk, n.d). The DGDP is also responsible for formulating and issuing an overall procurement policy for defense stores. (dgdp.gov.pk n.d). Within the DGDP, there are three Directorates of Procurement: The Directorate of Procurement Pakistan Army, Directorate of Procurement Pakistan Navy, and Directorate of Procurement Pakistan Air Force (dgdp.gov.pk, n.d). These directorates are delegated the financial power for procurement of defense stores and services for their respective military services up to the amount authorized by the DGDP.

“Defense acquisition is a specialized and complex decision-making activity that involves awareness of financial regulations, high standards of transparency, and public accountability” (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017, p. 4). Along with the willingness and ability to put rules into practice, defense acquisition also requires a thorough understanding of procurement procedures. Each government develops rules to oversee planning and procurement process execution. To gain the most value for the money spent on procurement, government organizations develop their own strategies while conforming to the government’s stated procurement standards (Nazir & Nadeem, 2015).

The process of defense acquisition in Pakistan is carried out by the Directorate of Procurement of each military service. Directorates of Procurement review a prospective contractor’s technical capability, corporate experience, quality capability, past performance, and financial capability. Advertisements regarding a contract’s solicitation are published on the Pakistan Public Procurement Regulation Authority website.



Furthermore, defense stores and services are accepted after a rigorous inspection. The procedures provide insight to Pakistani defense contracting officers regarding selecting the best defense contractor and subsequently managing the defense contract.

However, substandard deliveries of defense stores, contractors defaulting, and cancellation of contracts or re-solicitation of bids are becoming frequent in Pakistan (Director General Defense Procurement, Ministry of Defense Government of Pakistan, [DGDP], 2017). These factors may contribute to ineffective utilization of scarce financial resources, disturbing budgetary planning, and may limit the warfighter's capabilities. It has been determined that merely training defense contracting officers and their leadership on practicing and implementing defense procurement policies may not achieve the ideal solution to address the defense contracting problems (Grant et al., 2016). This determination can also be applied for the Pakistani defense contracting officers. Therefore, there is a need to develop financial tools that help Pakistani defense contracting officers to assess the financial health of defense contractors. In order to meet these challenges in a better way, Pakistani defense contracting officers need to be able to apply these financial tools to assess the financial health of prospective contractors before awarding any contract to ensure the contractor has the financial capability.

## **B. PURPOSE OF RESEARCH**

The purpose of this research is to develop an Integrated Financial Analysis Framework that can aid Pakistani defense contracting officers in the financial health assessment of prospective contractors. Dr. Juanita M. Rendon (2010, 2022) introduced the concept for the development and compilation of a financial analysis framework to determine the financial health of a company in any industry. Previous researchers have adapted J. M. Rendon's basic concepts for developing a financial analysis framework in different industries (Grant et al., 2016; Malik, 2017). Using J. M. Rendon's basic concepts (2010, 2022), this research also develops an Integrated Financial Analysis Framework specific to the textile industry in Pakistan and applies it to selected publicly traded companies in the Pakistan textile industry as an illustration. The Integrated Financial Analysis Framework is recommended as a supplement to existing policy and procedures used to measure the financial health of potential Pakistani defense contractors.



## **C. RESEARCH QUESTIONS**

This research study answers the following research questions.:

What financial ratios can be utilized to analyze the financial health of a prospective Pakistani defense contractor in the textile industry?

What appropriate financial health indicators can be identified from analyzing key financial statements, such as the balance sheet, income statement, and statement of cash flows of a prospective Pakistani defense contractor in the textile industry?

What financial factors indicate that a prospective Pakistani defense contractor in the textile industry might be participating in inappropriate financial statement behavior?

What are some key financial indicators that can be identified as possible red flags about the potential bankruptcy of a prospective Pakistani defense contractor in the textile industry?

## **D. METHODOLOGY**

This research begins with a literature review of prior scholarly research, books, publications, standards, rules, and regulations related to contracting and financial analysis; and focuses on the research questions. Specific to the Pakistan defense procurement environment, the literature review also includes a description of the rules, procedures, and instructions exercised in Pakistan for defense procurement. The literature review establishes a set of commonly used financial analysis tools that assist to determine the financial health of a company. As part of a financial statement analysis, the information from the literature review also aids in identification of financial statement health indicators.

Since uniforms are the hallmark of the military and Pakistan has a large textile manufacturing sector (Invest Pakistan. (n.d.)), this research focuses on the financial analysis of the textile industry. Dr. Juanita M. Rendon (2010, 2022) conceptualized the development and compilation of a financial analysis framework to assess the financial health of a company in any industry. Applying J. M. Rendon's basic concepts (2010, 2022), the researchers identify and compile a set of financial analysis tools as an Integrated Financial Analysis Framework specific to the Pakistan textile industry and illustrate the application of this framework to six selected publicly traded companies from the Pakistan textile industry. Pakistani defense contracting officers can utilize this



framework to evaluate the financial health of prospective defense contractors before awarding a contract to ensure that the contractor has the financial capability. The research findings chapter concludes with a discussion on the research questions as well as recommendations based on the findings.

#### **E. SIGNIFICANCE OF THE RESEARCH**

The Pakistan DGDP and its three Directorates of Procurement award contracts worth billions of Pakistani rupees for the procurement of defense stores and services to various contractors every year. Unfortunately, some defense contracts are delayed or terminated due to a contractor's failure to perform or meet specifications. The Pakistan government incurs a cost from delayed or terminated contracts both in terms of resources expended to terminate the contract and in the lack of receipt of the required defense stores. To reduce the probability of awarding defense contracts to a contractor that may not perform or that may go bankrupt during the execution of the contract, Pakistani defense contracting officers may need to evaluate the financial health of prospective contractors.

This research study is significant because it utilizes Dr. Juanita M. Rendon (2010, 2022) basic concepts for the development and compilation of a financial analysis framework to assess the financial health of a company in any industry. Referring to J. M. Rendon's basic concepts (2010, 2022), the researchers gather widely used financial analysis tools and create an Integrated Financial Analysis Framework specific to the Pakistan textile industry. The application of the framework to six selected publicly traded companies in the Pakistan textile industry provides an illustration to Pakistani defense contracting officers in the financial health assessment of contractors prior to the award of a contract. This research has relevance to DON/DoD in that the Integrated Financial Analysis Framework can be applied by any DoD/DON acquisition organization to any potential defense contractor to analyze the financial health of the company before awarding a contract. Ensuring defense contractors have the financial capability to perform DoD's mission-critical contracts is important for the DoD to accomplish its warfighting mission as well as to ensure appropriate expenditure of public funds.



## **F. REPORT ORGANIZATION**

This research study is comprised of six chapters. In Chapter I, Introduction, research background, and research questions are discussed. Chapter II, literature review, serves as the basis for this study. In Chapter III, the methodology for selecting the sample of publicly traded textile companies in Pakistan and the procedures for analyzing their financial statements are described. Chapter IV develops the Integrated Financial Analysis Framework based on commonly used financial analysis tools. Chapter V illustrates the application of the Integrated Financial Analysis Framework to the six publicly traded textile companies in Pakistan. The summary, conclusion, and further research areas are discussed in Chapter VI.

## **G. SUMMARY**

Contractors are used by Pakistan defense procurement organizations to supply defense stores to meet requirements of warfighters. This chapter provides the background of the research. The purpose of this research is to develop an Integrated Financial Analysis Framework that can assist Pakistani defense contracting officers to assess prospective contractors' financial health before awarding contracts. The researchers proposed four research questions and offered a methodology for answering these questions. This chapter concluded with a discussion on the research's significance as well as an overview of the report's organization. The following chapter provides a review of the literature, including the contract management standards and financial analysis. The need to compile a set of commonly used financial analysis tools as an Integrated Financial Analysis Framework to assist Pakistani defense contracting officers in the financial health assessment of a prospective contractor is also discussed.





## II. LITERATURE REVIEW

Chapter II reviews the literature from prior scholarly research, books, publications, standards, rules, and regulations related to contracting and financial analysis. The next section discusses the introduction of the literature reviewed.

### A. INTRODUCTION

The chapter starts with a discussion of the principal-agent theory. The contract management standard is then reviewed in detail. Accounting standards for publicly traded companies are discussed to provide a synopsis of financial statements, which include balance sheets, income statements, cash flow statements, and stockholders' equity statements. Process and methods to analyze publicly traded companies' financial statements are also covered that include global and ratio analysis. The limitations to financial statement analysis and financial health indicators of publicly traded companies are also discussed. The chapter also includes a discussion on fraud theory, procurement fraud, and fraud in financial reporting, along with preventive measures. In addition, Dr. Beneish's M-score for possible manipulation of earnings and Dr. Altman's Z-score for possible bankruptcy are discussed as part of a multivariate analysis. With reference to Pakistan, procurement reforms and establishment of the public procurement regulatory authority are explained. Pakistan defense procurement policies and instructions are also reviewed. Remedies for procurement fraud are discussed regarding the defense procurement environment in Pakistan. The chapter also discusses accounting standards of publicly traded companies operating in Pakistan. The chapter concludes with a discussion regarding the absence of a set of financial analysis tools that could assist Pakistani defense contracting officers in the financial health assessment of prospective contractors to ensure that they have the financial capacity.

R. G. Rendon (2015) states that many economic and management theories, including "social exchange theory, transaction cost economics, and resource-based views of the company" (p. 4), provide the foundation of academic study in contract management. He also states, "Government contracting has often been examined through the lens of principal-agent theory" (p. 3). Agency theory informs the contract



management process; therefore, the principal-agent theory is discussed in the next section.

## **B. PRINCIPAL-AGENT THEORY**

According to R.G. Rendon (2015), a contract indicates the relationship between the principal and agent. The principal is the buyer or the government, whereas the agent is the seller or contractor. The author also states that the principal and the agent enter into an agreement for supplying products or services “at the right quality, right quantity, right source, right time, and the right price” (R. G. Rendon, 2015, p. 4). R. G. Rendon (2015) adds that the government’s main goal is to make sure that the products or services are being procured per the user requirement and per the policy of defense procurement. On the other side, the contractor has the objective of earning maximum profit. R. G. Rendon (2015) also finds that the conflicting goals of the government and the contractor drive the behavior of both parties in the contract management process, which leads to two problems, moral hazard, and adverse selection. The pre-award phase problem is adverse selection, where the contractor seeks to conceal information. Moral hazard, on the other hand, is a post-award phase problem where the contractor seeks to conceal behavior (R. G. Rendon, 2015).

R. G. Rendon (2015) asserts that to mitigate adverse selection (the pre-award problem), the government seeks information on the market and the company, such as conducting market research and analyzing financial and cost data, to identify a responsible contractor and to negotiate an equitable and fair price. Federal Acquisition Regulation (FAR) 9.104-1(a; 2021) defines a responsible contractor as one who has “adequate financial resources to perform the contract, or the ability to obtain them” (p. 175). In order to mitigate moral hazard (post-award problem), the government develops a Quality Assurance Surveillance Plan and conducts contractor monitoring and surveillance (R. G. Rendon, 2015). Thus, evaluating a company’s financial health is part of determining contractor responsibility, which is part of mitigating the adverse selection problem of principal–agent theory. Rendon (2015) also states that principal–agent theory is useful for designing the appropriate selection and performance-monitoring processes



for contractors to address the adverse selection issue and to counter the effects of moral hazard, respectively.

R. G. Rendon (2015) concludes that principal–agent theory and the principal-agent problems need to be addressed in contract management because it is during this process, specifically the pre-award process, that a contractor is determined to be responsible, which includes having sufficient financial means to carry out the contract. Therefore, the subsequent section covers the contract management standard.

## **C. CONTRACT MANAGEMENT STANDARD**

When a government requires goods or services from an outside company in an area of expertise beyond its own, it will enter into an agreement known as a contract. The National Contract Management Association (NCMA; 2022) states, “a contract is a legally enforceable agreement for the sale, purchase, or lease of products, goods, supplies, or services; or the construction, alteration, or repair of real property” (p. 2). The government and the contractor fulfill their needs by efficient contract management. Three contract management phases, which include “pre-award, award, and post-award” (p. 2), make up the contract management process (National Contract Management Association, 2022).

### **1. Pre-award**

According to the National Contract Management Association (2022), pre-award is the initial phase of the contract management process. It encompasses “contract planning” (p.10) and involves the procedures through which purchasers create solicitations, and the contractors create proposals. The pre-award phase has two domains: develop solicitation and develop offer (National Contract Management Association, 2022).

#### **a. Solicitation Development**

Creating the request for proposal (RFP) is mainly the purchaser’s domain (National Contract Management Association, 2022). It includes the processes for outlining each component of the user’s requirements (business, technical, or regulatory) to the seller. Developing the RFP or solicitation adds value by clearly articulating the user’s requirements, which results in “responsive proposals” (p. 10) and effective



performance of a contract. In this domain, plan solicitation and request offers are buyer competencies (National Contract Management Association, 2022).

### (1) Plan Solicitation

In plan solicitation, all procuring departments formulate a proper planning mechanism for anticipated procurements by keeping in view the available resources and delivery timeline (Rafique et al., 2016). Planning is carried out in collaboration with the end user to decide “what to procure, when to procure, and how much to procure” (R. G. Rendon & J. M. Rendon, 2016, p. 10). When the requirement is quantified, market research is conducted to determine the best source, trends, and capabilities available in the market (Rafique et al., 2016). Chang (2013) contends that data from market research is based on surveys and feedback from buyers, industry, companies, and other agencies. After identifying market conditions, the government prepares solicitation or bidding documents used for inviting potential bidders to participate in the procurement process (Chang, 2013). Solicitation documents contain specific requirements, terms, and conditions “in the form of an invitation for bids (IFB) or a request for proposals (RFP) or request for quotation (RFQ)” (p. 31) to define the responsibilities and roles of the government and the contractor (Chang, 2013).

It also entails developing the overall acquisition management strategy. The government devises a strategy that specifies how the products or services will be obtained, what procurement methods will be used, and how the contractors will be down-selected for awarding the contract (Rafique et al., 2016).

### (2) Request for Offers

The procedure for carrying out the strategy by inviting proposals from contractors that meet the user’s requirements is known as request offers (National Contract Management Association, 2022). In this process, the government communicates with the contractors either through meetings, pre-proposal conferences, or by issuing a preliminary solicitation to the defense contractors before the advertisement of the final solicitation (Rafique et al., 2016). The objective of solicitation is to ensure that all contractors are given an equal opportunity to understand the government’s contractual



obligations and to facilitate the contractors for provision of responsive and thorough bids. Later, that solicitation, or RFP is advertised publicly (Chang, 2013).

**b. Development of Offer**

Creating a proposal is mainly the contractor’s domain. Plan sales and prepare offers are the contractor’s competencies for this domain (National Contract Management Association, 2022).

**2. Award**

The next phase in the contract management standard is the award (National Contract Management Association, 2022). This phase includes the function of contract management called “contract formation” (p. 14) and shows the complete task accomplished by both the government and the contractor which results in an awarded contract. (National Contract Management Association, 2022). The National Contract Management Association (2022), states that the “form contract is the only domain” (p. 14) included in the award phase. An agreement or contract is created by the procedures carried out within the form contract domain (National Contract Management Association, 2022).

**a. Form Contract**

The National Contract Management Association (2022) states that form contract includes the “process of determining reasonable cost and pricing, conducting negotiations, selecting the source, and managing disagreements” (p. 14). By selecting the best source and utilizing price negotiations, this domain adds value in mitigating the contract performance risk (National Contract Management Association, 2022).

**(1) Analyze Price or Cost**

The National Contract Management Association (2022) states that analyzing the price involves the procedure of assessing a contractor’s price proposal without examining the separate cost elements and the contractor’s proposed profit. It is a process in which the government compares the price “with indicators of reasonableness” (p. 14) including



previously paid prices, market data, competitive evaluation, and publicized pricing (National Contract Management Association, 2022).

Cost analysis examines each component of the expected or actual cost of contract performance to determine the likely contractor's cost (National Contract Management Association, 2022). The aim is to ascertain whether the proposed costs are in line with what a relatively economical and efficient organization should charge. When price analysis does not yield a fair and acceptable price and when cost data is necessary according to the clauses of the prime contract, cost analysis should be carried out (National Contract Management Association, 2022).

## (2) Plan Negotiations

Plan negotiations refers to the procedure that involves collaboration between the government and contractor with reference to a proposal's contents (National Contract Management Association, 2022). Before signing and making a contract official, both parties negotiate their terms in order to come to an agreement (National Contract Management Association, 2022).

## (3) Select Source

In the select source process, bids are compared against the evaluation criteria or factors stated in the RFP (Rafique et al., 2016). All the proposals fulfilling the criteria are down-selected or accepted whereas those not conforming to the criteria are rejected. The proposal that is most beneficial to the government is accepted, and that contractor is awarded the contract (Chang, 2013). The contract agreement is then documented (R. G. Rendon & J. M. Rendon, 2016).

## (4) Manage Disagreements

The procedure of managing disagreements is used to settle a dispute between the two parties to maintain legal conformity (National Contract Management Association, 2022). It also requires the ability to settle disagreements associated with the bidding or source selection processes using both formal and informal channels (National Contract Management Association, 2022).



### **3. Post-award**

The final phase in the contract management standard is the post-award (Rafique et al., 2016). This phase includes the functions of contract management called “contract administration” and “contract closeout” (p. 16). This phase’s domains are “perform contract” and “close contract” (National Contract Management Association, 2022, p. 16).

#### **a. *Perform Contract***

Performing a contract requires the procedure for carrying out contractual obligations, confirming quality, and managing the organization’s relationships (National Contract Management Association, 2022). This process adds value by monitoring risk and determining how it will affect contract performance and by ensuring that all terms and conditions are being fulfilled until the termination or closeout of the contract (National Contract Management Association, 2022).

##### **(1) Administer Contract**

Contract administration involves establishing expectations, maintaining the channels of communication, managing the documents, and evaluating how the contract is being administered (National Contract Management Association, 2022). This process manages risk and increases the likelihood of successful contract execution (National Contract Management Association, 2022)

##### **(2) Ensure Quality**

The process of ensuring quality focuses on monitoring the contract performance, delivery timeline, inspection, and acceptance of contract deliverables (National Contract Management Association, 2022). The focus of monitoring the contract’s performance ensures that products and services delivered are in compliance with the contract’s requirements (National Contract Management Association, 2022).

##### **(3) Manage Subcontracts**

According to the National Contract Management Association (2022), “Manage subcontracts is the process of planning, awarding, and managing subordinate contracts



determined necessary to support and successfully execute the prime contract” (p.16). The prime contract’s pre-award, award, and post-award phases are incorporated into the subcontracting process (National Contract Management Association, 2022).

#### (4) Manage Changes

The process of starting, negotiating, and making modifications to the contract while keeping configuration control over the agreement and its subsequent performance is known as managing changes (National Contract Management Association, 2022). This process allows flexibility in modifying the contract (if required) without jeopardizing its integrity (National Contract Management Association, 2022).

#### **b. Close Contract**

The National Contract Management Association (2022), states that a contract closes out once all of its requirements have been met, all administrative tasks have been accomplished, all disputes have been resolved, and lastly, the contractor has received payment. By confirming that all the government and contractor’s contractual responsibilities have been fulfilled, this procedure adds value. Contract closes out when the government confirms that all the goods or services are received, inspected, and accepted and payments have been made according to the contract’s terms and conditions (National Contract Management Association, 2022). The timely closeout of a contract is very important because, without it, the government will be unable to settle its contract-related financial records.

All three phases discussed in the contract management standard require different actions and outcomes, but all are equally important for the success of the contract. Figure 1 (National Contract Management Association, 2022) depicts the contract management standard framework.





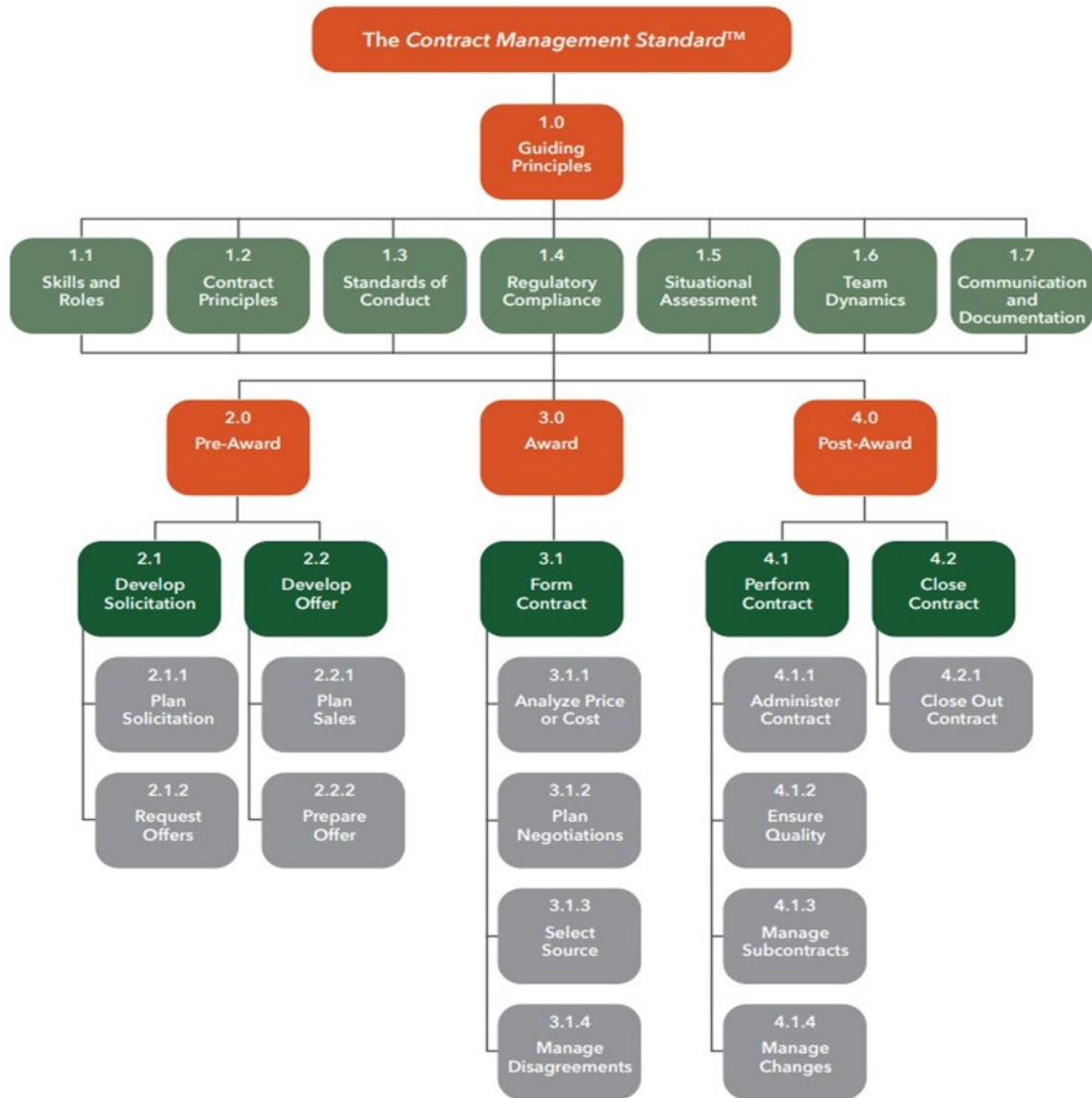


Figure 1. An Illustration of Contract Management Standard. Source: National Contract Management Association (2022).

For identifying a company’s financial capacity to fulfill a contract, it is necessary to know that company’s accounting standards. Therefore, the subsequent section includes a discussion on accounting standards used by publicly traded companies.

#### D. ACCOUNTING STANDARDS FOLLOWED BY PUBLICLY TRADED COMPANIES

Accounting standards are the set of rules, guidelines, and procedures issued by accountants to articulate financial statements. Publicly traded companies adhere to

Generally Accepted Accounting Principles (GAAP) for reporting and preparing financial statements (Warren, 2016). GAAP are rules and regulations that regulate how a company reports financial data. Warren (2016) states, “GAAP are necessary so that stakeholders can compare companies across time” (p. 9). Companies report their financial information on several financial statements, which include the balance sheet, income statement, cash flow statement, and stockholders’ equity statement (Malik, 2017). These financial statements offer valuable information to investors, market analysts, and creditors in the assessment of the financial health and earnings potential of a company. The subsequent section provides a basic description of these financial statements.

### **1. Balance Sheet**

Malik (2017) states, “The balance sheet is a snapshot of the financial position of a company” (p. 106). Therefore, a “balance sheet is also referred to as a statement of financial position” (Stickney et al., 2010, p. 106). It specifies a glimpse of the company’s financial situation at a particular point (Stickney et al., 2010).

Figure 2 illustrates the format of a company’s balance sheet. Figure 2 (Warren, 2016) shows that the balance sheet is comprised of three sections: assets, liabilities, and stockholder’s equity. An asset represents probable future economic benefit that a company owns and has in its possession due to a previous transaction or event, or something that will be received in the future and can be quantified (Stickney et al., 2010). A company’s liabilities are its outstanding “financial obligations” (p. 115) toward others such as creditors, suppliers, and employees due to a past event or transaction (Stickney et al., 2010). As depicted in Figure 2, assets less liabilities make up stockholder’s equity. A balance sheet equation, with assets on one side and liabilities and stockholders’ equity on the other side illustrates the link between the three components of the balance sheet (Stickney et al., 2010).

“Assets = Liabilities + Stockholders’ Equity” (Stickney et al., 2010, p. 106).

The accounting equation illustrates that a company acquires resources or assets by utilizing the funds provided by creditors and owners of the company. Stickney et al., (2010) state that “assets are classified into two categories: “current and non-current



assets” (p. 106). According to the authors, current assets are transformed into cash in less than a year while non-current assets cannot be transformed into cash in a year. Stickney et al. (2010) state that cash, marketable securities, accounts receivable, merchandise inventory, and certain prepayments that have already been paid like rent (prepaid rent) and insurance (prepaid insurance), are a few examples of current assets. Stickney et al. (2010) indicate that “non-current assets are Property, Plant and Equipment (PP&E), long-term securities investments, and intangible assets” (p. 106) such as goodwill, patents, and trademarks. Current assets are enumerated first on the balance sheet, while non-current assets are listed after the short-term assets (Stickney et al., 2010).

Stickney et al. (2010) illustrate that liabilities are also classified into two categories: current and non-current liabilities. The authors state that current liabilities are the financial obligations payable to suppliers, creditors, and employees within a year, whereas long-term financial obligations are “non-current liabilities” (p. 106). Stickney et al. (2010) also explain that accounts payable, taxes payable, notes payable, short-term debt, accrued salaries, and wages payable are included in the current liabilities section of the balance sheet. According to the same authors, “long-term debt, bonds payable, pension” (p. 106) benefit obligations, and deferred income taxes comprise non-current liabilities. On the balance sheet, liabilities are stated in an order of shortest-to longest-term debt (Stickney et al., 2010). Debt and liability have a similar meaning, but they are different. The main difference between liability and debt is that debt refers to borrowed money whereas liabilities are financial obligations. Stickney et al. (2010) state that stockholders’ equity includes capital contributed by stockholders and earnings retained by the company, as depicted in Figure 2.



TechSource Balance Sheet December 31, 20Y7		
<b>Assets</b>		
Current assets:		
Cash .....		\$ 52,650
Accounts receivable .....		91,080
Inventory .....		62,150
Estimated returns inventory.....		5,300
Office supplies .....		480
Prepaid insurance .....		<u>2,650</u>
Total current assets.....		\$214,310
Property, plant, and equipment:		
Land .....	\$ 20,000	
Store equipment .....	\$27,100	
Less accumulated depreciation.....	<u>(5,700)</u>	21,400
Office equipment .....	\$15,570	
Less accumulated depreciation.....	<u>(4,720)</u>	<u>10,850</u>
Total property, plant, and equipment .....		<u>52,250</u>
Total assets.....		<u>\$266,560</u>
<b>Liabilities</b>		
Current liabilities:		
Accounts payable.....		\$ 14,466
Customer refunds payable .....		7,954
Note payable (current portion).....		5,000
Salaries payable .....		1,140
Unearned rent.....		<u>1,800</u>
Total current liabilities .....		\$ 30,360
Long-term liabilities:		
Note payable (final payment due in ten years) .....		<u>20,000</u>
Total liabilities.....		\$ 50,360
<b>Stockholders' Equity</b>		
Common stock .....	\$ 25,000	
Retained earnings .....	<u>191,200</u>	
Total stockholders' equity.....		<u>216,200</u>
Total liabilities and stockholders' equity .....		<u>\$266,560</u>

Figure 2. An Illustration of Balance Sheet. Source: Warren (2016).

## 2. Income Statement

Stickney et al. (2010) state, “an income statement indicates the financial condition of a company for a certain period of time” (p. 146), such as annually, quarterly, or monthly. It is also referred to as a “statement of profit and loss” or “statement of operations” (Stickney et al., 2010, p. 146). Figure 3 (Warren, 2016) illustrates the format of a company’s income statement. In Figure 3, an income statement shows the company’s sales or revenue, costs of goods sold, gross profit, selling and administrative expenses, other expenses, and net profit in a logical manner. Sales or revenue is listed at the top of the income statement; therefore, “it is often referred to as the top line” (p.146) whereas the bottom line is called net income (Stickney et al., 2010). Companies can calculate their net income after deducting expenses such as the “cost of goods sold, selling and

administrative expenses, interest expenses, and tax expenses from total revenue” (p. 145) using this simple formula (Stickney et al., 2010):

$$\text{Net Income} = \text{Revenues} - \text{Expenses (Stickney et al., 2010, p. 145)}$$

TechSource Income Statement For the Year Ended December 31, 20Y7		
Sales .....		\$708,255
Cost of goods sold.....		<u>(520,305)</u>
Gross profit .....		\$187,950
Operating expenses:		
Selling expenses:		
Sales salaries expense.....	\$53,430	
Advertising expense.....	10,860	
Depreciation expense—store equipment .....	3,100	
Delivery expense .....	2,800	
Miscellaneous selling expense .....	<u>630</u>	
Total selling expenses.....		\$ 70,820
Administrative expenses:		
Office salaries expense.....	\$21,020	
Rent expense.....	8,100	
Depreciation expense—office equipment.....	2,490	
Insurance expense.....	1,910	
Office supplies expense.....	610	
Miscellaneous administrative expense.....	<u>760</u>	
Total administrative expenses.....		<u>34,890</u>
Total operating expenses .....		<u>(105,710)</u>
Operating income .....		\$ 82,240
Other revenue and expense:		
Rent revenue.....	\$ 600	
Interest expense.....	<u>(2,440)</u>	<u>(1,840)</u>
Net income.....		<u>\$ 80,400</u>

Figure 3. An Illustration of Income Statement. Source: Warren (2016).

### 3. Cash Flow Statement

Grant et al. (2016) state that the cash flow statement provides aggregate cash inflows and outflows. Warren (2016) states, “operating activities, investing activities, and financing activities” (p. 168) are the three sections that make up the cash flow statement. Three sections of this statement present details regarding a company’s cash economic activities, which leads to a total cash change for a period (Malik, 2017). The operating activities section of the cash flow statement indicates the total cash generated from its



goods or services. According to Malik (2017), the section on investment activities represents cash activities related to the acquisition and sale of non-current assets, particularly long-term investments, and PP&E. The financing section shows cash activities associated with equity and long-term debts. It includes the dividends paid to shareholders, payment of loan and long-term financing's principal amount, and receipts of long-term loans (Malik, 2017).

Companies can use either direct or indirect methods to report operating cash flow. Both methods result in the same overall net cash amount. However, the operating activities section is different under each method. The investing activities section and the financing section are the same under both methods.

Stickney et al. (2010) state that “the direct method reports the cash receipts from customers and deducts the cash payments” (p. 191) to suppliers, lenders, employees, and taxing authorities. Figure 4 (Warren, 2015) illustrates the format of a company's cash flow statement using the direct method.

Publicly traded companies, however, mostly utilize the indirect method. Warren (2016) revealed that “an indirect method is used to reconcile net income and net cash flows from operational activities” (p. 130). A cash flow statement prepared through the indirect method covers cash activities related to accrual based net income for transforming “net income from accrual basis to cash basis accounting” (Grant et al., 2016, p. 30). Under the accrual basis of accounting, revenue is recorded on the income statement as it is earned, irrespective of when cash is received (Grant et al., 2016). Under the accrual basis of accounting, expenses are recorded as incurred, whether cash has been paid out or not. Figure 5 (Warren, 2016) illustrates the format of a company's cash flow statement utilizing the indirect method.



<b>Family Health Care P.C.</b>		<b>DIRECT METHOD</b>
<b>Statement of Cash Flows</b>		
<b>For the Month Ended November 30, 20Y5</b>		
Cash flows used for operating activities:		
Cash received from patients .....	\$ 9,700	
Cash received from rental of land .....	<u>1,800</u>	\$ 11,500
Deduct cash payments for expenses .....		<u>(13,190)</u>
Net cash flow used in operating activities .....		\$ (1,690)
Cash flows used for investing activities:		
Purchase of office equipment .....		(1,700)
Cash flows from financing activities:		
Additional issuance of capital stock .....	\$ 5,000	
Deduct cash dividends .....	<u>(1,200)</u>	
Net cash flow from financing activities .....		<u>3,800</u>
Net increase in cash .....		\$ 410
November 1, 20Y5, cash balance .....		<u>7,320</u>
November 30, 20Y5, cash balance .....		<u>\$ 7,730</u>

Figure 4. An Illustration of Cash Flow Statement (by Direct Method). Source: Warren (2015).

<b>TechSource</b>		<b>INDIRECT METHOD</b>
<b>Statement of Cash Flows</b>		
<b>For the Year Ended December 31, 20Y7</b>		
Cash flows from operating activities:		
Net income .....		\$80,400
Depreciation expense—store equipment .....	\$ 3,100	
Depreciation expense—office equipment .....	2,490	
Changes in noncash current operating assets and liabilities:		
Increase in accounts receivable .....	(38,080)	
Increase in inventory .....	(2,450)	
Increase in estimated returns inventory .....	(1,000)	
Decrease in office supplies .....	120	
Decrease in prepaid insurance .....	350	
Increase in accounts payable .....	7,650	
Increase in customer refunds payable .....	500	
Decrease in salaries payable .....	(360)	
Decrease in unearned rent .....	<u>(600)</u>	<u>(28,280)</u>
Net cash flows from operating activities .....		\$52,120
Cash flows used for investing activities:		
Purchase of store equipment .....	\$ (7,100)	
Purchase of office equipment .....	<u>(5,570)</u>	
Net cash flows from investing activities .....		(12,670)
Cash flows used for financing activities:		
Payment of note payable .....	\$ (5,000)	
Payment of dividends .....	<u>(18,000)</u>	
Net cash flows from financing activities .....		<u>(23,000)</u>
Net increase in cash .....		\$ 16,450
January 1, 20Y7, cash balance .....		<u>36,200</u>
December 31, 20Y7, cash balance .....		<u>\$ 52,650</u>

Figure 5. An Illustration of Cash Flow Statement (by Indirect Method). Source: Warren (2016).





#### 4. Stockholder's Equity Statement

The stockholders' equity statement includes information related to stocks and the retained earnings of a company, specifically a corporation. According to Stickney et al. (2010), "the statement of changes in equity or stockholders' equity" (p. 19) includes the retained earnings statement. It shows both dividend distributions and the total earnings that a company has accumulated (Malik, 2017). Retained earnings are listed under the stockholder's equity section on the balance sheet when the accounting period ends. Grant et al. (2016) stated that the beginning retained earnings balance from the last year is added to the current period's net income, and dividend payouts to stockholders are then deducted to determine the retained earnings of the company. The format of a company's stockholders' equity statement is depicted in Figure 6 (Warren, 2016).

	Common Stock	Retained Earnings	Total
Balances, Jan. 1, 20Y7 .....	\$25,000	\$128,800	\$153,800
Net income.....		80,400	80,400
Dividends.....		(18,000)	(18,000)
Balances, Dec. 31, 20Y7.....	<u>\$25,000</u>	<u>\$191,200</u>	<u>\$216,200</u>

Figure 6. An Illustration of Stockholders' Equity Statement. Source: Warren (2016).

#### 5. Integrated Financial Statements

All of the financial statements are interrelated, which means that there is a relationship between each of the financial statements. Warren (2016) states that analyzing financial statements and the implications of transactions requires the examination of financial statements in an integrated manner. Figure 7 (Warren, 2016) illustrates the format of a company's integrated financial statements. Figure 7 shows the relationship between the stockholders' equity statement with the income statement since it includes the net income from the income statement under the retained earnings section. Similarly,





as a result of retained earnings and common stocks being shown on both the balance sheet and the stockholders' equity statement, these two financial statements are integrated (Warren, 2016). In addition, the cash amount on the balance sheet is also reflected on the cash flow statement as the ending net cash amount. Furthermore, the ending balance of net cash on the cash flow statement should be the same amount of cash shown on the balance sheet. Therefore, both of these financial statements are also integrated (Warren, 2016). These integrations or relationships also verify the correctness of the preparation of the financial statements (Warren, 2016).

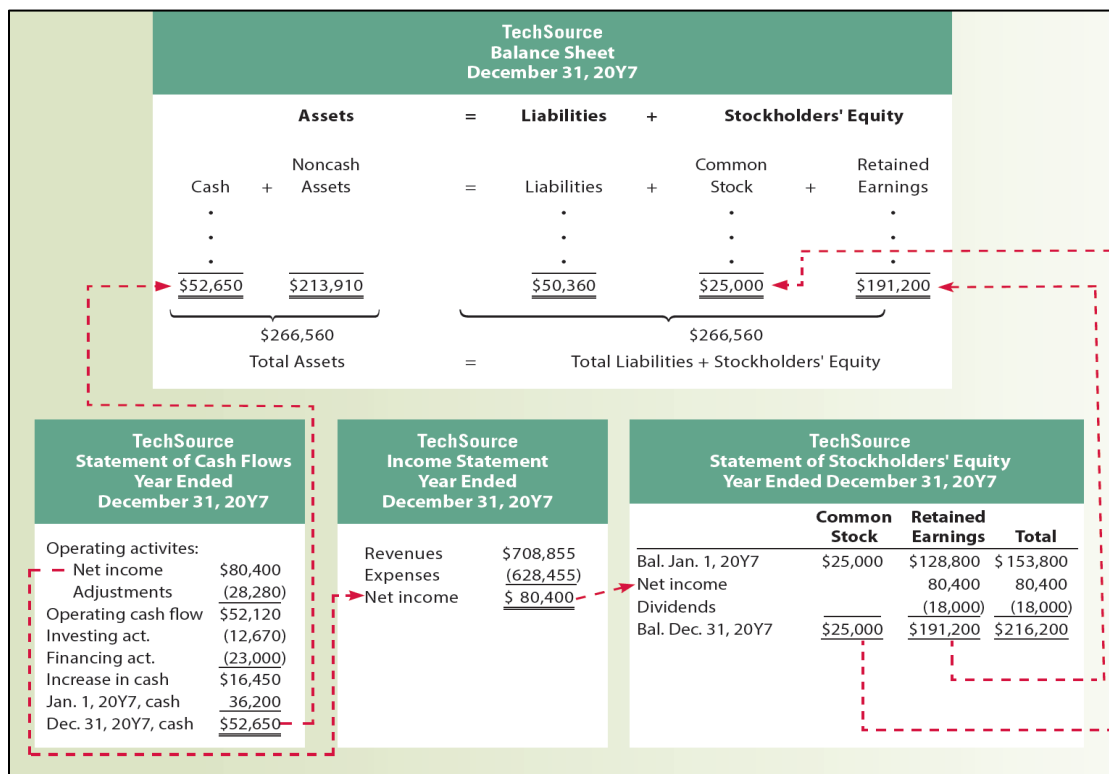


Figure 7. An Illustration of Integrated Financial Statements. Source: Warren (2016).

Publicly traded companies prepare financial statements such as balance sheets, income statements, cash flow statements, and stockholders' equity statements in compliance with GAAP for financial reporting to stakeholders. These financial statements can be utilized to perform financial analysis of publicly traded companies through various methods. The next section includes a discussion on financial statement analysis of publicly traded companies.

## **E. FINANCIAL ANALYSIS OF PUBLICLY TRADED COMPANIES**

A business structure is a type of legal organization of a business. There are several types of business structures: sole proprietorship, partnerships, and corporations (Warren, 2016). Corporations, which can be private companies or publicly traded companies, prepare their financial statements, including the balance sheets, income statements, cash flow statements, and stockholders' equity statements per GAAP rules. Publicly traded companies are required to be audited every year.

The financial statements present the company's financial performance to its stakeholders which include shareholders, creditors, investors, managers, employees, suppliers, customers, and government agencies. Because of the broad range of potential users, financial statements are described as general-purpose financial statements (Warren, 2016).

Financial data, presented in standardized financial statements, is meaningful. Furthermore, a system for reviewing information called financial statement analysis is intended to give information to decision-makers so they may assess a company's financial status and forecast its potential trends (Koetter et al., 2014). One possible reason to analyze financial statements is investigating relative movements of financial data across different periods. Although financial analysis does not offer comprehensive explanations for management problems, it does offer insight into potential areas for more research (Albrecht et al., 2008). Financial analysis enables the users to compare financial data and identify any potential value changes that may have occurred over time. Users can readily locate the financial data of a company and can draw inferences about its financial status with basic familiarity of accounting terminology (Koetter et al., 2014). Financial statement analysis can take many different forms, and it frequently depends on the stakeholders' use of the data. Analysis of financial statements can be time-consuming and challenging because companies may present data in a way to show them financially better than their factual position (Koetter et al., 2014). Additionally, many significant details may not be shown in the main sections of an annual report but may be indicated in the report's corresponding note sections (Koetter et al., 2014).



Pakistan DGDP, as well as its three Directorates of Procurement, award contracts for the procurement of defense stores to various contractors every year worth billions of Pakistani rupees. Unfortunately, some defense contracts are delayed or terminated due to a contractor's failure to perform or meet specifications. Delayed or terminated contracts incur a price to the Pakistan government both in relation to resources expended to terminate the contract and in the lack of receipt of the required defense stores or services. To reduce the probability of awarding defense contracts to a contractor that may not perform or that may go bankrupt during the execution of the contract, Pakistani defense contracting officers may need to assess the financial health of prospective defense contractors.

Dr. Juanita M. Rendon (2010, 2022) introduced the concept for the development and compilation of a financial analysis framework to assess the financial position of a company in any industry. Previous researchers have utilized J. M. Rendon's basic concepts for developing a financial analysis framework in different industries (Grant et al., 2016; Malik, 2017). Using J. M. Rendon's basic concepts (2010, 2022), this research reviews widely applied financial analysis tools used to analyze financial statements. These are global analysis (horizontal, vertical, and common size), ratio analysis (includes five different types of financial ratios), financial health indicators analysis, and multivariate analysis (includes fraud analysis and bankruptcy analysis). The purpose of the research is to develop an Integrated Financial Analysis Framework specific to the textile industry in Pakistan and to provide an illustration showing the application of the framework. The following section includes a discussion on the financial statement analysis methods: global analysis and ratios analysis.

## **F. FINANCIAL STATEMENT ANALYSIS METHODS**

Warren (2016) states that "financial statements may be analyzed using a variety of methods and metrics" (p. 359). In this research, the focus is on two methods of analysis: global analysis and ratio analysis. Warren (2016) expresses that "global analysis computes changes in amounts, percentages of amounts, and percentage changes in amounts for each financial statement using three methods: horizontal analysis, vertical analysis, and common-sized statement" (p. 359). Stickney et al., (2010) states that



“analysts compare relations between items in the financial statements in the form of ratios” (p. 244). Financial analysis is most effective when both methods of analysis are used and when results are compared over time and with competitors (Warren, 2016). The following section provides information on the global analysis method.

## **G. GLOBAL ANALYSIS**

A global analysis compares financial statement changes throughout time. Because financial data is useless without a baseline for comparison, it is predicated on framing a reference to appreciate its relevance (Gibson, 1992). Kennedy and McMullen (1973) emphasize that “comparative statements are useful to the analyst [end user] because they contain not only the data appearing on single statements but also the information necessary to the study of financial and operating trends over a period of years” (p. 207). Financial data are set up in columns on a comparative financial statement. There may be two or more periods given in columnar format and each column indicates a time period. A column displaying the growth or decrease from the base period in terms of dollars or percentages can also be included (Kennedy & McMullen, 1973). Figure 8 (Warren, 2016) shows the example of the format of a comparative balance sheet.



<b>TechSource Balance Sheet</b>			
	<b>December 31,</b>		<b>Changes</b>
	<b>20Y7</b>	<b>20Y6</b>	<b>Increase (Decrease)</b>
<b>Assets</b>			
<b>Current assets:</b>			
Cash .....	\$ 52,650	\$ 36,200	\$16,450
Accounts receivable .....	91,080	53,000	38,080
Inventory .....	62,150	59,700	2,450
Estimated returns inventory .....	5,300	4,300	1,000
Office supplies .....	480	600	(120)
Prepaid insurance .....	2,650	3,000	(350)
Total current assets .....	<u>\$214,310</u>	<u>\$156,800</u>	<u>\$57,510</u>
<b>Property, plant, and equipment:</b>			
Land .....	\$ 20,000	\$ 20,000	\$ 0
Store equipment .....	27,100	20,000	7,100
Accumulated depreciation—store equipment .....	(5,700)	(2,600)	(3,100)
Office equipment .....	15,570	10,000	5,570
Accumulated depreciation—office equipment .....	(4,720)	(2,230)	(2,490)
Total property, plant, and equipment .....	<u>\$ 52,250</u>	<u>\$ 45,170</u>	<u>\$ 7,080</u>
Total assets .....	<u>\$266,560</u>	<u>\$201,970</u>	<u>\$64,590</u>
<b>Liabilities</b>			
<b>Current liabilities:</b>			
Accounts payable .....	\$ 14,466	\$ 6,816	\$ 7,650
Customer refunds payable .....	7,954	7,454	500
Notes payable (current portion) .....	5,000	5,000	0
Salaries payable .....	1,140	1,500	(360)
Unearned rent .....	1,800	2,400	(600)
Total current liabilities .....	<u>\$ 30,360</u>	<u>\$ 23,170</u>	<u>\$ 7,190</u>
<b>Long-term liabilities:</b>			
Notes payable (final payment due in ten years) .....	20,000	25,000	(5,000)
Total liabilities .....	<u>\$ 50,360</u>	<u>\$ 48,170</u>	<u>\$ 2,190</u>
<b>Stockholders' Equity</b>			
Capital stock .....	\$ 25,000	\$ 25,000	\$ 0
Retained earnings .....	191,200	128,800	62,400
Total stockholders' equity .....	<u>\$216,200</u>	<u>\$153,800</u>	<u>\$62,400</u>
Total liabilities and stockholders' equity .....	<u>\$266,560</u>	<u>\$201,970</u>	<u>\$64,590</u>

Figure 8. An Illustration of Comparative Balance Sheet. Source: Warren (2016)

In comparative analysis, the data of a financial statement is presented in columns, and a column indicates a financial reporting period. In the first column, financial data of the most current period is shown, and the subsequent columns present data related to the prior periods. Comparative statements have the drawback that they do not cater to the price fluctuation effects. Financial data is more useful when it incorporates the year-to-year price fluctuations, whether it results from inflation or from the regular change in the price of products or services (Kennedy & McMullen, 1973). Any trends found in comparative statements should be noted by the end user, who should also be prepared to conduct additional research to investigate trend changes due to price levels fluctuation or inflation (Kennedy & McMullen, 1973). A company, for instance, might have a sales increase of 2% throughout various time periods. The apparent growth may be caused by inflation rather than another factor that would be related to the company's health (Grant et al., 2016). A discussion on horizontal analysis is presented in the following section.



## 1. Horizontal Analysis

While horizontally analyzing financial statements, analysts compare percentage changes in related items. This is done through calculating changes in the amount and percentages in items of the most current financial statement to its corresponding line item of the prior period financial statement (J. M. Rendon, 2010) to analyze the increase or decrease in amounts or percentages. “When comparing statements, the earlier statement is normally seen as the base for computing increases and decreases” (Warren, 2016, p. 359). Figure 9 (Warren, 2016) is an illustration of a horizontal analysis. The base year used in this example is 20Y5.

<b>Mooney Company Comparative Balance Sheet December 31, 20Y6 and 20Y5</b>				
	Dec. 31, 20Y6	Dec. 31, 20Y5	Increase (Decrease)	
			Amount	Percent
<b>Assets</b>				
Current assets	\$ 550,000	\$ 533,000	\$ 17,000	3.2%
Long-term investments	95,000	177,500	(82,500)	(46.5%)
Property, plant, and equipment (net)	444,500	470,000	(25,500)	(5.4%)
Intangible assets	50,000	50,000	—	—
Total assets	<u>\$1,139,500</u>	<u>\$1,230,500</u>	<u>\$ (91,000)</u>	(7.4%)
<b>Liabilities</b>				
Current liabilities	\$ 210,000	\$ 243,000	\$ (33,000)	(13.6%)
Long-term liabilities	100,000	200,000	(100,000)	(50.0%)
Total liabilities	<u>\$ 310,000</u>	<u>\$ 443,000</u>	<u>\$ (133,000)</u>	(30.0%)
<b>Stockholders' Equity</b>				
Preferred 6% stock, \$100 par	\$ 150,000	\$ 150,000	—	—
Common stock, \$10 par	500,000	500,000	—	—
Retained earnings	179,500	137,500	\$ 42,000	30.5%
Total stockholders' equity	<u>\$ 829,500</u>	<u>\$ 787,500</u>	<u>\$ 42,000</u>	5.3%
Total liabilities and stockholders' equity	<u>\$1,139,500</u>	<u>\$1,230,500</u>	<u>\$ (91,000)</u>	(7.4%)

Figure 9. An Illustration of Horizontal Analysis. Source: Warren (2016)

The horizontal analysis presents trend data that may be utilized to track changes in a specific financial statement line item's value over time. Financial statement line items are logically related to one another; therefore, the comparison provides important



insights. Kennedy & McMullen (1973) considers a trend significant only when it matches its corresponding trend. For example, sales and the cost of goods sold are linked. The cost of goods sold is anticipated to rise along with sales. According to Kennedy & McMullen (1973) trends indicate the need for further investigation. The next section provides information on vertical analysis.

## **2. Vertical Analysis**

In vertically analyzing financial statements, the percentage of each line item is calculated with reference to the total of the statement. It measures the relationship between line items for a single year (J. M. Rendon, 2010). Warren (2016) states, “Although vertical analysis is applied to a single statement, it may be applied to the same statement over time” (p. 362). Warren (2016) further states that vertical analysis “enhances the analysis by showing how the percentages of each item have changed” (p. 362). The same author also highlights that “to vertically analyze a balance sheet, the percentage of each asset line item is calculated as a proportion of the total assets” (p. 362). Warren (2016) further explains that “the percentage of each liability and shareholder equity line item is calculated as a proportion of the total liabilities and shareholder’s equity” (p. 362). Figure 10 (Warren, 2016) is an illustration of a vertical analysis performed on a balance sheet. This figure displays the data as follows:





**Mooney Company  
Comparative Balance Sheet  
December 31, 20Y6 and 20Y5**

	Dec. 31, 20Y6		Dec. 31, 20Y5	
	Amount	Percent	Amount	Percent
<b>Assets</b>				
Current assets	\$ 550,000	48.3%	\$ 533,000	43.3%
Long-term investments	95,000	8.3	177,500	14.4
Property, plant, and equipment (net)	444,500	39.0	470,000	38.2
Intangible assets	50,000	4.4	50,000	4.1
Total assets	<u>\$1,139,500</u>	<u>100.0%</u>	<u>\$1,230,500</u>	<u>100.0%</u>
<b>Liabilities</b>				
Current liabilities	\$ 210,000	18.4%	\$ 243,000	19.7%
Long-term liabilities	100,000	8.8	200,000	16.3
Total liabilities	<u>\$ 310,000</u>	<u>27.2%</u>	<u>\$ 443,000</u>	<u>36.0%</u>
<b>Stockholders' Equity</b>				
Preferred 6% stock, \$100 par	\$ 150,000	13.2%	\$ 150,000	12.2%
Common stock, \$10 par	500,000	43.9	500,000	40.6
Retained earnings	179,500	15.7	137,500	11.2
Total stockholders' equity	<u>\$ 829,500</u>	<u>72.8%</u>	<u>\$ 787,500</u>	<u>64.0%</u>
Total liabilities and stockholders' equity	<u>\$1,139,500</u>	<u>100.0%</u>	<u>\$1,230,500</u>	<u>100.0%</u>

Figure 10. An Illustration of Vertical Analysis. Source: Warren (2016)

The vertical analysis presents proportional data within a financial statement. Vertical analysis benefits in assessing the financial health of a company and comparing it with its industry peers (Kennedy & McMullen, 1973). The next section includes a discussion on common-sized statements.

### 3. Common-Sized Statements

Common-sized statements evaluate the financial situation of companies over periods. Common-sized financial statements are useful to compare companies that are different in size. Warren (2016) states that “common-sized financial statements are prepared by expressing a financial statement amount as a percentage of a base amount” (p. 65). He also expresses that, “A common-sized income statement is prepared by expressing income statement amounts as a percentage of sales” (p. 65). While “a common-sized balance sheet is prepared by expressing each asset as a percentage of total assets” (Warren, 2016, p.65). Warren (2016) asserts that “each liability and each stockholders’ equity item are expressed as a percent of total liabilities plus stockholders’ equity” (p. 65). All line items are converted to percentages in a common-sized financial



statement, and no actual dollar figures are displayed. According to Warren (2016), “Common-sized statements are often useful for comparing one company with another or for comparing a company with industry averages” (p. 364). Figure 11 (Warren, 2016) illustrates common-sized income statements of two companies. The next section presents an analysis of financial ratios.

	<b>Mooney Company</b>	<b>Lowell Corporation</b>
Sales	100.0%	100.0%
Cost of goods sold	(69.6)	(70.0)
Gross profit	<u>30.4%</u>	<u>30.0%</u>
Selling expenses	(12.8)%	(11.5)%
Administrative expenses	(6.9)	(4.1)
Total operating expenses	<u>(19.7)%</u>	<u>(15.6)%</u>
Income from operations	10.7%	14.4%
Other revenue and expense:		
Other revenue	0.6	0.6
Other expense (interest)	<u>(0.4)</u>	<u>(0.5)</u>
Income before income tax	10.9%	14.5%
Income tax expense	<u>(4.8)</u>	<u>(5.5)</u>
Net income	<u><u>6.1%</u></u>	<u><u>9.0%</u></u>

Figure 11. An Illustration of a Common-Sized Income Statement.  
Source: Warren (2016)

## H. FINANCIAL RATIO ANALYSIS

Ratio analysis involves comparing data from the income statement and balance sheet to determine how the business or industry is performing. Ratios draw attention to any relationships that exist between several data categories. They also provide a logical relationship between the denominator and the selected numerator. Particularly, there is a functional or economic relationship between the data in a ratio (Lev, 1974). Ratio analysis for one year is meaningless. Ratio analysis provides useful information only when it is conducted for a long term (Lai, 1995). In fact, Chabotar (1989) advises utilizing a time range of 3 to 5 years to spot trends and reduce outlier outcomes. The ratios themselves are meaningless without a means of comparison.



To get the most value out of financial statements analysis, users need to know what data is included in a financial statement. This knowledge will enable users to better understand the ratios they select to utilize during the analysis process (Koetter et al., 2014). A company's financial ratios are analyzed by comparing them with industry averages. Industry averages of the complete industry serve as benchmarks for a particular financial health indicator. There are numerous sources to find industry averages. Gibson (1992) highlights the importance of selecting the correct industry averages to analyze a company under discussion, because a company may be doing business in different industrial sectors.

Financial ratios can be computed in countless different ways. Even though there may be variations in formulas for the same ratio, the interpretation of the ratio and what it measures will be the same (J. M. Rendon, 2010). However, prior research suggests that all financial ratios may be categorized into a number of groups, allowing users to utilize a relatively small number of ratios to portray the data at a higher conceptual level. (Gursoy, 1994). The different ratios are summarized into five major categories (J. M. Rendon, 2010) which are discussed in the following section:

### **1. Liquidity Ratios**

Warren (2016) state that “liquidity is the ability of a company to convert assets into cash, which affects its ability to pay short-term debt such as accounts payable” (p. 364). Theoretically, this indicates a business organization's capacity to liquidate its current assets in the form of cash to dispose of its current liabilities (Koetter et al., 2014). According to Pervaiz et al., (2013), “liquidity is important if a person or a company needs access to funds in a short time frame or to pay for an expense” (p. 223). A higher liquidity ratio indicates reduced risk to a company when it is forced to liquidate assets for making payments. Profitability and liquidity are positively correlated. A company can progressively achieve a high return on assets (ROA) and a high return on equity (ROE) if its daily cash operations are well managed. A company having large debt and leverage is at risk and may not be capable of making a large profit (Samo & Murad, 2019). Table 1 shows a summary of commonly used liquidity ratios.



Table 1. Summary of Liquidity Ratios. Source: J. M. Rendon, (2010) and Pervaiz et al. (2013).

COMMONLY USED LIQUIDITY RATIOS	
Current Ratio	Current Assets / Current Liabilities
Quick Ratio	Current Assets—Inventory / Current Liabilities
Cash Ratio	Cash and Cash Equivalent / Current Liabilities

## 2. Debt Management Ratios

Debt management ratios reveal a business's dependence on debts and equities to run its operations. (Koetter et al., 2014). Debt management ratios are also referred to as financial leverage ratios. Companies have several financing opportunities; they may borrow funds, issue shares, or spend profit (Khan et al., 2013). Debt ratios, as opposed to liquidity ratios, emphasize the company's long-term financial and operational structure (Rist & Pizzica, 2015). A company with low debt ratios is considered financially healthy because it is financing assets from equity and retained earnings rather than debts (Koetter et al., 2014). A company with a high debt ratio is considered highly leveraged. Financial leverage also provides certain advantages. Debt is seen favorably by companies looking to expand. However, financial hardship happens when companies experience financial issues (Septyanto et al., 2022). Furthermore, excessive financial leverage might increase the chance of default (Samo & Murad, 2019). Debt management ratios need regular attention to assess potential risk connected with financing activities (Koetter et al., 2014). Table 2 shows a summary of commonly used debt management ratios.

Table 2. Summary of Debt Management Ratios. Source: J. M. Rendon (2010).

COMMONLY USED DEBT MANAGEMENT RATIOS	
Debt to Equity	Total Liabilities / Total Stockholders' Equity
Debt Ratio	Total Liabilities / Total Assets
Times Interest Earned	Operating Income / Interest Expense
Asset to Equity	Total Assets / Total Shareholder's Equity



### 3. Efficiency Ratios

The objective of efficiency ratios, which measures output in relation to input, is to reduce losses. A company’s revenues either from sales of goods or provision of services are termed as inputs that generate outputs in the form of profits or losses. Efficiency ratios are also referred to as turnover or asset management ratios (Koetter et al., 2014). These ratios are frequently used by prospective investors to assess how successfully a company utilizes and manages resources to optimize profits (Rahman, 2011). Table 3 lists a summary of commonly used efficiency ratios for evaluating a company’s financial statements.

Table 3. Summary of Efficiency Ratios. Source: J. M. Rendon, (2010).

COMMONLY USED EFFICIENCY RATIOS	
Accounts Receivable Turnover	Sales Revenue / Accounts Receivable
Inventory Turnover	Cost of Goods Sold / Inventory
Fixed Asset Turnover	Sales Revenue / Fixed Assets
Total Asset Turnover	Sales Revenue / Total Assets
Days’ Sales Outstanding	Accounts Receivable / Average Sales Per Day
Days’ Sales in Inventory	Inventory Average / Cost of Goods Sold Per Day

### 4. Profitability Ratios

Profitability is the single most relevant sign of a business’s financial position. Companies use their profits to expand. Companies with no or low profits usually have lower stock value. Growing profits are indicative of a company’s ability to raise its stock price and pay dividends. Profitable companies can receive loans from creditors at lower interest rates than unprofitable companies (Ramachandran & Madhumathy, 2016). Profitability ratios show how successful a company is at increasing profit or earning revenues (Koetter et al., 2014). Lev (1974) notes that regarding the profitability ratio, “The ratios thus yield an indicator of the company’s efficiency in using the capital committed by shareholders and lenders” (p. 13). A summary of commonly used profitability ratios is displayed in Table 4.



Table 4. Summary of Profitability Ratios. Source: J. M. Rendon, (2010).

<b>COMMONLY USED PROFITABILITY RATIOS</b>	
Gross Profit Margin	Gross Profit / Sales Revenue
Operating Profit Margin	Operating Profit / Sales Revenue
Net Profit Margin	Net Profit / Sales Revenue
Return on Assets	Net Income / Total Assets
Return on Equity	Net Income / Total Shareholders' Equity
Operating Leverage Multiplier	Net Income Growth / Sales Revenue Growth

## 5. Market Value Ratios

Market value ratios link companies' operations and their activity with shareholders' equity. Investors frequently utilize market value ratios to analyze the correlations between shares of stock and dividends because they want an adequate return on their investment. (Koetter et al., 2014). Stocks with high earnings per share have higher positive future returns and vice versa (Khan et al., 2013). Distribution of business income among shareholders, as dividends, is a critical decision. Generally, small and start-up companies choose not to distribute dividends because these companies tend to invest the earnings back into the company for future operations or growth (Ali et al., 2015). Some large and mature companies pay dividends regularly since they do not have enough avenues for further expansion, or they are already operating at an optimal or maturity level of their business cycle (Ali et al., 2015). Dividend decision influences both the financial and investing activities of a company; therefore, it is an important decision. A summary of commonly used market value ratios that are utilized in financial statements analysis are displayed in Table 5.



Table 5. Summary of Market Value Ratios. Source: J. M. Rendon, (2010).

<b>COMMONLY USED MARKET VALUE RATIOS</b>	
Earnings Per Share (EPS)	Net Earnings / Average Shares Outstanding
Price/Earnings	Market Price of Common Stock / EPS
Dividends Payout Ratio	Dividends / Net Income
Dividend Yield	Cash Dividends Per Share/ Market Price of Common Stock Per Share
Market-to-Book Value per Share	Market Value Per Share/ Book Value Per Share

Financial statement analysis is helpful in the financial health assessment of a company, but it also has several limitations. These limitations are discussed next.

#### **I. FINANCIAL STATEMENT ANALYSIS LIMITATIONS**

Effective utilization of financial statement analysis has a few restricting factors. For example, one limitation is that the comparative statement overlooks the impacts of inflation or a general price change of goods or services from year to year (Kennedy & McMullen, 1973). Financial statements report assets “at their cost or purchase price” (Warren, 2016, p. 18) disregarding any changes of prices or the effects of inflation (Grant, 2016). An extremely high rate of inflation may conceal a company’s true financial success depending on the time period under evaluation. A company may report a 2% increase in sales over many time periods, but the actual reason for growth may be inflation rather than another factor that would indicate the company’s health. (Grant et al., 2016).

Another limitation can be the correctness of the information presented on a financial statement. Every financial analysis method is built on reported data, so each method is dependent on the data’s reporting methodology, source, and degree of distortion (Grant et al., 2016).



Each financial analytical method has its own limitations. A combination of financial analysis techniques can highlight current status of a business in addition to any shifts that may impact its future status (Revsine et al., 2002).

The Pakistan defense contracting officers need to be cautious of these limiting factors when determining the financial health of a company. It may require asking questions of prospective defense contractors regarding any noticeable anomaly in financial data. In the next section, financial health indicators of publicly traded companies are discussed.

## **J. FINANCIAL HEALTH INDICATORS**

In addition to providing data for the horizontal, vertical, and ratio analyses, the financial statements also provide the opportunity for identifying financial health factors. A financial health analysis helps determine the financial strength of a business and shows its ability to meet its obligations under current as well as unfavorable future conditions. Kennedy and McMullen, (1973) and Grant et al., (2016) identified company's sales revenue, net income, inventory, accounts receivable, working capital, fixed assets, and operating environment as seven indicators of its financial health. Brief descriptions of these data items are provided in the following section.

### **(1) Sales Revenue**

The income statement reports sales activity, commonly referred to as sales revenue or revenue. According to Friedman (2000), a company typically records sales activity using either of the two accounting methods: cash basis or accrual basis. If a company makes sales to customers on credit, the accounts receivables are generated when sales are made on the accrual basis of accounting. Stickney et al., (2010) states that “under cash basis of accounting a firm measures performance from selling goods and providing services as it receives cash from customers and makes cash expenditures to providers of goods and services” (p. 26). While “the accrual basis of accounting typically recognizes revenue when a firm sells goods or renders services and recognizes expenses in the period when the firm recognizes the revenues that the costs helped produce” (Stickney et al., 2010, p. 28). In other words, under the accrual basis of accounting,



revenue is recorded and recognized when the revenue is earned, and expenses are recorded when they are incurred (J. M. Rendon, 2010). No matter how cautious a business is in extending credit, certain credit sales will be impossible to collect. Bad debt expenses, a part of operating expenses, are recorded in the income statement for uncollectible receivables. Uncollected accounts receivable ultimately reduce business revenues (Warren 2016).

## (2) Net Income

Net income represents earnings calculated after deducting operating expenses from total sales (Stickney et al., 2010). Stakeholders must comprehend how the company's net worth contributes to its analysis (Grant et al., 2016). A company bears a net loss if its expenses consistently outweigh its income (Friedman, 2000). Warren (2016) mentions "the starting point for calculating cash flow from operating activities is net income" (p. 171) on the cash flow statement using the indirect method. A profitability ratio that is used to assess a company's profitability is Net Profit Margin. Net Profit Margin is calculated by dividing Net Profit by Sales Revenue.

## (3) Inventory

For a retailer, inventory is comprised of goods that are purchased from a wholesaler and are ready for resale. For a manufacturing company, inventory consists of raw materials, work in process, and finished goods (Warren, 2016). When assessing companies' financial health, analysis of their inventory management skills is important (Grant et al., 2016). Inventory turnover is one of the asset management ratios. According to Warren (2016) "inventory turnover reflects the efficiency of purchasing and selling inventory and is computed by dividing the cost of goods sold by the average inventory" (p. 368). In general, a higher inventory turnover is preferable. It shows that sales are increasing, that will lead to more earnings for the company and ultimately higher returns for shareholders (Stickney et al., 2010). A decrease in inventory turnover may indicate that the company has excess inventory. Excess inventory costs the company money and may be a sign that a product is or will soon become obsolete. Moreover, excess inventory





could mean that unhappy customers are sending the goods back or the business is suffering delays from order time to delivery time. (Entrepreneur, 2015; Malik, 2017).

#### (4) Accounts Receivable

A company's accounts receivable are amounts that its customers owe it for previous transactions, including the selling of goods on credit (Friedman, 2000). Unpaid invoices affect current assets and may force a company to take unneeded loans if it cannot pay its normal expenses (Grant et al., 2016). According to Entrepreneur (2015) and Malik (2017), it is crucial to analyze cash collection period, receivables age, credit policies, and turnovers of accounts receivable. J. M. Rendon (2016) narrates calculation of accounts receivable turnover as dividing average accounts receivable by net sales revenue. A company's liquidity is increased by swiftly collecting accounts receivable. In addition, the amount received from debtors may be utilized to enhance or increase the business. Receivables that are collected quickly are also less likely to become uncollectible (Warren 2016). Accounts receivable that are uncollectible because of a customer's inability to pay a balance owing to bankruptcy or other financial issues cause the company substantial loss (Malik, 2017). According to Piechowicz (2006), a sound credit policy, controls over accounts receivable along with an effective debt recovery strategy are all components of effective accounts receivable administration. Account receivable turnover is also an asset management ratio.

#### (5) Working Capital

Warren (2016) defines working capital as "the difference between a company's current assets and current liabilities" (p. 365). Current assets include "cash, inventory, and accounts receivable," while accounts payable, short-term debt, and current long-term debt are current liabilities (Friedman, 2000). To maintain its financial capability, the companies use positive working capital to pay their short-term liabilities (Malik, 2017). Management of working capital is crucial to expand businesses therefore, it is an essential part of a company's financial management plan (Tsagem et al., 2015). According to Warren (2016) "working capital ratio is also called current ratio and is calculated by dividing current assets by current liabilities" (p. 365).



## (6) Fixed Assets

Long-term physical assets are termed as fixed assets. Fixed assets may include “property, plant, and equipment or plant assets” (Warren, 2016, p. 111) and are shown on the balance sheet. The same author also states that, “Equipment, machinery, buildings, and land” are examples of fixed assets (p. 111). Fixed assets may lose value over time. Warren (2016) further states that “the cost less accumulated depreciation for each major type of fixed asset is normally reported on the classified balance sheet” (p. 111). Fixed assets are used for providing goods and services (Grant et al., 2016). Businesses earn revenue using fixed assets that may turn into net income (Malik, 2017). Before conducting business with a company, it is important to consider their asset recording, asset disposal, and asset depreciation practices (Stickney et al., 2010). If a business invests extensively in fixed assets but has underused machinery, this could be a sign of reduced demand or an error in estimating the need for fixed assets (Entrepreneur, 2015).

## 7. Operating Environment

Understanding a company’s working environment and corporate culture is crucial when assessing its financial health (Grant et al., 2016). Grant et al. (2016) states that “factors, such as the political environment of the countries involved, economic background, and customer base, play vital roles in evaluating the financial health of a company” (p. 20). Operating factors offer solutions for loyal consumer base issues.

Financial analyses of publicly traded companies should also determine the susceptibility of fraud in procurement and financial reporting. The next section provides discussion on the fraud theories, procurement fraud schemes, fraud in financial reporting, and measures to prevent fraud.

## K. FRAUD THEORY

The term *fraud* is used broadly to refer to any conduct intended to deceive for the purpose of obtaining monetary or personal benefits. Fraud is defined as any action taken with the goal of defrauding another of their money or property through trickery, deception, or other fraudulent means. The Association of Certified Fraud Examiners [ACFE] (n.d.-a) defines occupational fraud as “those in which an employee, manager,



officer, or owner of an organization commits fraud to the to the organization’s detriment” (p. 75). [ACFE] (n.d.-a) further states that occupational fraud presents a real and large risk to any organization where people are employed. Each year, fraud causes billions of dollars in damage to businesses, governments, and people (ACFE, n.d.-a). Beasley et al., (2010) states that “the U.S. Securities and Exchange Commission’s most commonly cited motivations for fraud include the need to meet internal or external earnings expectations, an attempt to conceal the company’s deteriorating financial condition, the need to increase the stock price, the need to bolster financial performance for pending equity or debt financing, or the desire to increase management compensation based on financial results” (p. 7).

Fraud components are explained by two main theories. The study by American criminologist Donald R. Cressey (1973) on the circumstances leading fraudsters to violate ethical boundaries and perform initial fraudulent acts (Marks, 2018). According to Dorminey et al., (2012), findings from Cressey’s research has subsequently been known as the fraud triangle. The fraud triangle suggests that three elements: opportunity, incentive or pressure, and rationalization—must coexist for fraud to occur (Desai, 2020).

According to Dr. Cressey (1973), opportunity arises when someone notices a flaw in the system of internal controls or administration. Weaknesses in the internal controls offer ways to carry out the fraud. The fraud vulnerability in any system is what makes theft possible. When a person believes they have a financial need or want, this creates an incentive, pressure, or motive (Kassem & Higson, 2012). A financial need may be created out of personal greediness, or it may be related to external events or difficulties in life. Rationalization is the process of someone persuading themselves that committing a crime is acceptable. The fraudsters may think that their fraudulent acts are not intended to victimize anyone or presume that the dangers of committing the fraud are low (Rowe & McLaughlin, 2019). Figure 12 (ACFE.com (n.d.-b)) illustrates the elements of the fraud triangle.





Figure 12. An Illustration of Fraud Triangle: Source: ACFE.com (n.d.-b).

Wolfe and Hermanson (2013) further developed Cressey’s (1973) theory as the fraud diamond by introducing capacity as a fourth element. According to Wolfe and Hermanson (2013), in addition to rationalization, opportunity, and motive, capacity enables the successful commission of fraudulent act. Wolfe & Hermanson (2013) found that having adequate capacity is essential for an individual to rationalize or justify a wrongdoing, be motivated to carry out the act, and identify a vulnerability in the security or control systems that presents an opportunity. Having all four elements present at the same time, there is a likelihood of fraud (Rowe & McLaughlin, 2019). Figure 13 (Wolfe & Hermanson, 2013) illustrates the fraud diamond.

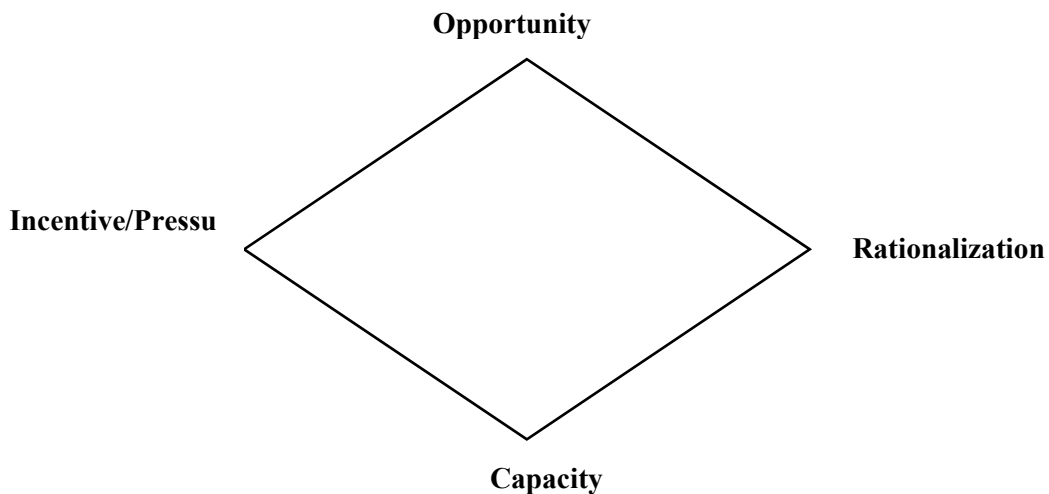


Figure 13. An Illustration of Fraud Diamond. Source: Wolfe and Hermanson (2013).

When these elements of the fraud triangle and the fraud diamond are present, several procurement fraud schemes can be carried out. Rendon and Rendon (2015) emphasize that recognizing opportunity (*where*), motive (*why*), and rationalization (*how*) of procurement fraud is a crucial component of procurement fraud prevention. Initially, the *where* indicates the area or phase of the contracting process where the contract management process takes place. Secondly, the *why* stands for the type of internal control that guards against a successful fraud scheme. Lastly, *how* represents the fraud scheme committed in procurement fraud (Rendon & Rendon, 2015). Rendon & Rendon (2015) emphasize that the management should comprehend the relationship between the procurement fraud scheme, contract management phases, and organization's internal controls. To deter the occurrence of procurement fraud schemes, it is necessary that internal controls are present, and function properly as intended. Procurement fraud and procurement fraud schemes are discussed next.

## **1. Procurement Fraud**

Coenen (2008) states that “fraud essentially involves using deception to make a personal gain for oneself dishonestly and/or create a loss for another” (p. 25). Tan (2013) states, “Procurement fraud is an intentional deception to negatively influence any stage of the procurement process to make a financial gain or cause a loss to the organization” (p. 31). Financial fraud is caused by deliberate deception, such as the recording of fake accounting transactions or the incorrect application of specific accounting standards (Rizwan, 2019). In either case, the financial disclosures are intentionally false. Fraud is different from mistakes or errors made when accounts are intentionally falsely stated. Those that engage in fraudulent activity do it with the intention of doing wrong (Wells, 2017). The next section discusses categories of fraud schemes related to procurement.

### **(a) Procurement Fraud Scheme Categories**

There are various types of procurement fraud schemes. Chang (2013) stated, “Collusion, conflicts of interest, bid-rigging, pricing/billing/cost-fixing schemes, fraudulent purchasing, and false representation are six common types of fraud in



government procurement” (p. 18). These schemes, which are also referred to as fraud schemes, are discussed next.

#### (1) Collusion

Collusion involves cooperation between the government and contractor in order to avoid standard procedures in the contracting process by using procurement fraud schemes such as “bribery, kickbacks, and split purchases” (Chang, 2013, p. 18). Bribery is “the offering, giving, receiving, or soliciting anything of value to influence an official act” (Wells, 2008, p. 183). Chang (2013) states that “in bribery, the collusion is between the offeror of the valued item and the person offering something in return, which could include consideration for a contract, access to privileged information, or an increase in orders from a contractor” (p. 18). Due to the financial worth of government contracts, contractors desire to win them (Rowe & McLaughlin, 2019); therefore, they offer bribes to the government contracting officer. Kickbacks refer to the situation where, in exchange for a portion of the profit made from the transaction, a government official does something for a contractor, like increase business, submit false invoices, or win a contract (Chang, 2013). Kickbacks influence the way a process is administered, whereas bribery is defined as the act of influencing someone’s judgment (Vona, 2011). Split purchases involve a number of parties working together to avoid government procurement thresholds, which may lead to more competition, oversight, or justification needs (Chang, 2013).

#### (2) Conflict of Interest

Non-alignment of government representatives’ loyalty with the government’s best interest creates a conflict of interest. Long-term close contractual interaction between the government official and the contractors could result in an initial possible conflict of interest. When people quit their employment in industry to work for the government, or the other way around, is the second possible type of conflict of interest. The third possible conflict of interest is close familial ties, which can be problematic when family members are connected to many contract parties (Rowe & McLaughlin, 2019). The main



theme of this kind of fraud is that any business agreements with the industry will benefit the government official directly (Rowe & McLaughlin, 2019).

### (3) Bid Rigging

The act of rigging a bid involves avoiding following the standard procedures for determining the government's needs and obtaining appropriate bids from vendors (Chang, 2013). It prevents the government from utilizing free and open competition effectively in a competitive environment. Contractors submit bids for the project in response to a solicitation package created by government procurement officials. Bid rigging is materialized when perspective defense contractors conspire to alternate or rotate the business among themselves (ACFE, n.d.-c). Bid rigging typically entails an agreement within competitors to restrict competition by nominating the vendor in advance to submit the winning bid (Rowe & McLaughlin, 2019). Instead of receiving the lowest bid, the buyer gets the bid which is greater than the competitive market price of products or services. The companies take turns being the prime contractor while the other companies involved in bid rigging serve as the subcontractors, so all these companies benefit from the contract. When bids are rigged, competition is limited, and customers unintentionally pay more for the goods or services they are buying (General Services Administration Office of Inspector General, 2012).

### (4) Billing/Cost/Pricing Schemes

Billing schemes involve contractors overcharging the government by submitting the same bills or invoices for multiple contracts. "Defective pricing is the submission of cost or pricing data that is not accurate, complete, or current" (Chang, 2013, p. 20). Vona (2011) states that cost mischarging is the practice of charging for a contract which is not permitted per the contract. This may entail withholding facts that may alter the pricing, fabricating evidence, or failing to update information (Chang, 2013). Such types of fraud schemes may be initiated by the contractors, both the contractors and government employees, or only government employees.

### (5) Fraudulent Purchases



Fraudulent purchases occur when procurements are made beyond the actual requirement. The fraudulent party may be the respective government procurement department or an individual in charge of procurement. Either party may conduct fraudulent activities for personal use or for selling items later for personal gain. For example, government employees and contractors could plan together to procure goods in excess of the actual requirement (Chang, 2013).

#### (6) Fraudulent Representation

Fraudulent representation includes “the misrepresentation of goods and services, provided by a contractor, which do not meet the quality specified in the contract” (Chang, 2013, p. 21). Chang (2013) states that “the failure to meet contract specifications occurs when a contractor gains financially from providing goods or services that do not meet the standards of what is required in the contract” (p. 21). For example, a contractor provides substandard and lower-specification equipment while charging a premium rate to the government.

In addition to procurement, fraud also occurs in financial reporting. Companies commit fraud in their financial statements for various reasons, including to present the company as an attractive and profitable concern to their stakeholders. Financial statement fraud is discussed next.

## 2. Fraud in Financial Reporting

Considering their intensity and pervasiveness, financial statement fraud influences the reporting mechanism, impacts equity markets, and affects the economy. Even though there are audit companies and fraud examiners, the inability to detect fraud is still deemed a despicable failure. Unfortunately, financial reporting fraud is still on the rise (Rizwan, 2019) and constitutes a substantial part of white-collar crime (Palshikar, 2014). It most frequently takes the form of sales manipulations on the income statement. Managers may exaggerate a company’s financial health to meet shareholder expectations, particularly in publicly traded companies. The danger of improper sales recordings increases with rule complexity or transaction size. Moreover, failing to properly record accrued expenses could result in an overstatement of company earnings, particularly in





times of slow sales (Rizwan, 2019). Another method of understating operational costs is to classify recurring expenses as non-recurring (Gee, 2014).

The balance sheet can also be manipulated by overstating assets. The majority of the asset overstatement that is done to make critical ratios appear appealing to investors is in current assets. Understating the liabilities is another technique to improve the attractiveness of the balance sheet. A company's profitability can also be artificially inflated by not reporting or reporting low provisions for doubtful accounts that include inventory obsolescence, accounts receivable, warranties obligations, and sale returns (Coenen, 2008). Poor auditing, along with current financial innovations, are found to enhance the fraudulent activities (Jickling, 2009). The examples of how financial statements can be manipulated include recording fictitious revenue or accounts receivable, understating liabilities or expenses, and overstating assets or income (J. M. Rendon, 2010).

Every business is affected by fraud, regardless of its size and industry (Rizwan, 2019). Financial statement fraud is caused by a variety of factors, not just personnel dishonesty. Moreover, it may not always be the result of the company having a dishonest CEO or CFO (Rizwan, 2019). Similarly, making the claim that every fraud arises from a large plot or plan is implausible (Wells, 2017). Regrettably, the environment where people are pressured to engage in essentially dishonest behavior leads to the development of fraud (Wells, 2017). Moreover, in the business environment, financial statement fraud rarely begins on a large scale. Although some employees are dishonest by nature, they inevitably get caught in their wrongdoing and cannot stay in the company for too long (Rizwan, 2019). Uncertain financial reporting areas are the first step in fraud. For example, those in charge of finance may take advantage of revenue recognition-related difficulties that exist while adopting Generally Accepted Accounting Standards (GAAP) regulations. Financial fraud also intensifies over time, and when it is widespread, it is unrecoverable (Young, 2014).

According to Wells (2001), patterns over time can tell a better story because “no one irregularity constitutes a clue of financial statement manipulation” (p. 83). He emphasizes that ratio-based fraud indicators should be viewed as indicators rather than



fraud identifiers. If there are any indications of fraud, more research into a company's financial status may be necessary. In addition, fraud prevention, which is discussed next, is of vital importance.

### **3. Fraud Prevention**

Fraud is sometimes only discovered after it has already occurred, rather than during the planning or development stages (Kidwell, 2018). The victims of fraud are not limited to the federal government that has lost funding. Warfighters who have been hurt by a fraudulent and defective product, and the taxpayers whose hard-earned income has not been utilized purposefully, are also victims. Most of the time, efforts to combat fraud are reactive. The problem with concentrating on remedial actions is that it takes attention away from prevention, which is where most efforts should be focused. Effective monitoring, internal controls, training on fraud awareness, and internal control policies are just a few of the preventive measures that can be used to stop fraud (Kidwell, 2018). While these preventive measures are widely used and available (Kidwell, 2018), data analytics is the most prevalent preventive form. Data analytics could be a useful fraud prevention tool in the domain of defense procurement. The next section includes a discussion on multivariate analysis. This analysis helps to determine the susceptibility of a company to fraudulent behavior. It also helps to determine a company's solvency state to ensure the contract is awarded to a company that has the financial capacity, that will not go bankrupt, and that will perform its contractual obligation. The following section discusses multivariate analysis, which includes a fraud analysis of financial statements, as well as bankruptcy analysis.

#### **L. MULTIVARIATE ANALYSIS**

The multivariate analysis concentrates on a combination of a few selected elements or financial ratios to forecast the behavior of a company, sometimes several years before a real event. The next sections examine fraud analysis and bankruptcy analysis as examples of multivariate analyses.



## 1. Fraud Analysis

Dr. Messod D. Beneish (1999), a well-known authority on identifying earnings manipulation and financial statement fraud, conducted a study on financial statement fraud. In his study, he incorporated a statistical process that seeks to detect companies' possible earnings manipulations. He took a sample of 74 companies that were found involved in financial statement fraud and matched them with another sample of 2,332 non-fraud companies (Beneish et al., 2013). He tested eight variables on each company's financial statement: "days' sales in receivables index; gross margin index; asset quality index; sales growth index; depreciation index; selling, general, and administrative expense index; leverage index; and total accruals to total assets" (Grant et al., 2016, p. 40). Beneish et al., (2013) concluded that "the profile of a typical earnings manipulator includes extreme growth, deteriorating fundamentals, and aggressive accounting practices" (p. 57). Each of the eight variables is assigned a weight before being added together to calculate the M-score (Grant et al., 2016). According to Beneish, (1999), an M-score greater than -1.78 indicates that a company may be a possible manipulator, while an M-score less than -1.78 indicates a company may be a possible non manipulator. According to Omar et al., (2014) "total M-Score calculated bigger than -2.22 suggests that the companies have manipulated their earnings" (p. 185). Financial statement manipulation is typically an ongoing, in-depth procedure (Repousis, 2016). Utilizing Beneish's study, a user can identify potential fraudulent behavior in a business. J. M. Rendon (2022) used Beneish's M-score to illustrate if a company could possibly be manipulating its financial statements. Figure 14 (Beneish et al., 2013) displays the formula of the M-score and Figure 15 (Beneish et al., 2013) shows the description of the M-score variables.



$$\begin{aligned}
 M\text{-score} = & -4.84 + 0.920(\text{DSR}) + 0.528(\text{GMI}) \\
 & + 0.404(\text{AQI}) + 0.892(\text{SGI}) \\
 & + 0.115(\text{DEPI}) - 0.172(\text{SGAI}) \\
 & + 4.679(\text{Accruals}) - 0.327(\text{LEVI}).
 \end{aligned}$$

Figure 14. Formula of M-Score Model. Source: Beneish et al. (2013).

Exhibit A1. Description of Variables and Rationale for Inclusion		
Variable	Description (numbers in brackets are Compustat codes)	Rationale
DSR	$(\text{Receivables}_t [2]/\text{Sales}_t [12]) / (\text{Receivables}_{t-1} / \text{Sales}_{t-1})$	Captures distortions in receivables that can result from revenue inflation
GMI	Gross margin <sub>t-1</sub> /Gross margin <sub>t</sub> , where Gross margin = 1 – Costs of goods sold [8]/Sales	Deteriorating margins predispose companies to manipulate earnings
AQI	$[1 - (\text{PPE}_t + \text{CA}_t) / \text{TA}_t] / [1 - (\text{PPE}_{t-1} + \text{CA}_{t-1}) / \text{TA}_{t-1}]$ , where PPE is net [8], CA is current assets [4], and TA is total assets [6]	Captures distortions in other assets that can result from excessive expenditure capitalization
SGI	$\text{Sales}_t [12] / \text{Sales}_{t-1}$	Managing the perception of continuing growth and capital needs predisposes growth companies to manipulate sales and earnings
DEPI	Depreciation rate <sub>t-1</sub> /Depreciation rate <sub>t</sub> , where Depreciation rate equals Depreciation [14–65]/(Depreciation + PPE [8])	Captures declining depreciation rates as a form of earnings manipulation
SGAI	$(\text{SGA}_t [189] / \text{Sales}_t [12]) / (\text{SGA}_{t-1} / \text{Sales}_{t-1})$	Decreasing administrative and marketing efficiency (larger fixed SGA expenses) predisposes companies to manipulate earnings
Accruals <sup>a</sup>	$(\text{Income before extraordinary items [18]} - \text{Cash from operations [308]}) / \text{Total assets, [6]}$	Captures where accounting profits are not supported by cash profits
LEVI	$\text{Leverage}_t / \text{Leverage}_{t-1}$ , where Leverage is calculated as debt to assets: (5 + 9)/6	Increasing leverage tightens debt constraints and predisposes companies to manipulate earnings

Figure 15. Description of M-Score Variables. Source: Beneish et al. (2013).

## 2. Bankruptcy Analysis

Over the years, several bankruptcy prediction models have been developed that utilize financial ratios as the plausible financial indicator (Punsalan, 1989). Beaver's (1966) model, which employs "univariate discriminant analysis" and Altman's (1968) model, which employs "multivariate discriminant analysis" are two significant studies that established using financial ratios to determine possible bankruptcy (Punsalan, 1989, p. 6).

In his study, William H. Beaver (1966) explained “*failure*” as businesses incapacity to pay their financial liabilities when they matured and “utilized the first modern statistical evaluation models to estimate financial failure” (Punsalan, 1989, p. 6). He took a sample of 79 failed manufacturing concerns, for the period between 1954 and 1964. Their asset worth of the selected companies “from \$0.6 million to \$45 million with a mean of approximately \$6 million” (Punsalan, 1989, p. 7). “A set of non-failed companies similar in asset size were also selected to compare against the failed companies” (Punsalan, 1989, p. 7). Beaver (1966) analyzed 30 ratios from each group’s financial statements of five years before bankruptcy. Punsalan (1989) stated that “in comparing the mean values, Beaver (1966) concluded that with a degree of regularity the data demonstrated differences in the mean for at least five years before failure, with the differences increasing as the years of failure approaches” (p. 7). Beaver (1966) identified a distinction in the ratios of successful and unsuccessful companies. Beaver (1966) discovered “the best ratios to identify failure are cash flow/total assets, cash flow/total debt, and net income/total debt” (Punsalan, 1989, p. 8).

Following Beaver’s (1966) work, some scholars examined multivariate methods for choosing a collection of ratios that effectively distinguishes between unsuccessful and successful companies. The most important study was conducted in 1968 by Edward I. Altman. Altman (1968) used a “multiple discriminant analysis” (Punsalan, 1989, p. 6) in this work because he was aware of the risks of merely using ratios from a single variable. His work was later called Z-score model (Altman, 1968). The financial models of 33 manufacturing companies that initiated bankruptcy between 1946 and 1965 were used in Altman’s discriminant model, along with a stratified sample of 33 companies that did not file for bankruptcy (Altman, 1968). The manufacturing companies’ assets ranged in size from \$0.7 to \$25.9 million (Altman, 1968). Altman (1968) selected the following 5 ratios from a list of 22 ratios to develop the final discriminant function (Altman, 1968; Punsalan, 1989):

$$Z = 0.012X_1 + 0.014X_2 + 0.033X_3 + 0.006X_4 + 0.999X_5$$

where:



- X1 = working capital/total assets
- X2 = retained earnings/total assets
- X3 = earnings before interests and taxes/total assets
- X4 = market value of equity/book value of total debt
- X5 = sales/total assets

The previously mentioned function was first tested with the initial 66 sample companies. 95% of the entire sample, or 63/66, was properly identified by “the empirical results of the model” (Punslan, 1989, p. 11) one year before bankruptcy. There was a general decline in accuracy to 83% for the two years preceding the bankruptcy. According to the Altman Model’s evidence, bankruptcy can be forecast at least two years in advance (Punsalan, 1989). Altman (1968) additionally concluded that companies are categorized as bankrupt if their Z scores are less than 1.81 and non-bankrupt if they are larger than 2.99. Due to the potential for incorrect categorization, companies with “scores between 1.81 and 2.99 are in the zone of ignorance due to the possibility of error classification” (Punsalan, 1989, p. 12).

To maintain the level of accuracy, Altman (2000) revised his model considering regular financial structural changes of companies. The revised model adopted four ratios: “working capital divided by total assets, retained earnings divided by total assets, net profit before interest and taxes divided by total assets, and shareholder’s equity divided by total liabilities” (Grant et al., 2016, p. 38). For the updated mode, Altman (2000) concluded that a Z-score of less than 1.10 suggests that a company is on the verge of bankruptcy, while a Z-score of more than 2.60 would suggest a company is not facing bankruptcy. When the Z-score falls between these two figures, bankruptcy cannot be forecast. According to Altman (1968), the use of the Z-score model can be of benefit to a creditor, like a bank, to help with loan application investigations, saving money for the financial institutions. J. M. Rendon (2022) included the Z-score model in the financial analysis framework to assess the financial health of companies.

The literature review discussed in the previous sections provided a knowledge base regarding contract management standards, financial reporting standards, and methods of financial analysis. These standards and financial methods are general frameworks and may be applied to any type or nature of business. The next section



provides a discussion on procurement policies, and procurement fraud remedies specific to Pakistan defense procurement. The accounting standards that Pakistan publicly traded companies follow for financial reporting are also discussed.

#### **M. REFORMS AND PUBLIC PROCUREMENT REGULATORY AUTHORITY IN PAKISTAN**

Khan and Akkoc (2016) state that in 1997–1998, World Bank auditors conducted their initial evaluation of Pakistan’s procurement system. It was then revealed that 3,700 of the 4,524 contracts reviewed could not be completed due to a lack of statutory framework, as depicted in Figure 16. Khan and Akkoc (2016) also state that the World Bank recommended fostering a public procurement law as per the United Nations Commission on International Trade and Law procurement model. The World Bank also recommended that a small, professionally trained, and independent agency be created so that the regulatory agency could formulate policies, documentation, and rules and regulations (Khan & Akkoc, 2016). Since the independence of Pakistan, there was no central regulatory authority for monitoring public procurement in the country (Nazir & Nadeem, 2015). According to Hussein & Najib (2021), the Pakistan institute of development economics shows that a developing country like Pakistan spent 20% of its gross domestic product on the public procurement sector annually and was facing many problems in its public procurement, which could be improved through an efficient and effective procurement system. These reasons necessitate procurement reforms in Pakistan. Figure 16 (Khan & Akkoc, 2016) represents the need for procurement reforms in Pakistan.







Figure 16. World Bank Assessment of Pakistan's Procurement System in 1997–1998. Source: Khan & Akkoc (2016)

In addition, Table 6 shows motives for procurement reforms in Pakistan.

Table 6. Motives for Procurement Reforms in Pakistan. Source: Pakistan Public Procurement Regulatory Authority (PPRA rule, Federal Government of Pakistan, 2004).

<ul style="list-style-type: none"> <li>• The rules, regulations, and manuals were outdated.</li> </ul>
<ul style="list-style-type: none"> <li>• The rules were not compatible with international standards.</li> </ul>
<ul style="list-style-type: none"> <li>• Public procurement suffered because the staff was not capable and could not manage the funds properly.</li> </ul>
<ul style="list-style-type: none"> <li>• Professionals in public sector procurement were not properly trained.</li> </ul>
<ul style="list-style-type: none"> <li>• Lack of sound planning and detailed evaluation created massive hurdles and bottlenecks in procurement procedures.</li> </ul>
<ul style="list-style-type: none"> <li>• The rules and regulations were limited to supply and construction bidding procedures only.</li> </ul>
<ul style="list-style-type: none"> <li>• There were no rules and regulations for service procurements.</li> </ul>
<ul style="list-style-type: none"> <li>• The rules were not well-defined to prevent fraud or corruption.</li> </ul>
<ul style="list-style-type: none"> <li>• A system for updating the existing rules and regulations to reflect user requirements was lacking.</li> </ul>

The PPRA was established in 2004 at the recommendation of the World Bank survey and upon government and related shareholders' consultation under the PPRA Ordinance (PPRA rule, Federal Government of Pakistan, 2004). The PPRA website states, "PPRA is an autonomous body endowed with the responsibility of prescribing



regulations and procedures for public procurements by Federal Government owned public sector organizations” (ppra.org.pk, n.d.). PPRA rules and regulations are mainly based on international best practices (PPRA rule, Federal Government of Pakistan, 2004). The PPRA is also responsible for monitoring the procurement of public organizations and improves the transparency, governance, accountability, and quality of defense stores of public procurement (PPRA rule, Federal Government of Pakistan, 2004). All procuring organizations of the federal government are bound to follow PPRA rules for the procurement of defence stores. The Pakistan defense purchase procedure and instructions being utilized in procurement of defense stores are discussed in the next section.

## **N. PAKISTAN DEFENSE PURCHASE PROCEDURE AND INSTRUCTIONS**

Every year, the Pakistan MoD allocates billions of Pakistan rupees to support Pakistan’s defense acquisition. According to DPPI-35, a book containing all of the relevant clauses of PPRA rules and defense procurement procedures and instructions, defense acquisition is a complex and specialized decision-making activity (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017). It involves awareness of financial regulations and the highest standards of transparency, public accountability, and integrity (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017).

The Pakistan Directorate General Defense Procurement (dgdp.gov.pk, n.d.) states that since the inception of Pakistan, the Defense Purchase Directorate has been performing the task of defense procurement. It was merged with the Director General Munition Production in 1967 and named Directorate General Munition Production and Procurement. Directorate General Munition Production and Procurement was made responsible for the indigenous production and procurement of defense stores in the country. In 1970, the directorate was divided into two separate entities, Directorate General Munition Production and Directorate General Defense Purchase (dgdp.gov.pk, n.d.). Since then, the DGDP has been responsible for the procurement and disposal of defense stores (dgdp.gov.pk, n.d.). Three directorates of Procurement work under the functional and administrative cover of DGDP: Directorate of Procurement Pakistan Army, Directorate of Procurement Pakistan Navy, and Directorate of Procurement



Pakistan Air Force (dgdp.gov.pk, n.d.). These directorates are granted financial power for the procurement of defense stores and services for respective military service up to the amount delegated by the DGDP.

The DGDP is also responsible for formulating and issuing the overall procurement policy for defense stores under the policy guidelines laid down by the PPRA, as the PPRA is a regulatory body responsible for monitoring, assessing, and streamlining public procurement activity within Pakistan. Some of the existing rules, procedures, and instructions being extensively used in defense procurement are illustrated next.

### **1. Principles of Procurement**

As previously mentioned, defense procurement follows the principles of procurement included in the PPRA rules (PPRA rule, Federal Government of Pakistan, 2004). PPRA (2004) rule 4 states that the government should ensure that procurement is being carried out in a “fair and transparent manner” through an “efficient and economical” (p. 4) procurement system. Thus, the objective of procurement is to create good value for public money.

### **2. Pre-qualification of Suppliers and Contractors**

Rule 15 of PPRA states that the government should engage in a pre-qualification process before the request for proposal (PPRA rule, Federal Government of Pakistan, 2004). With regard to construction projects and highly technical equipment, pre-qualification questionnaires are compulsory. The pre-qualification process’ objective is to assure that only financially and technically sound contractors with great expertise are encouraged to submit bids (PPRA rule, Federal Government of Pakistan, 2004). The government should consider certain factors about the contractor while engaging in pre-qualification, such as past performance and relevant experience, managerial skills, financial position, and any other factors that the government deems appropriate (Rafique et al., 2016).



### 3. Criteria for Evaluation

Rule 29 of PPRA includes the bid evaluation criteria (PPRA rule, Federal Government of Pakistan, 2004). The government is required to formulate a suitable bid evaluation criterion against which an evaluation of the bid is to be carried out. This evaluation criteria needs to be published in the solicitation documents (PPRA rule, Federal Government of Pakistan, 2004). If the government cannot publish an unambiguous criterion in the solicitation documents, then it shall be regarded as a “mis-procurement” (Khan & Akkoc, 2016, p. 18). The term *mis-procurement* is used when procurement is made in violation of statutory laws and regulations. PPRA rule 35 also states that the government should announce the bid evaluation results in the bid evaluation report with justifications for accepting or rejecting the bids a minimum of 15 days before awarding the contract (PPRA rule, Federal Government of Pakistan, 2004). According to PPRA rule 38, all of the proposals received will be evaluated by the government against the evaluation criteria, and the lowest bid that is most beneficial for the government will be accepted (PPRA rule, Federal Government of Pakistan, 2004).

Pakistan, similar to the United States, also follows the contract management process for defense procurement contract planning, administering, and closing out. With contracting, there are potential fraud vulnerabilities. Therefore, in defense contracting, procurement fraud has always been a point of concern. The DGDP has formulated and issued necessary policies that narrate the application of fraud remedies when Pakistani defense contractors fail to meet the contractual obligation. These fraud remedies are discussed in the next section.

#### O. FRAUD REMEDIES IN PAKISTAN DEFENSE PROCUREMENT

Fighting procurement fraud involves many different aspects, such as reactionary actions like “criminal investigations, prosecution, civil remedies, and recoveries” as well as administrative remedies like “contractor debarment and suspension” (Kidwell, 2018, p. 7). DPPI-35 outlines the imposition of the following remedies in cases where a Pakistan defense contractor fails to meet the contractual obligations (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017):



### (1) Imposition of Late Delivery Charges

DPPI-35 states that if a Pakistan defense contractor fails to provide defense stores within the stipulated time period and because of the delayed delivery the government has experienced a loss, then the late delivery (LD) charges will be imposed on the contractor (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017). The LD charges are already included in the contract clauses for any delayed delivery of defense stores. If levied, LD charges are recouped at a rate of up to 2%, but not below 1% of the contracts' total value. Except for freight, taxes, and insurance expenses, the total charges for the late-delivered defense stores will not go beyond 10% of the total contract value. The payment authority, Controller Military Accounts, is then informed of the recovery of LD charges from the defense contractors (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017).

### (2) Risk and Expense

The delivery date and time of the defense stores specified in the contract are the most important conditions on which the contract is based. According to DPPI-35 (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017), Pakistani defense contractors are liable to deliver all the defense stores in compliance with the contract's terms and conditions. If the defense contractor fails to deliver the required defense stores as per the contractual terms and conditions, the contract will be canceled at the risk and expense of the defense contractor. Moreover, any additional cost for acquiring defense store from other sources will be recouped from the actual defaulted contractor (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017).

### (3) Blacklisting

A Pakistani defense contractor is prohibited from doing business with the government organizations in the future if they breach their contractual responsibilities and engage in any type of fraud or deception (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017). Likewise, all other procuring



departments are also intimidated to act similarly against the defaulted contractor (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017).

(4) Removal

If a Pakistan defense contractor fails to provide a quote for five successive bids, that contractor will no longer be included on Pakistan's approved contractor list, and no further invitation to tender will be issued to that contractor (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017). However, all previous contracts awarded to that contractor will be fulfilled (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017).

(5) Temporary Stoppage of ITs

If a Pakistan defense contractor's performance for a particular financial year does not meet the contractual criteria, then during the next financial year, an invitation to tender will not be issued to that defaulted contractor for a specific period typically three months (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017). However, proposals already received by the government or expected to be received against an already issued invitation to tender will be taken into consideration (Director General Defense Procurement, Ministry of Defense Government of Pakistan, 2017). The accounting standards that publicly traded companies in Pakistan use to prepare and report financial statements are covered in the subsequent section.

**P. ACCOUNTING STANDARDS FOR PUBLICLY TRADED COMPANIES OPERATING IN PAKISTAN**

In Pakistan, all publicly traded companies are listed on the Securities and Exchange Commission of Pakistan. These companies follow the same GAAP as U.S. companies for reporting and preparing financial statements. The financial statements are comprised of balance sheets, income statements, cash flow statements and stockholders' equity statements. In the annual reports, companies present horizontal, vertical, and ratio analyses. Not every company presents all the financial analyses. For ratio analyses especially, companies present their own selected groups of ratios. These financial statements are available on the Pakistan Stock Exchange and individual company



websites for the public and stakeholders' information. In the absence of a standard financial health assessment framework of Pakistan defense contractors, there is a need to develop an Integrated Financial Analysis Framework for Pakistani defense contracting officers, which is discussed in the next section.

**Q. NEED FOR AN INTEGRATED FINANCIAL ANALYSIS FRAMEWORK FOR PAKISTANI DEFENSE ACQUISITION OFFICERS**

The literature reviewed in this research study established that Pakistani defense contracting organizations also use the same contract management standard as that of the National Contract Management Association for contract planning, awarding, administering, and closing out. Publicly traded companies in Pakistan use the GAAP for financial reporting. These companies utilize commonly used trend and ratio analysis tools for presenting financial statement analyses. Specific to Pakistan, public and defense procurement policies, as well as policies imposing remedial measures in cases where defense contractors fail to meet obligations, are available to Pakistani defense contracting officers. All these standards and policies exist in different places, and the responsibility lies with Pakistani defense contracting officers to educate themselves about these resources' availability and effective utilization during the acquisition process. A set of all relevant policies and financial analysis tools as a compendium is missing. Dr. Juanita M. Rendon (2010, 2022) established the concept for the development and compilation of a financial health analysis framework of companies in any industry. Previous researchers have tailored J. M. Rendon's basic concepts for developing a financial analysis framework in different industries (Grant et al., 2016; Malik, 2017). Seeking to fulfill the need of Pakistan defense contracting officers, the researchers use the basic concepts of J. M. Rendon (2010, 2022) to compile a financial analysis framework specific to Pakistan textile industry by assembling the commonly used financial analysis tools in one place. The methodology used in compiling a financial analysis framework is described in Chapter III, the development of framework is discussed in Chapter IV, and an illustration of the application of the framework is provided in Chapter V. The following section provides a summary for this chapter.



## **R. SUMMARY**

The literature review presented in this chapter set forth a foundation to design a framework for Pakistani defense contracting officers to assess financial health of prospective contractors. The chapter started with the discussion on principle-agent theory. The contract management process was elaborated next. Accounting standards that publicly traded companies use to prepare financial statements were then discussed. The chapter also included the financial statement analysis and different methods to conduct financial analysis. Specific to the Pakistan defense procurement environment, this chapter included a description of the rules, procedures, and instructions exercised in Pakistan for defense procurement. Procurement fraud remedies were discussed with reference to the Pakistan defense procurement environment. Accounting standards for financial reporting used by the publicly traded companies in Pakistan were highlighted. Finally, the need to compile a set of the widely used financial analysis methods to assist Pakistani defense contracting officers in financial health assessment of contractors was emphasized. The next chapter provides a discussion on the methodology used in this research study.



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### **III. METHODOLOGY**

This chapter provides a discussion on the methodology used in this research. Development of the Integrated Financial Analysis Framework is also discussed. The next section provides an introduction to this chapter.

#### **A. INTRODUCTION**

The methodology and methods used for this research study are discussed in this chapter. The development of an Integrated Financial Analysis Framework to supplement the existing Pakistan defense procurement rules, policies, and procedures to determine the financial health of defense contractors is discussed. Sample selection criteria for publicly traded companies in Pakistan's textile industry is described. An overview of the processes used to analyze the financial health of publicly traded companies in the Pakistan textile industry is also highlighted. Finally, the limitations of the research are briefly discussed. The methods used for this research study are discussed in the next section.

#### **B. METHODS**

The research follows a logical progression, beginning with the literature review of previous academic studies, publications, standards, books, rules, and regulations pertaining to contracting and financial analysis while focusing on the research questions on which this research study is based. Since, uniform is the hallmark of the military, and Pakistan has a large manufacturing textile sector; therefore, this research focuses on Pakistan's textile industry. This study identifies widely used financial analysis tools to evaluate a publicly traded company's financial health. When analyzing the financial statements of Pakistani publicly traded companies, the literature review helps in the identification of financial health indicators. Using the basic financial statement analysis concepts of J. M. Rendon (2010, 2022), this research compiles commonly used financial analysis tools specific to Pakistan's textile industry to develop an Integrated Financial Analysis Framework. The application of the framework is illustrated on a sample of six publicly traded companies in Pakistan's textile industry. The Integrated Financial



Analysis Framework may supplement existing policies and procedures to evaluate the financial position of prospective Pakistani defense contractors before the government awards contracts. Finally, the research findings address the research questions and provide recommendations based on the findings.

### **C. DEVELOPMENT OF INTEGRATED FINANCIAL ANALYSIS FRAMEWORK**

Considering the basic financial statement analysis concepts presented by J. M. Rendon (2010, 2022), commonly used financial analysis tools specific to the Pakistan textile industry are to be identified to develop an Integrated Financial Analysis Framework as shown in Appendix A. The Integrated Financial Analysis Framework is meant to supplement the existing rules, policies, and procedures utilized by Pakistani defense contracting officers in the financial health assessment of a prospective contractor. By implementing the Integrated Financial Analysis Framework, Pakistani defense contracting officers would be in a better position to evaluate the financial health of prospective defense contractors to ensure that the contractors had the financial capability before awarding contracts.

### **D. SAMPLE SELECTION**

The developed Integrated Financial Analysis Framework is applied to a sample of companies to illustrate the use of the framework. The sample is chosen based on three criteria. The first criterion chooses only publicly traded companies for this research since their annual reports are publicized on companies' website and the Pakistan Stock Exchange Limited website (<http://financilas.psx.com.pk/>). Publicly traded companies submit their annual reports to the Pakistan Stock Exchange Limited. A publicly traded company's annual report includes financial statements comprising of income statement, balance sheet, cash flow statement and stockholders' equity statement. The public can access these financial statements on the Pakistan Stock Exchange Limited website. Furthermore, publicly traded companies prepare their financial statements as per GAAP. The financial analysis tools researched in this research study are applied to the appropriate financial statement data to illustrate the Integrated Financial Analysis Framework.



The second criterion is the choice of the industry. Uniforms are a symbol of the military. The Pakistan military forces procure uniforms through contracts from companies working in the Pakistan textile industry. Pakistan has a large textile manufacturing sector (Invest Pakistan. n.d.); therefore, in this research study, the financial analysis focuses on the textile industry. There are roughly 12 economic sectors in Pakistan, including those that produce raw resources, food, chemicals, various manufactured goods, and pharmaceuticals. Up to 38.8% of the activities of textile companies in the private sector are involved in the manufacture of raw materials (Samo & Murad, 2019). According to Invest Pakistan (n.d.), Pakistan is the fourth-largest producer, third-largest consumer, and the eighth-largest exporter of textile goods in Asia. 40% of Pakistan's labor force is employed by the country's textile industry, which accounts for 46% of the country's whole manufacturing sector (Invest Pakistan, n.d.). There are 423 textile industries working in Pakistan, and 5% of the total textile industries are registered in the stock exchange (Invest Pakistan. n.d.). Textile companies are registered in the Pakistan Stock Exchange under three sectors: textile composite, textile spinning, and textile weaving (Pakistan Stock Exchange. n.d.). The textile composite sector manufactures and sells yarn and woven fabrics. The textile spinning sector manufactures and sells cloth and hosiery products, and the textile weaving sector weaves yarn and sells processed fabric. Of the 122 textile companies registered in the Pakistan Stock Exchange, 51 are engaged in the textile composite business, 62 are engaged in textile spinning, and 9 are in the textile weaving business. The researchers chose the textile industry for their sample selection and the textile composite sector for their sector.

The third sample selection criterion used to select a company is its market share price, as shown on the Pakistan Stock Exchange Limited (n.d.) website. Among the share price of the 51 Pakistan textile composite companies, two companies are selected with the highest market share prices, two with medium share prices, and two with the lowest market share prices.

Based on the selection criterion, six publicly traded companies from the Pakistan textile composite sector of the textile industry are selected to illustrate application of Integrated Financial Analysis Framework. Annual reports of these companies for 6 years,



from 2016 to 2021, are available on the Pakistan Stock Exchange Limited (n.d.)). For privacy, the companies are referred to in this research as Companies A, B, C, D, E and F.

#### **E. DATA ANALYSIS PROCESS FOR ILLUSTRATION**

For illustration purposes, a comprehensive financial analysis is performed on the financial statements which include balance sheets, income statements, cash flow statements, and notes thereon of each of the six selected publicly traded companies from the Pakistan textile industry, textile composite sector. Comprehensive financial analysis is performed in five portions: horizontal, vertical, ratios, fraud, and bankruptcy analyses. The ratios analysis includes five sub-categories: liquidity, debt management, efficiency, profitability, and market value. The data obtained through horizontal, vertical, and ratio analyses aids in locating any anomaly or major departure from a company's regular financial behavior. Any irregularity in a company's financial performance trend could raise questions about its financial health. In addition, multivariate analysis is performed which includes fraud analysis and bankruptcy analysis. The fraud analysis determines whether a company may be involved in fraudulent financial reporting. The bankruptcy analysis predicts a company's existing and possible capability of continuing in business or possibly of facing bankruptcy.

#### **F. LIMITATIONS**

The industry averages of the Pakistan textile industry are not publicized in any official or authorized document or website. Therefore, industry averages of the U.S. textile industry, as available on the Ready Ratios (<https://www.readyratios.com>) and Investing.com (<https://www.investing.com>) websites, are used for the comparison of financial data. In addition, in the absence of a standard pattern for ratio calculation in sample Pakistan textile composite companies' annual reports, academic formulas for calculations of financial ratios are used.

#### **G. SUMMARY**

This chapter described the methodology and provided the methods adopted to conduct the research. The development of the Integrated Financial Analysis Framework as a supplement to existing rules, policies, and procedures in financial health evaluation



of a Pakistan defense contractor was described. The criteria for selection of the sample publicly traded companies from the Pakistan textile industry was discussed. An overview of financial analysis tools commonly utilized in financial health assessment of sample publicly traded companies was provided. The limitations of the research were also highlighted. Next chapter discusses findings for the financial analysis framework.



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## **IV. FINDINGS FOR THE DEVELOPMENT OF THE INTEGRATED FINANCIAL ANALYSIS FRAMEWORK**

The chapter provides a discussion on the findings for the development of the Integrated Financial Analysis Framework. The next section provides the introduction.

### **A. INTRODUCTION**

Referring to the basic financial analysis concepts presented by J. M. Rendon (2010, 2022), this research aims to develop an Integrated Financial Analysis Framework, specifically to aid Pakistani defense contracting officers in the financial health assessment of prospective defense contractors. From the literature review, the researchers determine the various financial analysis tools that are helpful in the financial health assessment of publicly traded companies from different financial perspectives. The analytical tools include horizontal analysis, vertical analysis, ratio analysis, as well as multivariate analysis which encompasses fraud analysis and bankruptcy analysis which are discussed in detail in subsequent sections. The researchers combine financial analysis tools specific to the Pakistan textile industry to develop an Integrated Financial Analysis Framework (Appendix A). In Chapter V, the researchers illustrate the framework to analyze the financial statements of companies selected from the textile composite sector of the Pakistan textile industry. There are a few areas that are also considered while selecting the sample of companies, which are discussed next.

### **B. SELECTION OF SAMPLE**

In order to illustrate the use of the Integrated Financial Analysis Framework, six publicly traded companies were selected from the textile composite sector of the Pakistan textile industry. The audited annual reports, including financial statements, of these companies for the last six years, from 2016 to 2021, are available to the public on the websites of the individual companies and the Pakistan Stock Exchange. For the sake of privacy, names of these companies are mentioned in the research as Companies A, B, C, D, E, and F. Due to the non-availability of industry averages of the Pakistan textile industry on any official or authorized document or website, industry averages of the U.S.



textile industry, as available on the websites of Ready Ratios (<https://www.readyratios.com>) and Investing.com (<https://www.investing.com>), are used for the comparison of financial data. Academic formulas are used for calculations of financial ratios for a sample of six selected companies from Pakistan textile industry textile composite sector.

The subsequent sections provide a discussion on the financial tools, which are combined as an Integrated Financial Analysis Framework developed for the financial health assessment of prospective Pakistan defense contractors. The first tool, horizontal analysis, is discussed next.

### **C. HORIZONTAL ANALYSIS**

One of the most common and effective techniques employed in financial analysis is horizontal analysis. It requires comparing two periods horizontally, in which one period is the base and other period is expressed as a percentage of the base (Kennedy & McMullen, 1973). The ability to identify trends is the primary benefit of performing a horizontal analysis (Revsine et al., 2002). A horizontal trend analysis reveals patterns over time and provides data on the rise or fall of accounting values in financial statements. Malik (2017) states that comparative analysis compares trends in financial statements. Grant et al., (2016) contend that horizontal analysis is a quick financial metric that is available to contracting officers to evaluate a company's financial statements over different periods. Horizontal analysis is used to analyze income statements, balance sheets, and cash flow statements. In the analysis, figures for line items of successive financial statements are compared to determine performance and areas of improvement. J. M. Rendon (2010) used horizontal analysis as a method to analyze the financial statements of any company. The researchers selected horizontal analysis as a part of the Integrated Financial Analysis Framework. The Integrated Financial Analysis Framework may help the Pakistani defense contracting officers in the financial health assessment of a defense contractor to ensure the contractor has the financial capability before a contract is awarded. The next section discusses the vertical analysis tool.





#### **D. VERTICAL ANALYSIS**

Vertical analysis highlights financial position changes from a different viewpoint than horizontal analysis. Horizontal analysis compares the figures across periods while vertical analysis compares each line item as a percentage of the total vertically down a period (Malik, 2017). Vertical analysis can be quite useful for analyzing the present financial position of a company and comparing companies operating in the same industry (Kennedy & McMullen, 1973). During the bid evaluation process, information obtained from horizontal analysis enables contracting officers to compare the financial health of prospective contractors side by side (Grant et al., 2016). J. M. Rendon (2010) used vertical analysis to compare the financial statements of any company. The researchers selected vertical analysis as a part of the Integrated Financial Analysis Framework. The Integrated Financial Analysis Framework may help the Pakistani defense contracting officers in the financial health assessment of a defense contractor to ensure the contractor has the financial capability before a contract is awarded. The following section discusses commonly used ratios.

#### **E. COMMONLY USED RATIOS FOR THE FINANCIAL HEALTH ASSESSMENT OF A COMPANY**

In ratio analysis, financial data of balance sheets and income statements are compared to interpret a company's or industry's performance (Kennedy & McMullen, 1973). For companies' financial health assessment, various ratios are calculated (Grant et al., 2016). All financial ratios are categorized under five main categories, which are liquidity, debt management, profitability, efficiency, and market value (J. M. Rendon, 2010). Each of these categories focuses on different components of a company's financial structure, that when combined, account for total financial health (Rist & Pizzica, 2015). However, only a few of the ratios of each category are widely used in the financial analysis process (Grant et al., 2016). The researchers selected the two most common ratios from each category, a total of 10, to develop the Integrated Financial Analysis Framework. The selected ratios are particular to the textile industry; however, these can be utilized in any industry after some adjustment. The Integrated Financial Analysis Framework may help the Pakistani defense contracting officers in



the financial health assessment of a defense contractor to ensure the contractor has the financial capability before a contract is awarded. Table 7 shows the 10 ratios selected for financial analysis along with their calculation procedures.

Table 7. Selected Ratios for Integrated Financial Analysis Framework. Sources: J. M. Rendon (2010); Rahman (2011); Pervaiz et. al. (2013); Ali et. al. (2015); Grant et al. (2016); Ramachandran and Madhumathy (2016); Malik (2017); and Samo and Murad (2019).

Categories	Ratios	Formulas	Use
<b>Liquidity Ratios</b>	Cash Ratio	$\frac{\text{Cash and cash equivalents}}{\text{Current Liabilities}}$	Calculates a company's capacity to pay short-term liabilities.
	Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	
<b>Debt Management Ratios</b>	Debt Ratios	$\frac{\text{Total Liabilities}}{\text{Total Assets}}$	Calculates leverages of a company.
	Debt-to-Equity Ratio	$\frac{\text{Total Liabilities}}{\text{Interest Equity}}$	Determines the debt a company is willing to use rather than equity to fund its operations.
<b>Efficiency Ratios</b>	Total Asset Turnover	$\frac{\text{Sales}}{\text{Total Assets}}$	Calculates the sales a company generated from investment in assets
	Inventory Turnover	$\frac{\text{Cost of Goods Sold}}{\text{Inventory}}$	Calculates the frequency at which a company sells and replaces its inventory
<b>Profitability Ratios</b>	Return on Assets (ROA)	$\frac{\text{Net Income}}{\text{Total Assets}}$	Assesses a company's efficiency to produce profits from its assets.
	Net Profit Margin Ratio	$\frac{\text{Net Profit}}{\text{Sales Revenue}}$	Calculates revenue or profit earned from sales.
<b>Market Value Ratios</b>	Price Earning (P/E) Ratios	$\frac{\text{Market Price of Common Stock}}{\text{EPS}}$	Calculates price at which investors desire to buy a company's stocks.
	Dividend Payout Ratios	$\frac{\text{Dividends Payment}}{\text{Net Income}}$	Determines the percentage of profits distributed to shareholders.

### 1. Commonly Used Liquidity Ratios

A company's liquidity, or capacity to transform assets into cash, determines its capacity to meet its immediate obligations like accounts payable (Warren, 2016). Rist & Pizzica (2015) explain that liquidity ratios analyze whether companies are able to pay their short-term debts, which are required within a year. Stakeholders of a company use



liquidity ratios for financial health assessment and to ascertain the company's debt repayment capacity. Companies utilize these ratios to decide about managing their debt, spending, and planning for potential future expansion (Rist & Pizzica, 2015). The most frequently used liquidity ratios are quick ratio, current ratio, cash flow liquidity ratio (Rendon, 2010) and cash ratio (Pervaiz et al., 2013).

The researchers selected two liquidity ratios specific to the textile industry: cash ratio and current ratio, for development of Integrated Financial Analysis Framework. These are important financial metrics and can also be applied to any industry. Liquidity ratios help stakeholders determine the liquidity position of a company at any given period. If the company's liquidity ratios are below the industry averages, its liquidity position may be considered weak. However, a company with a greater liquidity ratio has a strong liquidity position (Malik, 2017). If financial managers are interested in achieving long-term financial growth, they should concentrate on the liquidity management policies and liquidity components (Samo & Murad, 2019).

#### **(a) Cash Ratio**

The cash ratio compares “cash and cash equivalents to the total current liabilities of the company” (Pervaiz et al., 2013, p. 227). The cash ratio shows the strength of cash-in-hand of a company. According to Pervaiz et al., (2013), “cash ratio is the improved form of the quick ratio and is more conservative approach and describes how quickly a company can write off its short-term debt” (p. 228). A cash ratio of 0.9 means that the company has cash and cash equivalents of nine cents to pay current liabilities of one dollar. Since total current liabilities are made up of several companies' liabilities like accounts payable, wages payable, insurance payable, many factors can have an impact on this ratio, both positively and negatively. It is preferred for the cash ratio to rise over time (Khan et al., 2013).

#### **(b) Current Ratio**

Warren (2016) states that “the current ratio is sometimes called the working capital ratio or banker's ratio and is calculated by dividing current assets by current liabilities” (p. 365). It shows whether the business has enough cash to service its immediate debts and liabilities for a period of about 12 months. A high current ratio



means the business is more capable of paying off debts (Malik, 2017). A lower current ratio indicates that the business is having trouble covering its short-term debts. A current ratio of 1 or greater is considered ideal, while a current ratio of less than 1 is a reason for concern (Rist & Pizzica, 2015). As an illustration, a current ratio of 2.9 means that a company maintains \$2.90 in current assets against every \$1 in current liabilities. In addition, good current ratios will vary from industry to industry (Grant, 2016), so it is important to review industry averages.

## **2. Commonly Used Debt Management Ratios**

According to Warren (2016), “solvency is the ability of a company to pay its debts as they become due over a long period of time, which includes the company’s ability to pay interest and loans as they mature” (p.370). By examining the total amount of debt, a company owes and the proportion of equity it owns, debt management ratios can be used to assess its solvency and level of financial leverage (Rist & Pizzica, 2015). An important aspect depicting a company’s financial health is its capacity for repaying long-term debt. Besides possessing sufficient liquidity to pay a short-term debt, a company must also have adequate liquidity to pay a long-term debt (Grant et al., 2016). In order to reduce risk and maintain profitability, a company must have effective debt management (Samo & Murad, 2019)

The researchers select two debt management ratios specific to the textile industry: debt ratio and debt-to-equity ratio, to develop an Integrated Financial Analysis Framework. Both ratios can be applied to any company as they indicate financial health showing how much a company finances its assets with debts. A greater debt ratio specifies a company as more indebted, and a lower debt ratio indicates a company as taking fewer risks. A significantly low debt ratio, though, can also indicate that the company may not be utilizing opportunities for expansion (Malik, 2017).

### **(a) Debt Ratio**

The debt ratio of a company is calculated when dividing its total liabilities by its total assets, sometimes referred to as the leverage ratio (Rist & Pizzica, 2015). A lower debt ratio compared to industry averages can indicate that the company is utilizing debts



properly and assets are financed by equity (Koetter et al., 2014). A high debt ratio means that bonds or bank loans hold the majority of a company's finance. A debt ratio calculates the percentage of assets funded by debt (Valipour et al., 2012). For illustration purposes, a company maintains a debt ratio of 0.8, this means that for every one dollar of assets, debt accounts for eight cents. Large debt and interest payments make companies more susceptible to financial difficulties, which could lead to bankruptcy. This condition also creates challenges for companies to obtain new loans. The assets and profits may not be enough to pay off the loans (Septyanto et al., 2022).

### **(b) Debt-to-Equity Ratio**

A company's debt-to-equity ratio is calculated when dividing the total value of its liabilities by the value of its shareholders' equity (J. M. Rendon, 2010). This ratio indicates the financial leverage of a company. The best debt-to-equity ratio is regarded as between 1 and 2, however, it varies with the nature of the industry. A low debt-to-equity ratio means the company has less external borrowing and low-interest expenses. It may also be interpreted as the business not capturing opportunities to grow. A high debt-to-equity ratio alerts shareholders regarding the company's finances. A higher debt-to-equity ratio may also reveal that a company is forceful in its financing strategy and is actively trying to grow (Khan et al., 2013). To illustrate, a 1.8 debt-to-equity ratio means that the company owes \$1.80 of debt against every \$ 1 of equity.

## **3. Commonly Used Efficiency Ratios**

Efficiency ratios are also termed as turnover or performance ratios as well as asset management ratios (Grant et al., 2016). The efficiency ratio calculates a company's capacity to produce sales and earn profit by utilizing its resources (Rist & Pizzica, 2015). Efficiency ratios often consider the time element utilized in the collection process of a company. This element indicates the time a company takes to convert its inventories into sales and how much sales are generated from business assets.

The researchers selected two efficiency ratios specific to the textile industry: total asset turnover and inventory turnover as part of the Integrated Financial Analysis Framework. These ratios can also be applied to any industry and are important indicators



of financial health and assist stakeholders in determining how effectively a company manages asset turnover and sales. A higher total asset turnover ratio and higher inventory turnover ratio are preferable (J. M. Rendon, 2016).

**(a) Total Asset Turnover**

A company's total asset turnover is calculated when dividing the value of its total sales by the value of its total assets. Warren (2016) states that "the total asset turnover ratio measures how effectively a company uses its assets to generate sales" (p. 372). Companies that maintain a higher asset turnover ratio are considered effective in utilizing their assets to earn revenue. To illustrate, a total asset turnover of 1.7 is interpreted as the company is earning revenues of \$1.7 against utilizing \$1 in total assets. The total asset turnover ratio is extremely industry-specific, like other ratios. Shareholders can gain insight into companies' efficiency to produce revenue by looking at their total asset turnover ratio. This ratio can be applied to compare companies in the same industry to ascertain which company is effectively utilizing its resources.

**(b) Inventory Turnover**

Inventory turnover evaluates a company's efficiency in selling and replacing goods over a certain time period (Rist & Pizzica, 2015). By dividing the ending inventory for any period by the cost of goods sold (COGS) of the same period, inventory turnover is computed. Although inventory is an asset, excess inventory reduces liquidity because cash is used to maintain inventory. A low inventory turnover may signify an excessive investment in inventories, whereas a high inventory turnover frequently indicates that the company is running low on stock, which negatively impacts customer service. The ratio should be greater as it indicates a quick turnover of the stock (Rahman, 2011). To illustrate, an inventory turnover of 3.3 means that the company is selling and replacing its inventory 3.3 times in that given period. Excess inventory raises insurance costs, storage costs, property taxes and other related costs while lowering the chance of expanding or improving operations. A surplus of inventory also raises the possibility of losses from falling prices or inventory obsolescence. Conversely, maintaining sufficient inventory on hand avoids losing sales as a result of low supply. Varied with the type of inventory, the



company, and the industry, several things constitute a good inventory turnover (Warren, 2016).

#### **4. Commonly Used Profitability Ratios**

The effectiveness of a company in turning a profit or growing its revenues can be determined by its profitability ratios (Koetter et al., 2014). Profitability is the ideal metric for evaluating a company. Companies that generate profits are able to pay dividends and maintain a high share price. Profitable companies can use leverage to boost shareholders' equity since profitable businesses will receive loans from creditors at lower interest rates than unprofitable ones (Ramachandran & Madhumathy, 2016). The focus of profitability analysis is on a company's profit generating capability. The operating results of the companies, as shown in their income statements, are indicative of this ability. The assets of the companies, as shown on their balance sheet, also affect their capacity to turn a profit. Warren (2016) states that "the income statement and balance sheet relationships are often used in evaluating profitability" (p. 372).

The researchers selected two profitability ratios specific to the textile industry: return on assets and net profit margin ratio as a part of Integrated Financial Analysis Framework. These ratios are general and can also be applied to any industry. According to J. M. Rendon (2016), companies desire higher ROA and higher net profit margin ratios.

##### **(a) Return on Assets (ROA)**

Warren (2016) states that "the ROA measures the profitability of total assets, without considering how the assets are financed. In other words, this rate is not affected by the portion of assets financed by creditors or shareholders" (p. 373). Stakeholders use an ROA to ascertain a company's efficiency in utilizing resources to earn a profit. The metric is calculated as a percentage in which net income is divided by total sales revenue. Generally, a ROA is represented as a percentage, like 12%. However, it may be expressed as an amount invested. To illustrate, a 12% return on assets may be stated as \$0.12 return for every \$ 1 invested. In other words, for every dollar invested, the company earns twelve cents. A company with higher ROA is considered more capable



because it is utilizing its balance sheet effectively and efficiently to earn profits. Conversely, a company with lower ROA needs improvements in its business processes (Ramachandran & Madhumathy, 2016).

### **(b) Net Profit Margin Ratio**

A company's net profit margin ratio is calculated when dividing the total value of its net income by the value of its sales revenue (J. M. Rendon, 2016). The net profit margin evaluates profitability of industry peers. It can also be used to anticipate the profitability of various industries. It depends on the level of competition, the demand's elasticity, the differentiation of the products, and other elements (Ramachandran & Madhumathy, 2016). For stakeholders and potential investors, it is quite helpful. Also, it shows how well the products are manufactured, run, and sold. To illustrate, a company having a 4.4% net profit margin is earning forty-four cents of net income for every one dollar in net sales. It is preferable to have a higher net profit margin (J. M. Rendon, 2016). A company's lower profitability ratio than the industry averages indicates its inability to provide a reasonable return on owner equity and its lower-efficiency level (Rahman, 2011).

## **5. Common Market Value Ratios**

The variations in company's share prices directly affect its financial performance (Khan et al., 2013). A publicly traded company's stock's current share price is assessed using market value ratios. These measures are used by both existing and prospective investors to assess whether the shares of a company are overvalued or underpriced (Koetter et al., 2014). These ratios also present a company's pattern of income that is distributed among shareholders as dividends. Publicly traded companies are encouraged to distribute more earnings as dividends because it increases the investors' trust in the company. Moreover, by doing so, companies can get credit from the financial market at lower interest rates and for longer periods (Ali et. al., 2015).

The researchers selected two market value ratios specific to the textile industry: price earnings ratio and dividend payout ratio as a part of the Integrated Financial Analysis Framework. These ratios are general and can also be applied to any industry.





### **(a) Price Earnings Ratio**

A company's price earnings ratio is calculated when the market price of its common stock is divided by its earning per share. Warren (2016) states that "the price-earnings (P/E) ratio on common stock measures a company's future earnings prospects and is often quoted in the financial press" (p. 376). It represents how the market perceives a company's potential for future profits (Warren, 2016). Investors and analysts use P/E ratios to assess the relative value of companies' stocks. The P/E ratio can calculate performance of a company over periods, or it can make comparison of performance with industry peers. A higher P/E ratio may indicate the stocks are overpriced. It may also indicate that investors predict that the company will grow fast in the future. For the stock shares, some investors are more willing to pay more than others depending on the investor's risk-taking view or conservatism (Malik, 2017). The higher P/E ratio indicates the future potential of a company to earn a higher return (J. M. Rendon, 2016). A P/E ratio of less than 10 is often interpreted as indicating a company that has declining earnings or is undervalued. A P/E ratio of over 25 usually indicates an expanding company with high earnings potential or a company that is overvalued (Warren, 2016).

### **(b) Dividend Payout Ratio**

A company's dividend payout ratio is calculated when the total value of its dividends payments is divided by its net income (J. M. Rendon, 2016). A company's growth opportunities have a direct relationship with the dividend payout ratio. A company with high chances of growth tends to distribute fewer dividends as it chooses to fund its business growth using internally generated profit (Ali et al., 2015). For example, a company's dividend payout ratio of 21% is interpreted as paying twenty-one cents of dividend per one dollar of net income. Company dividend payout consistency has a direct relationship with the value of a company. Companies that distribute higher and consistent dividends payout ratio experience greater market demand for their stocks which result in higher stock price (Ali et al., 2015). The next section discusses the findings associated with fraud analysis.



## F. FRAUD ANALYSIS

The M-score model developed by Beneish et al. (2013) is a fraud behavior detector that precisely identifies potential fraud behavior related to the manipulation of financial data. This approach can be used to identify whether a company may be falsifying financial data to appear financially stable (Repousis, 2016).

Beneish (1999) states that “General Sales Growth (GSI), Gross Margin Index (GMI), Asset Quality Index (AQI), Sales Growth Index (SGI), Depreciation Index (DEPI), Sales and General and Administrative Expenses Index (SGAI), Total Accrual to Assets or Accruals (TATA), and Leverage Index (LEVI) are the eight fraud ratios that make up the M-Score model” (p. 27). In Figure 17, these eight fraud ratios are displayed.

Exhibit A1. Description of Variables and Rationale for Inclusion		
Variable	Description (numbers in brackets are Compustat codes)	Rationale
DSR	$(\text{Receivables}_t [2] / \text{Sales}_t [12]) / (\text{Receivables}_{t-1} / \text{Sales}_{t-1})$	Captures distortions in receivables that can result from revenue inflation
GMI	Gross margin <sub>t-1</sub> /Gross margin <sub>t</sub> , where Gross margin = 1 - Costs of goods sold [8]/Sales	Deteriorating margins predispose companies to manipulate earnings
AQI	$[1 - (\text{PPE}_t + \text{CA}_t) / \text{TA}_t] / [1 - (\text{PPE}_{t-1} + \text{CA}_{t-1}) / \text{TA}_{t-1}]$ , where PPE is net [8], CA is current assets [4], and TA is total assets [6]	Captures distortions in other assets that can result from excessive expenditure capitalization
SGI	$\text{Sales}_t [12] / \text{Sales}_{t-1}$	Managing the perception of continuing growth and capital needs predisposes growth companies to manipulate sales and earnings
DEPI	Depreciation rate <sub>t-1</sub> /Depreciation rate <sub>t</sub> , where Depreciation rate equals Depreciation [14-65]/(Depreciation + PPE [8])	Captures declining depreciation rates as a form of earnings manipulation
SGAI	$(\text{SGA}_t [189] / \text{Sales}_t [12]) / (\text{SGA}_{t-1} / \text{Sales}_{t-1})$	Decreasing administrative and marketing efficiency (larger fixed SGA expenses) predisposes companies to manipulate earnings
Accruals <sup>a</sup>	$(\text{Income before extraordinary items [18]} - \text{Cash from operations [308]}) / \text{Total assets}_t [6]$	Captures where accounting profits are not supported by cash profits
LEVI	$\text{Leverage}_t / \text{Leverage}_{t-1}$ , where Leverage is calculated as debt to assets: $(5 + 9) / 6$	Increasing leverage tightens debt constraints and predisposes companies to manipulate earnings

Figure 17. Description of M-Score Variables. Source: Beneish et al. (2013).

The following equation contains the formulas to calculate the M-score. An M-score lower than -2.22 means that there is no potential fraud, whereas M-score higher than -2.22, suggests existence of potential fraud or manipulation of figures (Omer et al., 2014). J. M. Rendon (2022) used the M-score model to assess financial statements for fraudulent behavior. The researchers selected the M-score model for fraud detection to develop the Integrated Financial Analysis Framework specific to the Pakistan textile industry. The Integrated Financial Analysis Framework would be useful in the financial

health assessment of prospective contractors. The M-score is a general fraud analysis tool and can be used in any company. The M-score can also be calculated using online M-Score calculators, such as Beneish M-Score calculators from website Beneish M-Score Calculator: Kelley School of Business: Indiana University (iu.edu) (J. M. Rendon, 2022)

$$\begin{aligned}
 M\text{-score} = & -4.84 + 0.920(\text{DSR}) + 0.528(\text{GMI}) \\
 & + 0.404(\text{AQI}) + 0.892(\text{SGI}) \\
 & + 0.115(\text{DEPI}) - 0.172(\text{SGAI}) \\
 & + 4.679(\text{Accruals}) - 0.327(\text{LEVI}).
 \end{aligned}$$

### G. BANKRUPTCY ANALYSIS

A company's Z-Score can determine its potential bankruptcy (Altman, 2000). A company's insolvency can be predicted from its Z-score up to two years beforehand (Altman, 1968). The original formula of the Z-Score is shown in the equation. A Z-Score below 1.1 shows a company's likely bankruptcy, and a Z-Score 2.6 predicts that a company is unlikely to go bankrupt (Grant et al., 2016). Additionally, Gates (1993) states that the Z-Score range of 1.10 to 2.60, is the only range where bankruptcy cannot be predicted. For a business, this is a possible *grey area*.

$$\begin{aligned}
 \text{(I)} \quad Z &= .012X_1 + .014X_2 + .033X_3 + .006X_4 + .999X_5 \\
 \text{where } X_1 &= \text{Working capital/Total assets} \\
 X_2 &= \text{Retained Earnings/Total assets} \\
 X_3 &= \text{Earnings before interest and taxes/Total assets} \\
 X_4 &= \text{Market value equity/Book value of total debt} \\
 X_5 &= \text{Sales/Total assets} \\
 Z &= \text{Overall Index}
 \end{aligned}$$

The following equation shows the simplified version of Z-score formula. J. M. Rendon (2022) applied the Z-score to assess financial statements for potential bankruptcy. The researchers select the simplified version of the Z-Score to develop the Integrated Financial Analysis Framework specific to the Pakistan textile industry. The developed framework would be useful in the financial health assessment of Pakistan prospective contractors. The Z-score is a general tool to deduct possible bankruptcy and can also be applied to any company. The Z-score can also be calculated using online Z-Score calculators, such as Credit Guru Inc from URL <https://www.creditguru.com/>



[index.php/bankruptcy-and-insolvency/altman-z-score-insolvency-predictor](http://index.php/bankruptcy-and-insolvency/altman-z-score-insolvency-predictor) (J. M. Rendon, 2022).

$$Z = 1.2X_1 + 1.4X_2 + 3.3X_3 + 0.6X_4 + 1.0X_5.$$

The following is the visual state of Z-score analysis interpretation (J. M. Rendon 2022).

#### Z-Score Analysis:

- **Above 3.0** : Company is safe based on financial figures
- **Between 2.7 – 2.99** : On Alert. Zone area where once should exercise caution.
- **Between 1.8 – 2.70** : Good chances of the company going bankrupt within 2 years.
- **Below 1.80** : Probability of financial embarrassment.

## H. SUMMARY

There are many financial tools, metrics, and methods available for the financial health assessment of companies. Considering the basic financial statement concepts of J. M. Rendon (2010, 2022) and the literature review, this chapter identified and compiled the commonly used financial analysis tools to develop the Integrated Financial Analysis Framework specific to the Pakistan textile industry. These widely used financial analysis tools are horizontal analysis, vertical analysis, ratios analysis as well as multivariate analysis which is composed of fraud analysis, and bankruptcy analysis. The Integrated Financial Analysis Framework can be applied to any company to conduct financial analysis pertaining to any time period. However, for this research study, the Integrated Financial Analysis Framework is illustrated on the financial statements of the six publicly traded companies from the Pakistan textile industry's textile composite sector. Pakistani defense contracting officers can incorporate this framework into the existing policy and procedures for financial health assessment of prospective defense contractors to ensure the contractor has the financial capability. The next chapter illustrates an application of Integrated Financial Analysis Framework. The chapter further provides discussions on limitations and implications of the Integrated Financial Analysis Framework, as well as recommendations based on the findings.

## **V. ILLUSTRATION OF ANALYSIS, LIMITATIONS, IMPLICATIONS, AND RECOMMENDATIONS**

This chapter provides a discussion of the application of the Integrated Financial Analysis Framework on six selected publicly traded companies from the Pakistan textile industry-textile composite sector. The financial analysis of each company provides an illustration to the Pakistani defense contracting officers regarding how to apply the Integrated Financial Analysis Framework. The chapter further provides a discussion on the limitations and implications of the Integrated Financial Analysis Framework as well as recommendations based on the findings. The subsequent section covers the introduction of the chapter.

### **A. INTRODUCTION**

This chapter analyzes the application of the Integrated Financial Analysis Framework, developed in Chapter IV, that a Pakistani defense contracting officers may use in the financial health assessment of defense contractors. The focus of this research is the textile industry; therefore, this chapter illustrates identical financial analyses of six publicly traded companies from the Pakistan textile industry-textile composite sector applying the Integrated Financial Analysis Framework. The selected companies' original names have been replaced as Company A, B, C, D, E, and F. The financial data to perform analysis is derived from the selected companies' financial statements that comprise of income statements, balance sheets, cash flow statements, and stockholder's equity statements. The Integrated Financial Analysis Framework is comprised of five financial analysis methods. The first financial analysis method is horizontal analysis, and second analysis method is vertical analysis. The third financial analysis method is financial ratio analysis using selected ratios specific to the textile industry. Although the focus of this analysis is on the textile industry, these ratios are general in nature and can also be utilized in any industry with some adjustment. An industry averages-based comparison analysis is part of the financial ratio analysis. The industry averages of the Pakistan textile industry are not publicly available in any official or authorized document or website. Therefore, industry averages of the U.S. textile industry, from the websites of Ready Ratios



(<https://www.readyratios.com>) and Investing.com (<https://www.investing.com>), are used for the comparison of financial ratios. Furthermore, a multivariate analysis is conducted which includes bankruptcy and fraud analyses, which constitute the fourth and fifth analysis, respectively. The financial analysis of each company is shown as an example to demonstrate to Pakistani defense contracting officers how to use the Integrated Financial Analysis Framework. The following section discusses analysis of Company A.

## **B. FINANCIAL ANALYSIS OF COMPANY A**

Company A was established in Pakistan as a Public Limited Company under Companies Ordinance, 1984. Company A is registered in Pakistan Stock Exchange Limited (<https://dps.psx.com.pk>) in the textile composite sector. Company A manufactures and sells yarn and woven fabric. Company A has its own electricity generation facility to support manufacturing processes.

Company A is analyzed using five different financial analysis methods, which include horizontal, vertical, ratio, bankruptcy, and fraud analyses. The financial statements used for Company A's financial analysis are the balance sheets, income statements, and cash flow statements. These statements are highly integrated; therefore, to have an in-depth knowledge of a prospective contractors' financial situation, Pakistani defense contracting officers should review all of these financial statements.

### **1. Horizontal Analysis**

Three financial statements, balance sheets, income statements, and cash flow statements, of Company A are horizontally analyzed for five years, from 2017 to 2022. The financial data of 2017 serves as the base year to analyze the data for the rest of the years. Table 8 shows the horizontal analysis of Company A and includes only the main line items of each financial statement. The detailed horizontal analysis of Company A's financial statements is available at Appendices B, C, and D.



Table 8. Company A's Financial Statement Horizontal Analysis

<b>Balance Sheet</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Retained earnings	423%	23%	175%	172%	100%
Total Equity	203%	131%	126%	109%	100%
Total Non-Current Liabilities	118%	115%	97%	92%	100%
Total Current Liabilities	72%	231%	173%	216%	100%
Total Liabilities	97%	167%	131%	147%	100%
Total Equity and Liabilities	142%	152%	129%	131%	100%
Total Non-Current Assets	100%	98%	97%	92%	100%
Total Current Assets	337%	130%	94%	180%	100%
Total Assets	142%	152%	129%	131%	100%
<b>Income Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Sales – net	191%	153%	153%	127%	100%
Cost of sales	167%	153%	148%	126%	100%
Profit before taxation	647%	146%	209%	133%	100%
Provision for taxation	225%	94%	116%	103%	100%
Profit after taxation	873%	173%	259%	150%	100%
<b>Cash Flow Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Net cash generated from operating activities	1759%	-343%	786%	-659%	100%
Net cash used in investing activities	-64%	59%	79%	-12%	-100%
Net cash generated from financing activities	-656%	228%	-210%	346%	100%

The first financial statement of Company A to analyze is the balance sheet. Figure 18 graphically illustrates the horizontal analysis of Company A's balance sheets. Retained earnings, reserves, and issued share capital make up total equity. Company A's total equity gradually increased during the four years; 2017 to 2020. In 2021, the company earned significant profit after taxation which increased the retained earnings and equity percentage substantially. Non-current liabilities increased because the company acquired long-term loans in 2020 and 2021 under 'The Temporary Economic Refinance Facility (TERF)' and 'the Refinance Scheme' offered by the State Bank of Pakistan. These programs aimed to alleviate the impact of COVID-19 by offering loans at interest rates that were lower than the standard lending rates. Under the Refinance Scheme, Company A secured financing of Rs. 262.17 million, and under TERF, it obtained Rs. 348.943 million in funding. In 2021, the company paid off short-term borrowings that decreased the current liabilities and the total liabilities amounts. Generally, the assets side is showing an increase. In 2021, the company invested in PP&E, and long-term deposits with utilities companies.



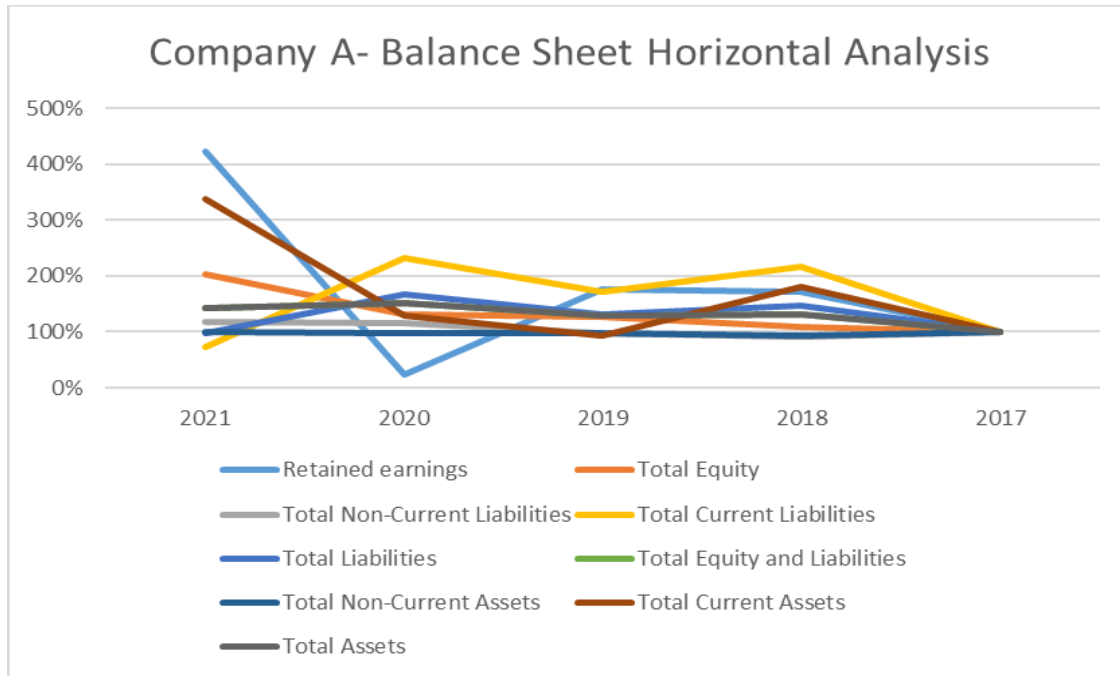


Figure 18. Horizontal Analysis of Company A’s Balance Sheets.

The second financial statement of Company A to analyze is the income statement. Figure 19 graphically illustrates the horizontal analysis of Company A’s income statement. Sales show a gradual increase from 2017 to 2019, remaining the same in 2020, and a major increase in 2021; almost double that in 2017. In 2021 Finance Costs comprised of interest on borrowings and worker’s compensation funds reduced significantly (135% in 2021 versus 185% in 2020). Additionally, comparatively less increase in Administrative Costs (148% in 2021 versus 138% in 2020) resulted in a significant increase in Net Income (Profit after Taxation) in 2021 (873% in 2021 versus 173% in 2020).



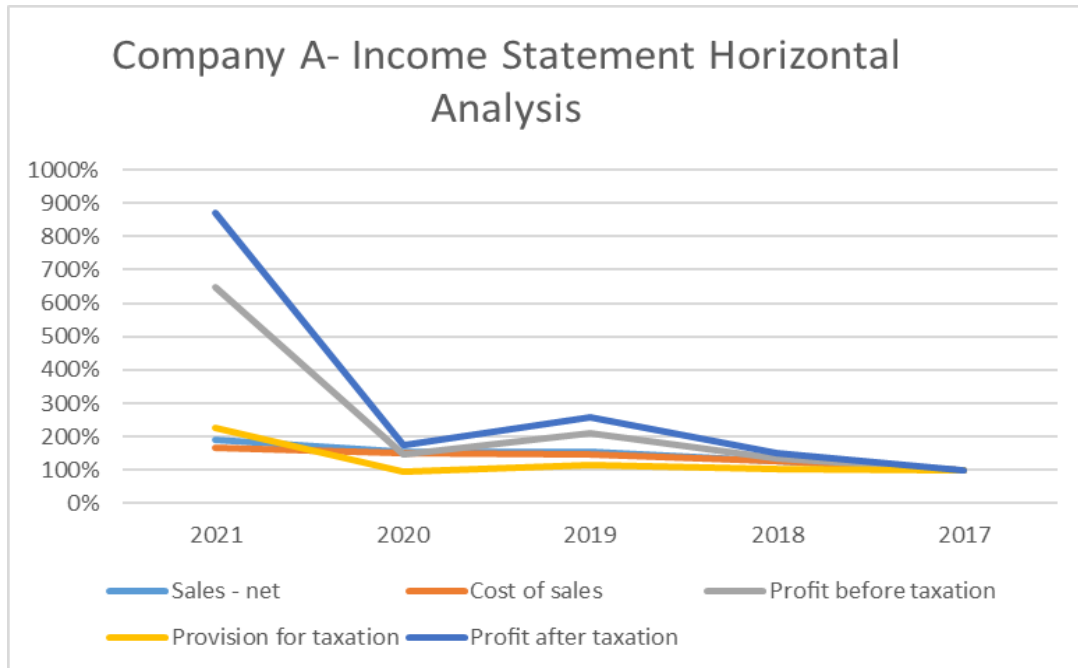


Figure 19. Horizontal Analysis of Company A’s Income Statements.

The third financial statement of Company A to analyze is the cash flow statement. Figure 20 graphically illustrates horizontal analysis of Company A’s cash flow statement. From 2017 to 2021, net cash inflows generated from operating activities and financing activities show an increase and decrease trend every alternate year; however, net cash flow from investing activities remained negative over five years because the company gradually increased its investment in PP&E during that time period. The deficit rose from 12 % in 2018 to 64% in 2021. Increase in cash from operating and financing activities offset the deficit during the periods except in 2017 and 2020 where it was a negative balance. The company is engaged in an export business as well, so from 2019 to the present, it has included exchange rate change effects in cash flow statements. Net cash increases of Rs 140 million in 2019, Rs 302 million in 2020, and Rs 203 million in 2021 are the result of exchange rate changes.

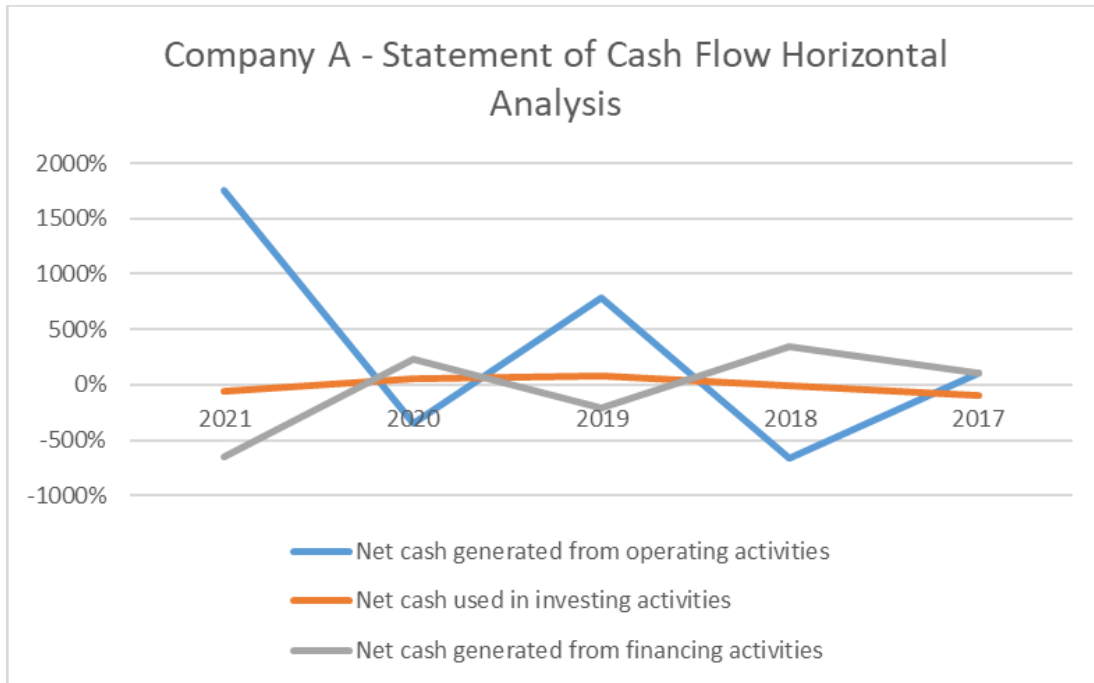


Figure 20. Horizontal Analysis of Company A's Cash Flow Statements.

## 2. Vertical Analysis

Company A's financial statements are also vertically analyzed for a period of five years, from 2017 to 2022. These include balance sheets and income statements. The financial data of 2017 serves as the base year to analyze the data for the rest of the years. Table 9 depicts the vertical analysis of Company A and includes only the main line items of the financial statements. The detailed vertical analysis of Company A's financial statements is shown in Appendices B, C, and D.

Table 9. Company A's Financial Statements Vertical Analysis

<b>Balance Sheet</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Retained earnings	5%	0%	2%	2%	2%
Total Equity	60%	36%	41%	35%	42%
Total Non-Current Liabilities	27%	24%	24%	22%	32%
Total Current Liabilities	13%	40%	35%	43%	26%
Total Liabilities	40%	64%	59%	65%	58%
Total Equity and Liabilities	100%	100%	100%	100%	100%
Total Non-Current Assets	39%	36%	42%	39%	55%
Total Current Assets	61%	64%	58%	61%	45%
Total Assets	100%	100%	100%	100%	100%
<b>Profit and Loss Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Sales – net	100%	100%	100%	100%	100%
Cost of sales	79%	90%	87%	90%	90%
Profit before taxation	16%	4%	6%	5%	5%
Provision for taxation	2%	1%	1%	1%	2%
Profit after taxation	14%	3%	5%	4%	3%

The first financial statement of Company A to analyze is the balance sheet. Figure 21 graphically illustrates the vertical analysis of Company A's balance sheet that shows upward and downward movement over the five-year period. From 2017 to 2020, the liabilities, equity, and assets sides of the balance sheet show a change of 5–6%; however, 2021 is different. In 2021, the company's position is strengthened by a reduced reliance on total liabilities (-24% with respect to 2020) and an increased share of the total equity (+24% with respect to 2020) in total equity and liabilities. On the assets side, there are no significant fluctuations.

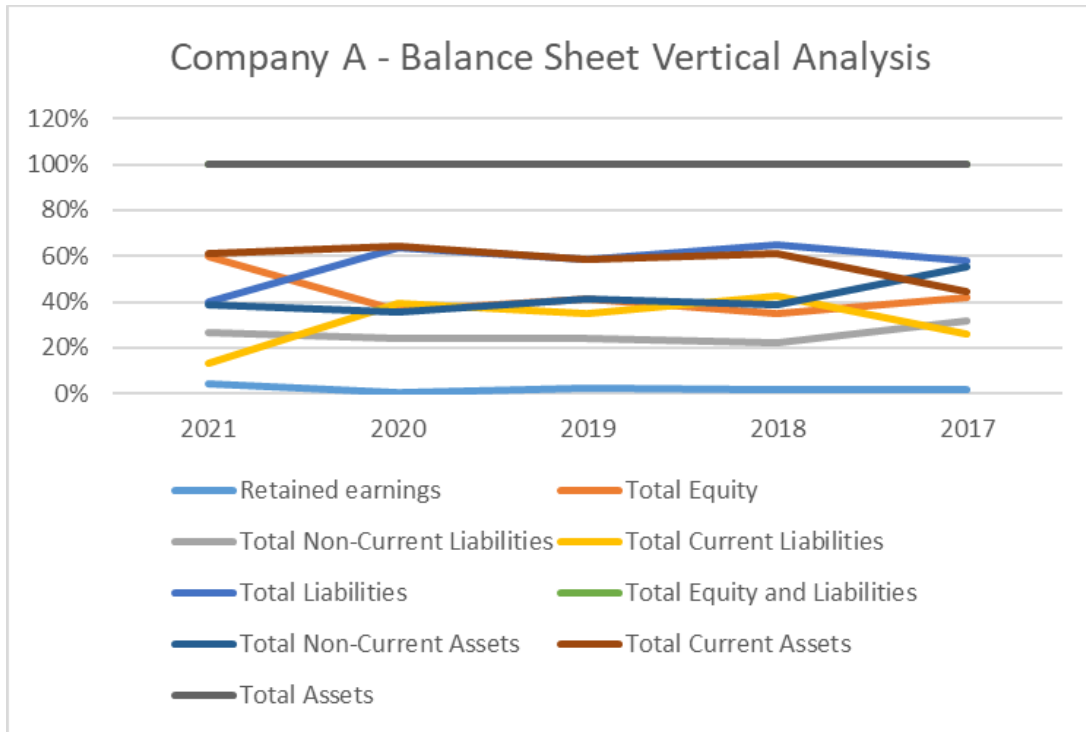


Figure 21. Vertical Analysis of Company A's Balance Sheets.

The second financial statement of Company A to vertically analyze is the income statement. A graphical representation of Company A's income statements is shown in Figure 22. Total improvement in the company's health in 2021 is evident from the vertical analysis as well. The composition of the income statement from 2017 to 2020 showed a constant upward or downward trend; however, in 2021, cost of sales was decreased (11% with respect to 2020) resulting in an increased profit before and after taxation.

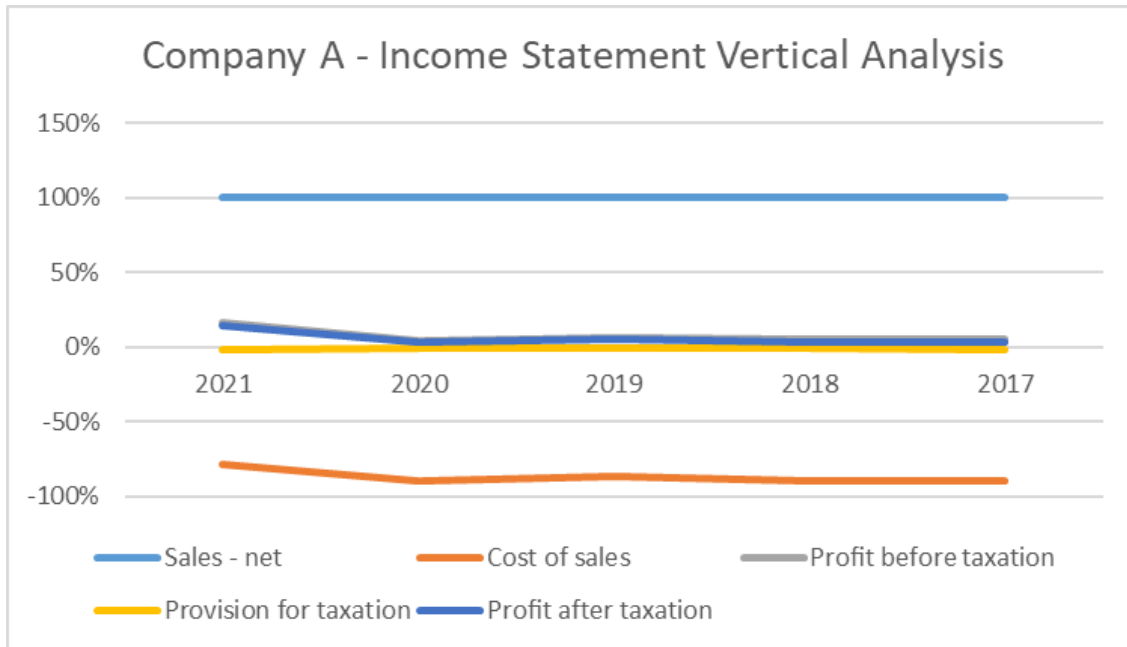


Figure 22. Vertical Analysis of Company A’s Income Statements.

### 3. Ratio Analysis

The ratio analysis is performed on Company A’s financial statements from 2017 to 2021 under five categories. These categories include Liquidity, Debt Management, Efficiency, Profitability, and Market Value. Two ratios of each category are further calculated as per the Integrated Financial Analysis Framework. The ratios used in this analysis are specific to the textile industry; however, these can be used for any industry after some adjustment. The ratios of Company A are further compared with the U.S. textile industry averages. The industry averages of the Pakistan textile industry are not publicly available in any official or authorized document or website. Therefore, industry averages of the U.S. textile industry, are to be used from the websites of Ready Ratios (<https://www.readyratios.com>) and Investing.com (<https://www.investing.com>), for the comparison of the financial ratios.

#### a. Liquidity Ratios

The first category of ratios computed from the financial statements of Company A are liquidity ratios. These ratios interpret Company A’s ability to pay current liabilities from available current resources. The two liquidity ratios, Current and Cash ratio, are calculated for a period of five years from 2017 to 2021. The liquidity ratio



analysis of Company A and its comparison with the U.S. textile industry averages is presented in Table 10.

Table 10. Company A’s Liquidity Ratios Analysis

<b>Liquidity Ratios</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Cash Ratio	0.37	0.05	0.09	0.04	0.02
<b>Industry Averages</b>	<b>0.22</b>	<b>0.57</b>	<b>0.18</b>	<b>0.04</b>	<b>0.14</b>
Current Ratio	2.94	0.90	1.19	0.91	2.12
<b>Industry Averages</b>	<b>2.59</b>	<b>2.56</b>	<b>2.84</b>	<b>3.13</b>	<b>2.86</b>

The first liquidity ratio of Company A to analyze is the cash ratio. The cash ratio indicates the adequacy of Company A’s cash reserves and its ability to settle short-term obligations promptly. The ratios of 2017 to 2019 show an increasing trend. In 2020, it decreased, then significantly increased in 2021. Except in 2021, the cash ratio of Company A is considerably less than the textile industry average of the U.S. in 2017 to 2020. The reason behind the low cash ratio may be the high leverage of the company which shows that the company had less access to cash and cash equivalents to pay its liabilities as compared to U.S. textile industry averages. The year 2021 is showing a positive trend because the company paid off its current liabilities. Cash and cash equivalent increased in 2021 when funds were received from a long-term loan (non-current liabilities) from the State Bank of Pakistan using ‘Temporary Economic Refinance Facility (TERF)’ and ‘the Refinance Scheme’ to dampen the effects of COVID–19, which also improved the ratio.

Figure 23 is a graphical representation of Company A’s cash ratio which depicts the upward trend in 2021. Although the company has a higher cash ratio than the U.S. industry averages for all years, it would be beneficial to perform more research regarding a substantial increase in a ratio when in the previous years, it was facing decreasing trend. The cash ratio of Company A increased in 2021 not only due to business income but also because of cash received from the loan received from the State Bank of Pakistan. The cash ratio would probably decrease when the interest payable (current liabilities) becomes due on the long-term loan.



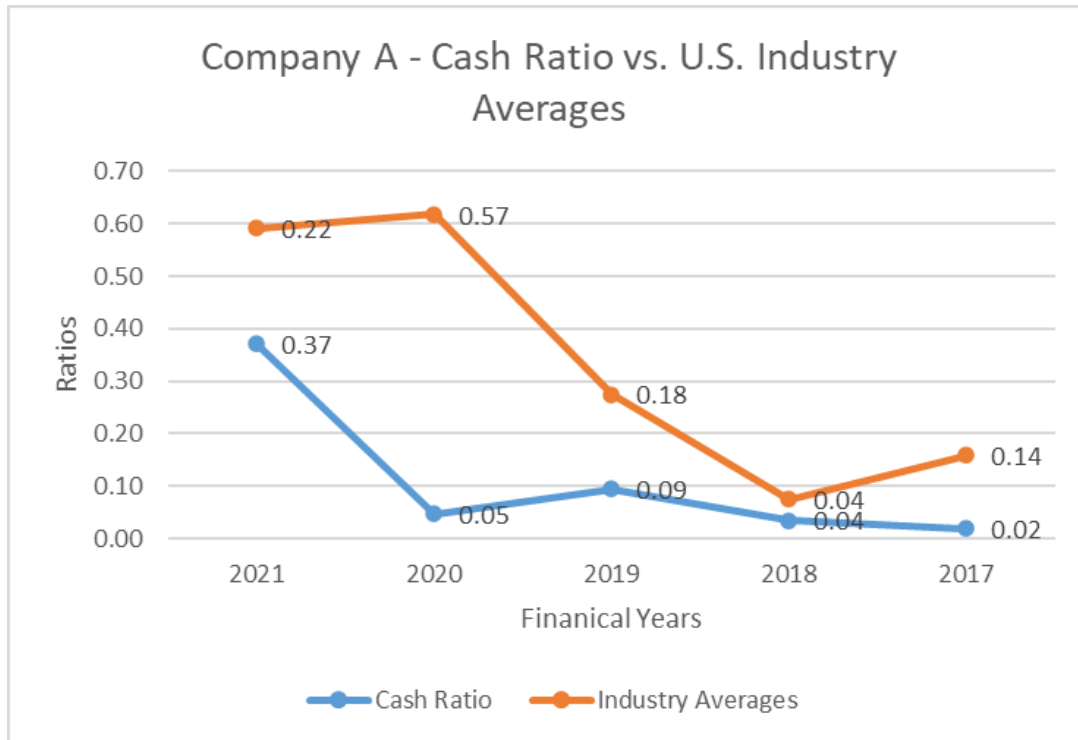


Figure 23. Comparison of Company A’s Cash Ratio against U.S. Industry Averages.

The second liquidity ratio of Company A to analyze is the current ratio. A company’s current ratio compares its current assets against current liabilities. It monitors a company internally and externally, and helps users assess how well current assets can pay for current liabilities (Rist & Pizzica, 2015). The current ratio of 2:1 is usually considered beneficial, but it depends on the industry (Rendon, 2016). The current ratio of Company A is less than U.S. textile industry averages from 2017 to 2020. Because of the State Bank of Pakistan’s support to industries to offset the loss of COVID-19, the current assets of the company improved in 2021, shown in the graph in Figure 24.

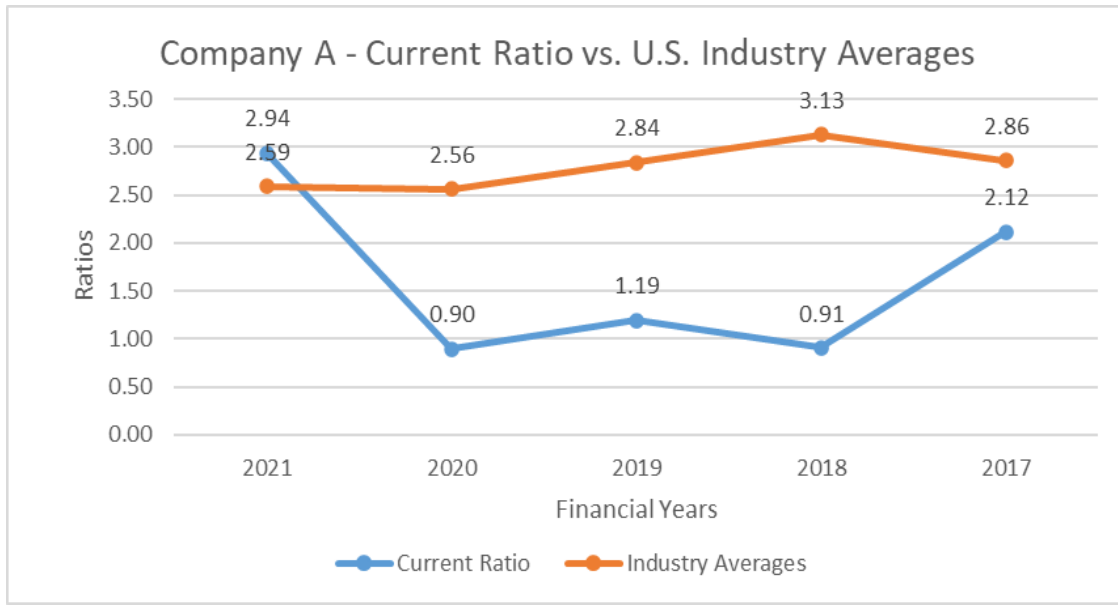


Figure 24. Comparison of Company A’s Current Ratio against U.S. Industry Averages.

**b. Debt Management Ratios**

The next ratio analysis of Company A is debt management, which allows shareholders to promptly assess the capacity of a company to meet its long-term liabilities. Two debt management ratios: Debt ratio and Debt-to-Equity ratio, were calculated for a period of five years from 2017 to 2021. Table 11 depicts Company A’s debt management ratios in comparison with the U.S. textile industry averages.

Table 11. Company A’s Debt Management Ratios Analysis

Debt Management Ratios	2021	2020	2019	2018	2017
Debt Ratio	0.40	0.64	0.59	0.65	0.58
<b>Industry Averages</b>	<b>0.41</b>	<b>0.40</b>	<b>0.46</b>	<b>0.43</b>	<b>0.41</b>
Debt-to- Equity Ratio	0.66	1.77	1.43	1.86	1.38
<b>Industry Averages</b>	<b>0.69</b>	<b>0.68</b>	<b>0.87</b>	<b>0.76</b>	<b>0.54</b>

The first debt management ratio of Company A that is analyzed is the debt ratio. A company’s debt ratio compares its total debts versus total assets. The ratio indicates the amount of assets Company A financed by debts. A lower debt ratio is considered better. Company A’s debt ratio is more than the U.S. textile industry averages from 2017 to 2020. It shows that Company A’s assets are more leveraged on debts than the other textile companies operating in the U.S. In 2021, the situation gets better with reduced total liabilities. The company paid short-term liabilities that reduced the debt ratio





significantly, from 0.64 (2020) to 0.40 (2021). The trend analysis, shown in Figure 25, displays the same ups and downs. In 2021, the debt ratio of company A and U.S. textile industry averages are almost the same.

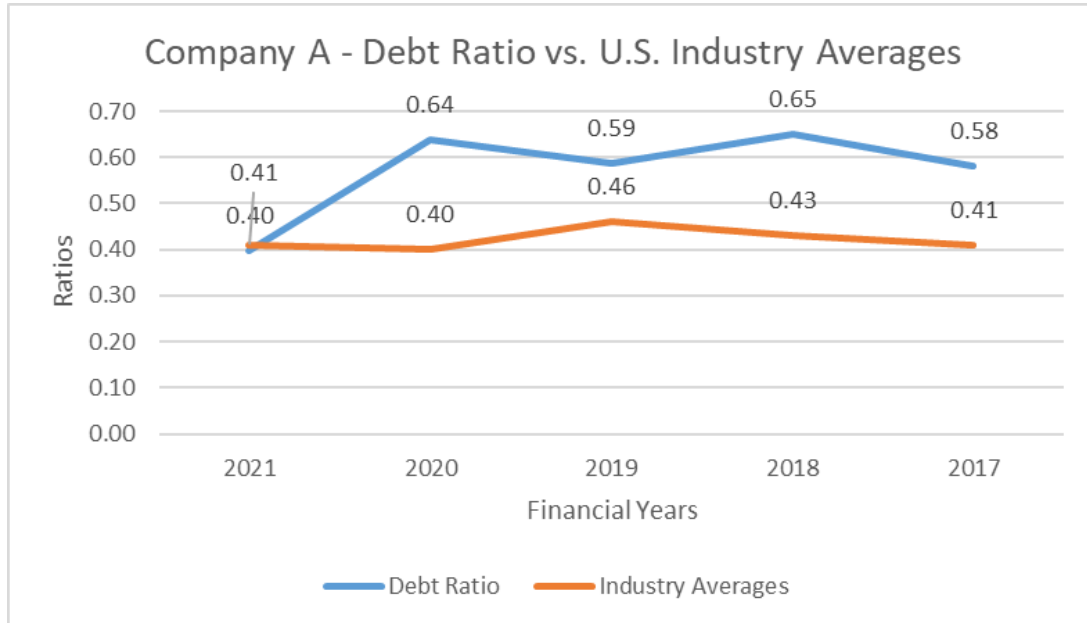


Figure 25. Comparison of Company A’s Debt Ratio against U.S. Industry Averages.

The second debt management ratio of Company A to analyze is performed by calculating the debt-to-equity ratio that compares total debts versus total shareholders’ equity. Company A’s debt-to-equity ratio shows the amount of debt Company A leverages as compared to equity. Figure 26 displays the five-year trend from 2017 to 2021 of Company A’s debt to equity ratio. The graph illustrates that Company A is more leveraged than the U.S. textile industry averages from 2017–2020. A company with higher debts is considered at financial risk to pay off its obligation. However, in 2021, increased profit after taxation resulted in enhanced retained earnings and shareholders’ equity; thus, the ratio improved and coincided with the U.S. textile industry average.

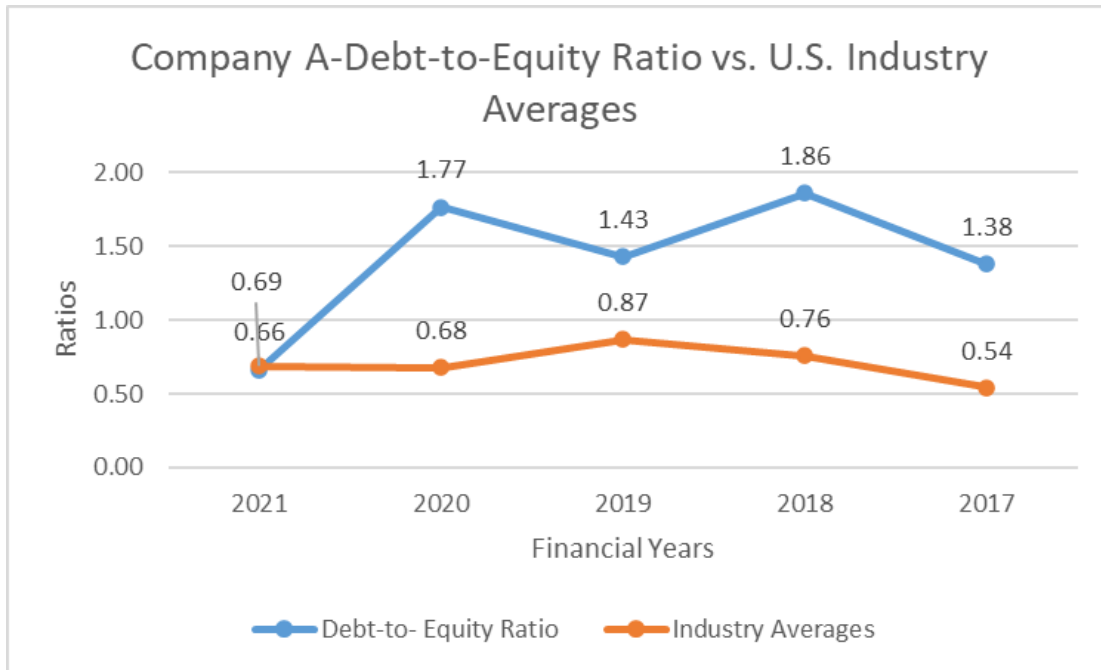


Figure 26. Comparison of Company A’s Debt-to-Equity Ratio against U.S. Industry Averages.

**c. Efficiency Ratios**

The third category of ratios computed from the financial statements of Company A are efficiency ratios. Efficiency ratios analyze a company’s capacity to generate revenue from their assets. As a result, companies strive to maintain greater efficiency ratios to be considered financially sound (Rist and Pizzica, 2015). Company A’s efficiency ratios: total assets turnover and inventory turnover have been calculated and depicted in Table 12 with a comparison of the U.S. textile industry averages. The data shows that the company’s efficiency ratios are similar to the industry averages and there are no major variations.

Table 12. Company A’s Efficiency Ratio Analysis

Efficiency Ratios	2021	2020	2019	2018	2017
Total Assets Turnover	1.54	1.15	1.35	1.10	1.14
<b>Industry Averages Ratio</b>	<b>1.36</b>	<b>1.01</b>	<b>1.23</b>	<b>1.37</b>	<b>1.22</b>
Inventory Turnover	3.03	2.21	3.31	2.36	3.99
<b>Industry Averages Ratio</b>	<b>3.69</b>	<b>3.38</b>	<b>3.54</b>	<b>3.44</b>	<b>3.92</b>

The first efficiency ratio of Company A to analyze is its total asset turnover, which compares sales with total assets. The data shows an upward trend from 2017 to



2019, a dip in 2020, and a major improvement in 2021. The reason behind this is the increasing sales from 2017–2019, decreased sales in 2020 (COVID-19 effects), and a significant increase in 2021. To compare with the U.S. textile industry average, in 2017 and 2018 the company’s ratios were less than the industrial average. However, from 2019 to 2021, these ratios are better than the U.S. textile industry peers. It seems that the company’s sales activity was not affected by COVID-19 as much as the U.S. textile industry. Figure 27 graphically illustrates Company A’s total assets turnover ratio against the U.S. textile industry averages.

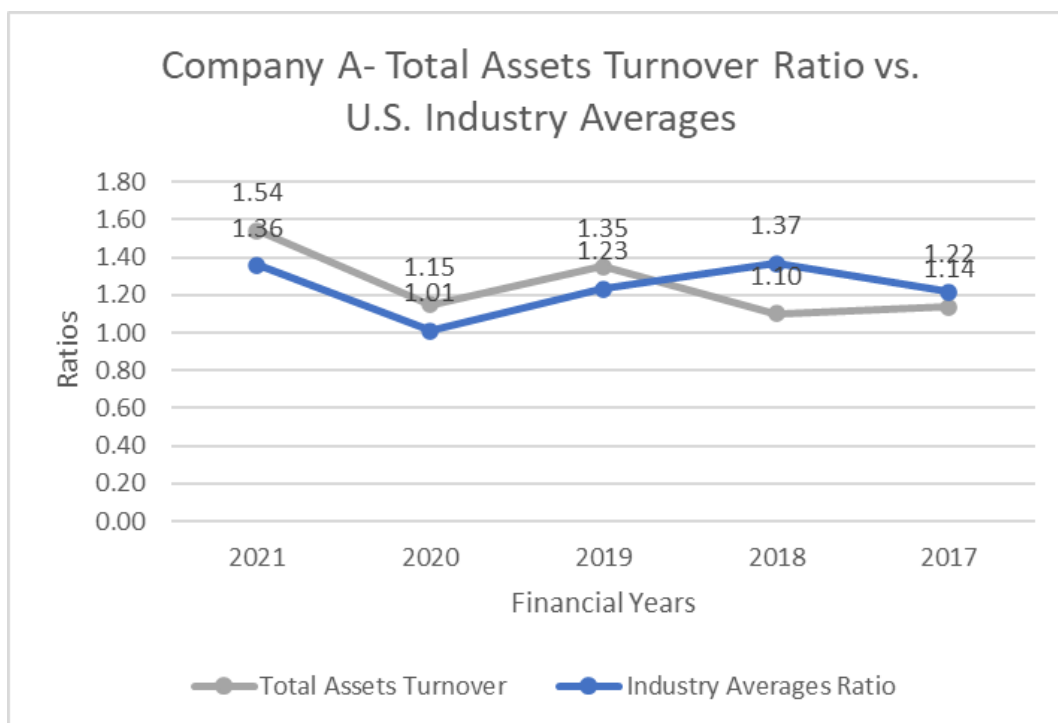


Figure 27. Comparison of Company A’s Total Asset Turnover Ratio against U.S. Industry Averages.

The second efficiency ratio of Company A to analyze is inventory turnover. The inventory turnover ratio compares the amount of cost of goods sold with the average inventory. Figure 11 graphically illustrates Company A’s inventory turnover ratios that shows an upward and downward trend every alternate year from 2017 to 2021. The ratio is below the U.S. textile industry averages during the five-year period. The crisscross pattern of the inventory turnover ratio indicates an unstable sales pattern of the company. The company’s trend to turn inventories into sales (revenue) is volatile, as shown in Figure 28.

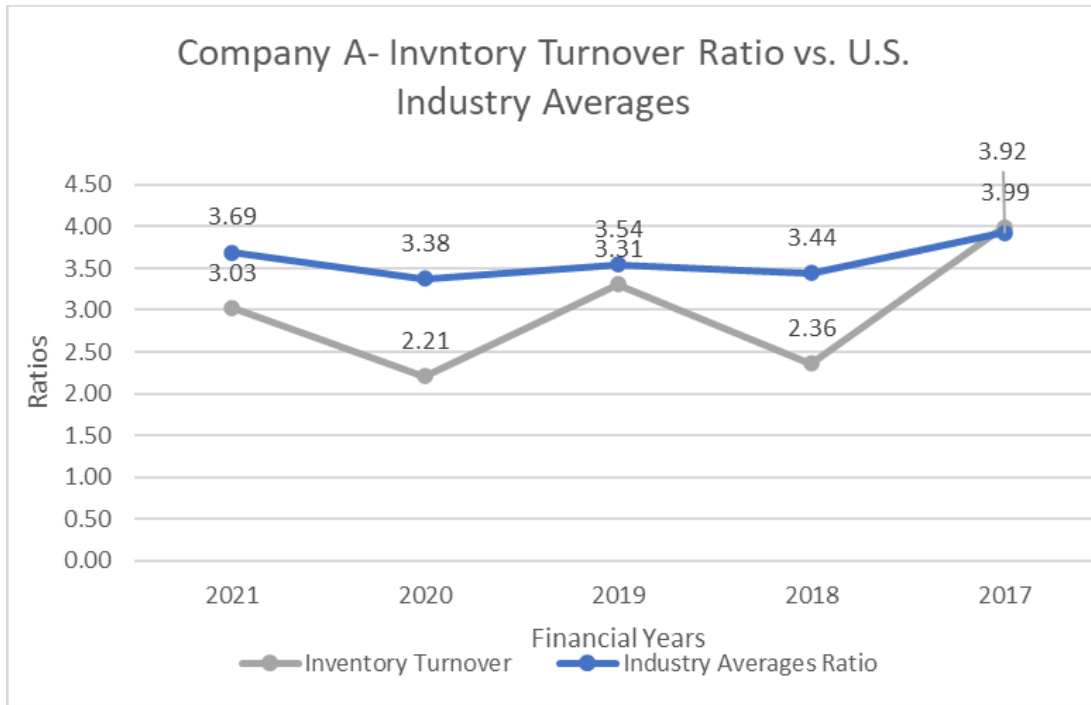


Figure 28. Comparison of Company A’s Inventory Turnover Ratio against U.S. Industry Averages.

**d. Profitability Ratios**

The fourth category of ratios analyzed from the financial statements of Company A are profitability ratios. A company’s profitability ratios are very important financial ratios as these ratios offer a snapshot of its financial health (Rist & Pizzica, 2015). Two profitability ratios: Return on Assets (ROA) and Net Profit Margin ratios are the two profitability ratios which were calculated for Company A for a period of five years from 2017 to 2021. Table 13 displays the Company A’s profitability ratios and the U.S. textile industry averages.

Table 13. Company A’s Profitability Ratio Analysis

Profitability Ratios	2021	2020	2019	2018	2017
Return on Assets %	21.4%	4.0%	7.0%	4.0%	3.5%
<b>Industry Averages</b>	<b>5.3%</b>	<b>-3.8%</b>	<b>5.7%</b>	<b>6.0%</b>	<b>5.8%</b>
Net Profit Margin %	13.9%	3.4%	5.1%	3.6%	3.0%
<b>Industry Averages</b>	<b>12.2%</b>	<b>-13.4%</b>	<b>12.5%</b>	<b>12.3%</b>	<b>8.8%</b>

The first profitability ratio of Company A to analyze is its Return on Assets (ROA), which compares net income with total assets and expressed as a percentage.



Company A's ROA indicates an increasing trend from 2017 to 2019. Due to the global effect of COVID-19, ROA decreased in 2020; however, it significantly increased in 2021. Compared to the U.S. textile industry peers, the company has performed less in 2017 and 2018 and well in the years 2019 to 2021. Figure 29 describes that Company A maximized its profit in these years although the world was slowed down due to COVID-19. The high sales in 2021 is depicted as the record high ROA in the same year; i.e., 21.4% versus the U.S. textile industry averages of 5.3%.

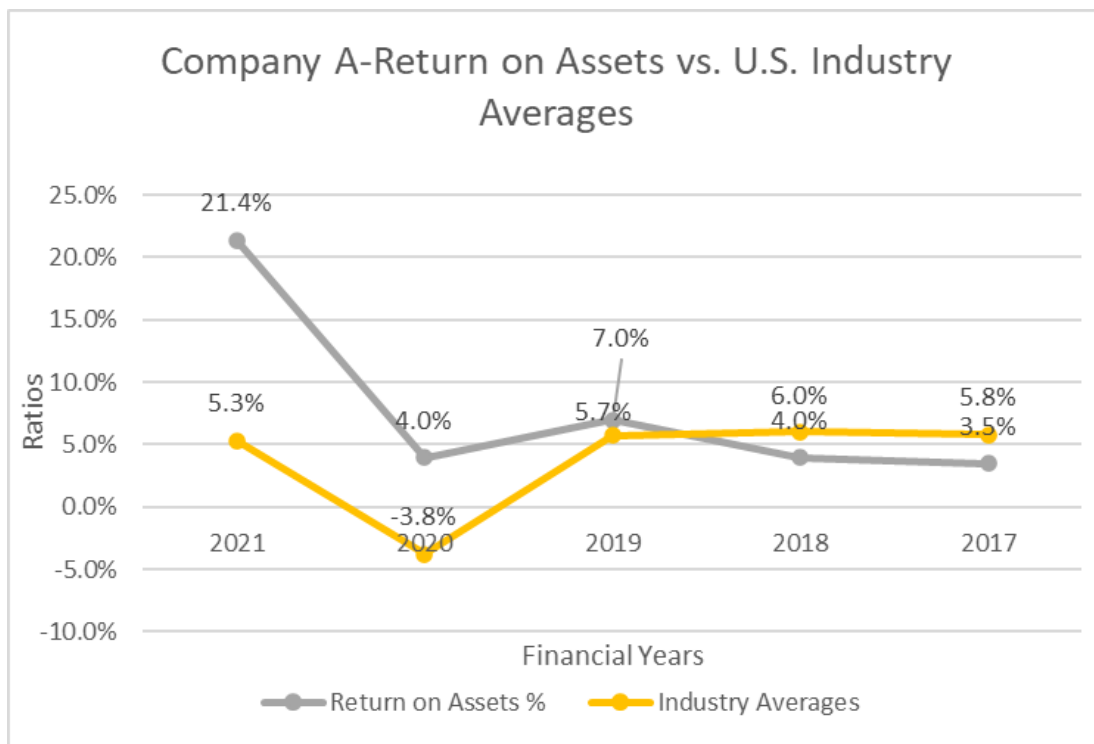


Figure 29. Comparison of Company A's Return on Assets against U.S. Industry Averages.

The second profitability ratio of Company A to analyze is the net profit margin. The net profit margin compares Company A's net profit after taxation with the net sales revenue. The graph shown in Figure 30 shows a similar trend for net profit margin as the trend for Return on Assets. The company performed well from 2019 to 2021 due to an increase in sales and reduced cost of goods sold. The net profit margin ratio improved during 2019 to 2021 because net profit after taxation increased. Company A's net profit margin ratio was below the industry averages from 2018 to 2019. However, the company performed better than the U.S. textile industry averages in 2020

and 2021. The U.S. were facing the adverse effects of COVID-19. For example, in 2020, the U.S. industry averages reported a loss of 13.4 % whereas Company A reported profit margin of 3.4% that was four times higher than the U.S. textile industry peers. Company A better utilized its finances to increase its sales revenue and net profit during the period of COVID-19 pandemic.

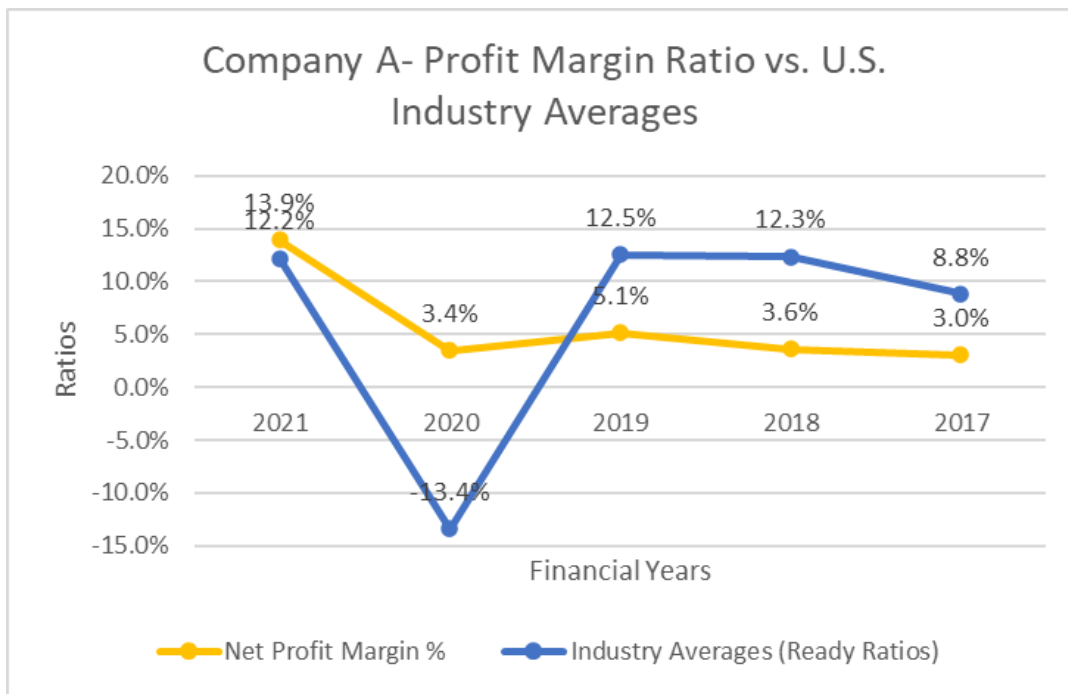


Figure 30. Comparison of Company A’s Profit Margit Ratio against U.S. Industry Averages.

**e. Market Value Ratios**

The fifth category of ratios analyzed from the financial statements of Company A are market value ratios. A company’s market value ratios provide the market’s perception of its share price and future growth potential. These ratios are helpful in deciding the stock price of a publicly traded company (Malik, 2017). Two market value ratios; Price Earning (P/E) and dividend payout ratios, are calculated for Company A from 2017 to 2021 as per Table 14. Typically, companies with higher market value ratios are favored due to the potential for increased returns which is linked to the higher P/E ratio and dividend payout ratios. However, the decision ultimately rests with the investor who is willing to buy stocks at a higher price in anticipation of better returns.



Table 14. Company A’s Market Value Ratios Analysis

<b>Market Value Ratios</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Price Earnings Ratio	1.32	3.86	2.43	6.2	6.29
<b>Industry Averages</b>	<b>21.48 (TTM-Trailing 12 Months)</b>				
Dividends Payout Ratio	0.000	0.650	0.231	0.265	0.129
<b>Industry Averages</b>	<b>0.96</b>	<b>-0.15</b>	<b>0.82</b>	<b>1.33</b>	<b>0.32</b>

The first market value ratio of Company A to analyze is its price earnings ratio that compares stock price against earnings per share. Company A’s P/E ratio decreased from 2019 to 2021. Moreover, it is lower than the U.S. textile industry trailing 12 months averages. When performance data of a company is used for the past 12 consecutive months to present financial results, it is called “trailing 12 months” (TTM). TTM’s 12-month duration does not always correspond with the end of a financial year. Company A’s lower P/E ratio than U.S. industry TTM averages means that Company A’s shares are undervalued. Investors will be motivated to buy Company A’s shares at reduced prices before the market recovers. Figure 31 illustrates price earnings ratios of Company A and U.S. textile industry averages from 2019 to 2021.



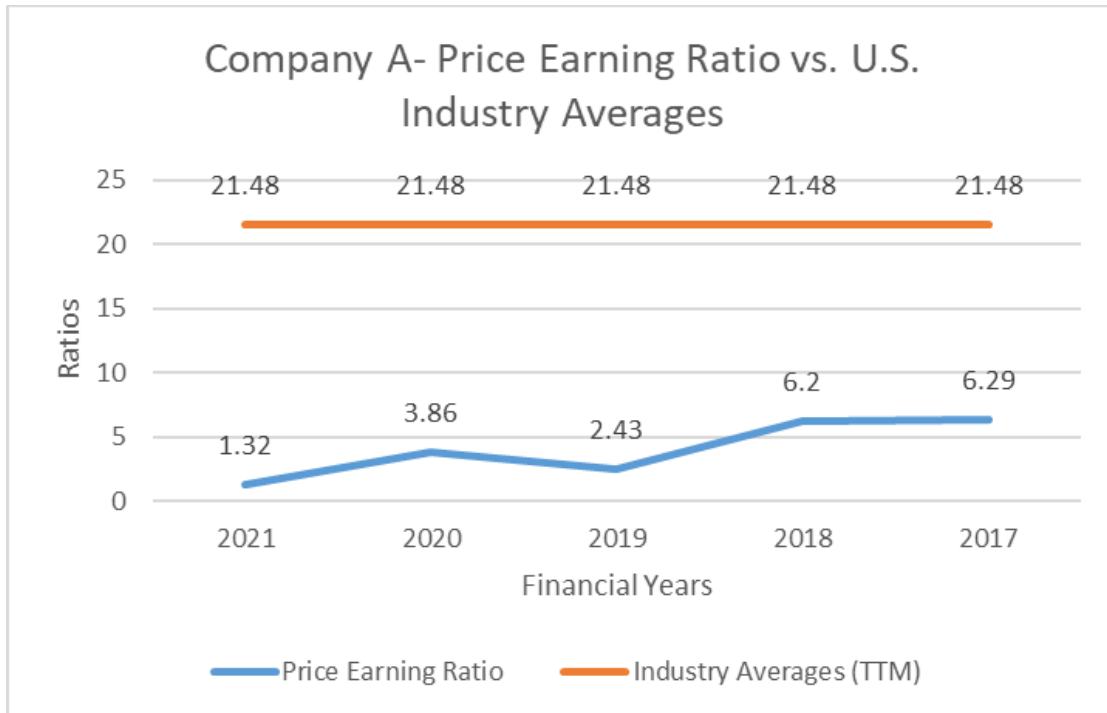


Figure 31. Comparison of Company A’s Price Earnings Ratio against U.S. Industry Averages.

The second market value ratio of Company A to analyze is dividend payout ratio. The dividend payout ratio compares the total amount of dividends paid (preferred and normal dividend) from Company A’s net earnings. Company A paid dividends every year; however, it is not paid with a stable trend. The company’s dividend payout ratio is lower than the industry averages during 2017 to 2019 and 2021. The analysis of financial statements reveals that the company used its cash flow in repayment of long-term loans and increased investment in long-term assets from 2017 to 2019 and 2021. Numerous well-established companies rationalize their lower or non-existent dividend payout ratios by reinvesting a significant portion of their earnings back into their operations. This approach is intended to ensure that shareholders’ funds are utilized effectively to grow the company, resulting in greater returns for them. During 2020, when the U.S. textile industry was striving to recoup out of the COVID-19 pandemic effects, Company A performed well and issued dividends. In 2020, Company A’s dividend payout ratio is greater than the U.S. textile industry averages. Figure 32 graphically illustrates dividend payout ratios of Company A and the U.S. textile industry.





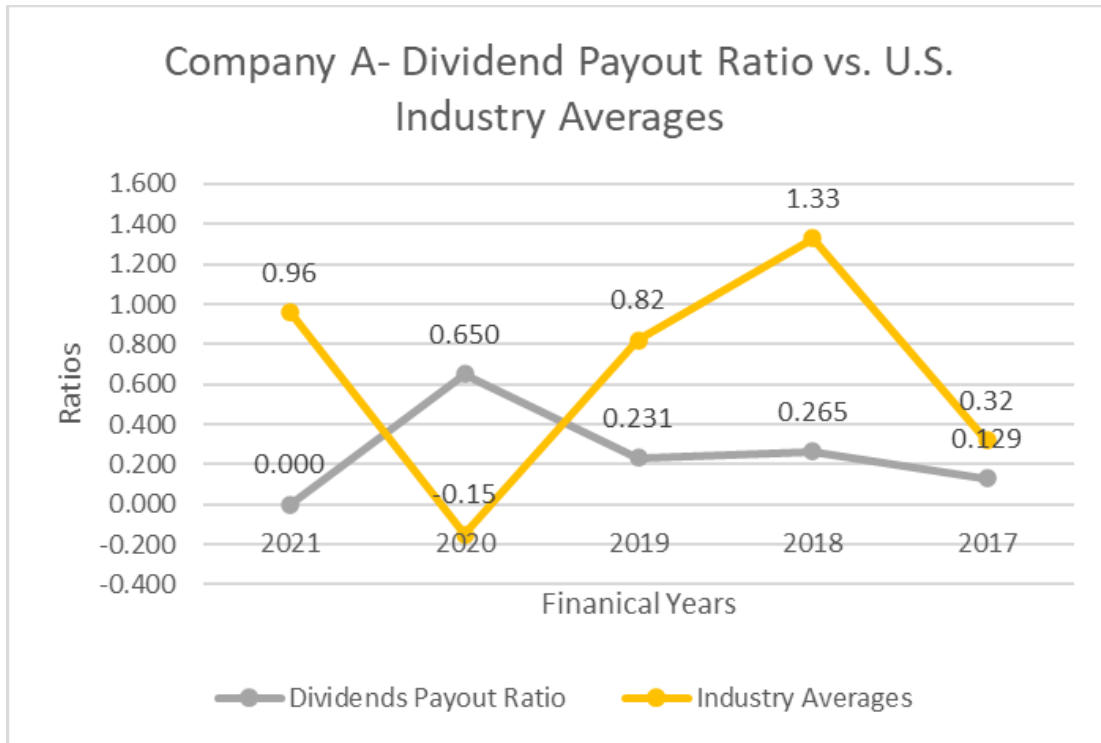




Figure 32. Comparison of Company A's Dividend Payout Ratio against U.S. Industry Averages.

#### 4. Fraud Analysis

The M-score of Company A was calculated for the five years, from 2019 to 2021. The M-scores of Company A fall in the range of no possible fraud for four years, except for 2018 in which the M-score is within the range of possible fraud. Table 15 depicts the M-score of Company A. The detail review of the data pertaining to 2018 indicates higher Days Sales in Receivables Index (DSRI), Gross Margin Index (GMI), Sales Growth Index (SGI), Sales, General and Administrative Expenses Index (SGAI) and Leverage Index (LVGI) ratios than the other years' ratios. The M-score fraud analysis shows that unusual increases in these ratios during 2018 decreased the overall M-score ratio. An unusual increase is just an indication of possible fraud in the company. It does not mean that Company A is engaged in fraudulent activities. The company needs to investigate the reasons for the extraordinary increase in ratios during 2018 and 2020 by taking a closer look at the financial statements and investigating the relevant personnel involved in the preparation of the accounts and financial statements.

Table 15. Fraud Analysis of Company A

Company A's M-Score						
Derived Variables	2021	2020	2019	2018	2017	Manipulator/Non-Manipulator Means
DSRI	0.986	0.848	0.865	1.377	1.282	1.465/1.031
GMI	0.471	1.294	0.800	0.944	0.772	1.193/1.014
AQI	1.860	0.848	1.037	0.760	0.864	1.254/1.039
SGI	1.248	1.001	1.204	1.272	1.178	1.607/1.134
DEPI	1.050	0.966	1.077	0.873	0.957	1.077/1.001
SGAI	1.278	0.922	0.993	1.149	0.917	1.041/1.001
TATA	-0.166	0.108	-0.117	0.193	0.004	0.031/0.018
LVGI	0.624	1.085	0.905	1.121	1.056	1.111/1.037
<b>M-score</b>	<b>-2.90</b>	<b>-2.04</b>	<b>-3.02</b>	<b>-1.20</b>	<b>-2.23</b>	

 M<-2.22, no possible fraud  
 M>-2.22, possible fraud

## 5. Bankruptcy Analysis

The Z-score bankruptcy analysis of Company A was calculated for five years from 2017 to 2021. The Z-score is an indication of possible bankruptcy. It does not mean that a company will go into bankruptcy. The bankruptcy score of Company A for the years 2018 to 2021 shows the company does not have the potential for bankruptcy. Company A's Z-score for 2017 is 2.041 that falls within the range of unknown. The range of unknown shows that a company's potential bankruptcy situation could go either way. Table 16 displays the Z-score bankruptcy analyses of Company A. One of the major contributors of the overall Z-score being is when a company has too much debt in their capital structure. The scores show that Company A is financially stable and out of the threat of bankruptcy.



Table 16. Bankruptcy Analysis of Company A

Company A's Z- Score					
Variables	2021	2020	2019	2018	2017
X1= Working Capital / Total Assets	0.478	0.248	0.235	0.184	0.187
X2= Retained Earnings/Total Assets	0.046	0.002	0.021	0.020	0.015
X3= EBIT/Total Assets	0.929	0.895	0.852	0.862	0.196
X4= Market Value of Equity / BV of Total Debts	0.016	0.009	0.012	0.011	0.016
X5= Sales / Total Assets	1.540	1.148	1.352	1.102	1.139
Z Score = 1.2X1+1.4X2+3.3X3+0.6X4+1.0X5	5.254	4.407	4.483	4.203	2.041

	Z<1.81, Possibly Bankrupt
	1.81<Z<2.99, Unknown
	Z>2.99, Possibly Non-Bankrupt

The financial analysis of Company A is for illustration purposes only. It aims to explain to Pakistani defense contracting officers how to apply the Integrated Financial Analysis Framework on the financial statements of prospective contractors. Next section analyzes the financial statements of Company B.

### C. FINANCIAL ANALYSIS OF COMPANY B

Company B was established as a public limited company in Pakistan as per Companies Act 1913 revised as Companies Act 2017. Company B is registered in the Pakistan Stock Exchange Limited (<https://dps.psx.com.pk>) in the textile composite sector. The company is in the textile manufacturing business, which involves purchase, sale, and trade of yarn and cloth. Company B also manufactures other products and fabrics that use unprocessed cotton and synthetic fibers(s). Electricity is produced, gathered, distributed, supplied, and sold by Company B.

In the next section, the Integrated Financial Analysis Framework, which consists of five different analyses: horizontal, vertical, ratio, bankruptcy, and fraud analysis, is applied for financial health assessment of Company B. The financial statements used for Company B's financial analysis include balance sheets, income statements, and cash flow statements. These statements are highly integrated with one another. Therefore, to have an in-depth knowledge of a prospective contractors' financial situation, Pakistani defense contracting officers should review all of these financial statements.

## 1. Horizontal Analysis

Three financial statements, balance sheets, income statements, and cash flow statements, of Company B are horizontally analyzed for five years, from 2017 to 2022. The financial data of 2017 serves as the base year to analyze the data for the rest of the years. Table 17 shows the horizontal analysis of Company A and includes only the main line items of each financial statement. The detailed horizontal analysis of Company B's financial statements is available at Appendices E, F, and G.

Table 17. Company B's Financial Statements Horizontal Analysis

<b>Balance Sheet</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Revenue Reserves	130%	110%	110%	101%	100%
Total Equity	100%	88%	80%	85%	100%
Total Non-Current Liabilities	95%	105%	105%	79%	100%
Total Current Liabilities	130%	126%	116%	117%	100%
Total Liabilities	126%	123%	115%	112%	100%
Total Equity and Liabilities	112%	104%	96%	97%	100%
Total Non-Current Assets	96%	96%	91%	88%	100%
Total Current Assets	140%	117%	104%	115%	100%
Total Assets	112%	104%	96%	97%	100%
<b>Profit and Loss Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Sales – <i>net</i>	164%	122%	128%	104%	100%
Cost of sales	155%	118%	124%	103%	100%
Profit before taxation	1000%	219%	489%	12%	100%
Taxation	922%	447%	491%	6%	100%
Profit after taxation	457%	30%	212%	7%	100%
<b>Cash Flow Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Net cash generated from operating activities	37%	96%	322%	-116%	-100%
Net cash used in investing activities	-38%	-36%	-86%	-21%	-100%
Net cash from financing activities	48%	6%	-18%	45%	100%

The first financial statement of Company B to analyze is the balance sheet. Figure 33 graphically illustrates the horizontal analysis of Company B's balance sheets. The balance sheet shows a steady growth with marginal improvement under all line items with respect to base year 2017. Changes in equity are due to a decrease and increase in the value of reserves of alternate years. Long-term finances, which is a part of non-current liabilities, increased from 2017 to 2020 and decreased in 2020 by paying off Rs 156 million liabilities. Company B's liabilities composition shifted toward current liabilities showing a 30% increase in trades and other payables compared to the base

year. An overall total equity and liabilities section shows that the company is more dependent on creditors for finances rather than shareholders. On the assets side, the company keeps on reevaluating its intangible assets (Rs 18 million in 2017 to 6 million in 2019, 20 million in 2020 and then 13 million in 2021). Long-term investments decreased from 2017 to 2021 by 26%. Investment in spares, stock, and trade receivables increased by 40%. The composition of the assets side shows that the company's total asset position increased by 12% with respect to base year; however, the majority of the assets are non-liquid. Overall, the year 2021 is the most favorable year for the company in terms of the balance sheet.

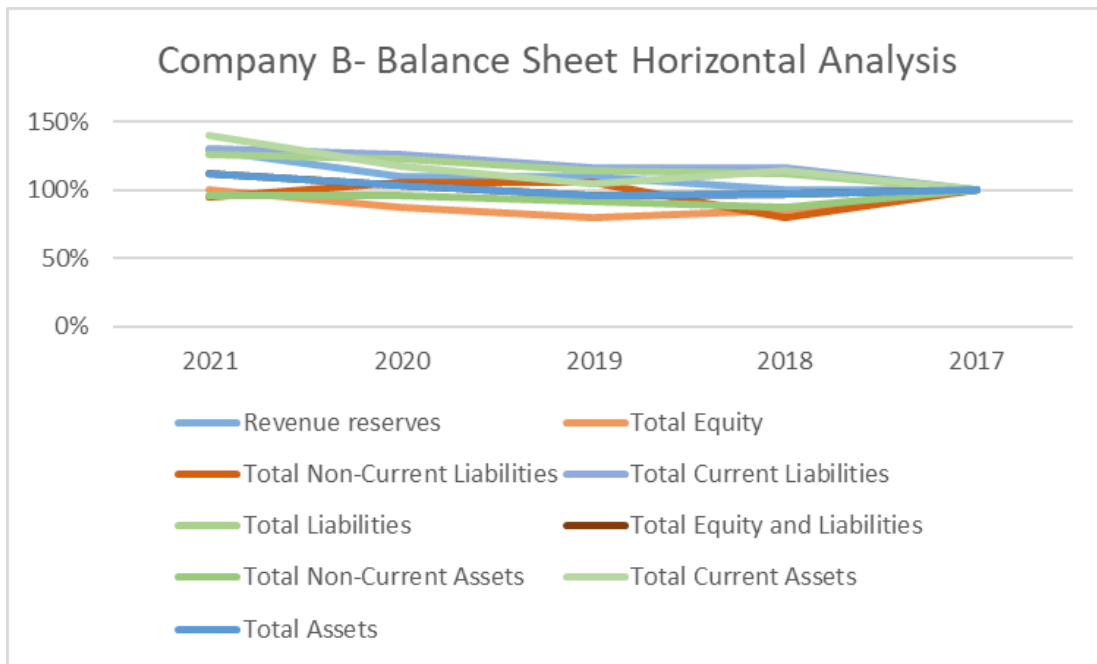


Figure 33. Horizontal Analysis of Company B's Balance Sheets.

The second financial statement of Company B to analyze is the income statements. Figure 34 graphically illustrates the horizontal analysis of Company B's income statements. Sales of Company B increased from 2017 to 2021 by 64% while cost of sales increased by 55% only, as a result gross profit increased by 252%. The annual reports of Company B state that from 2017 to 2021, the management concentrated on identifying profitable opportunities, optimizing production efficiency, and reducing costs through various methods. The company improved work processes to increase productivity.

Although the sales activities enhanced, the company curtailed its general, sales and administrative expenses resulting in the profit from operations and before taxation increasing by 343% and 1000% respectively and resulting in an increase in the selling price. A significant operating cost increase is in 2021 by 31% (from 2020) mainly because of enhanced exports and associated ocean freight rates. To relieve the industries from the COVID-19 effects, Pakistan State Bank of Pakistan reduced the borrowing rates. The decrease in finance cost due to lower average borrowing rates was 6% in 2021 as compared to 2020. However, increased taxation (922% in 2021 with respect to 2017) decreased the net profit percentage to 457%. The company increased the provision of income tax to meet the additional turnover taxes and deferred taxes liability. The income statement horizontal analysis presents a promising performance from 2017 to 2021. The effects of the COVID-19 pandemic are visible from the decreased numbers of 2020. However, the company has regained its growing pace in 2021 at an accelerated rate (for example, sales increased to 164% versus 122% in 2020).

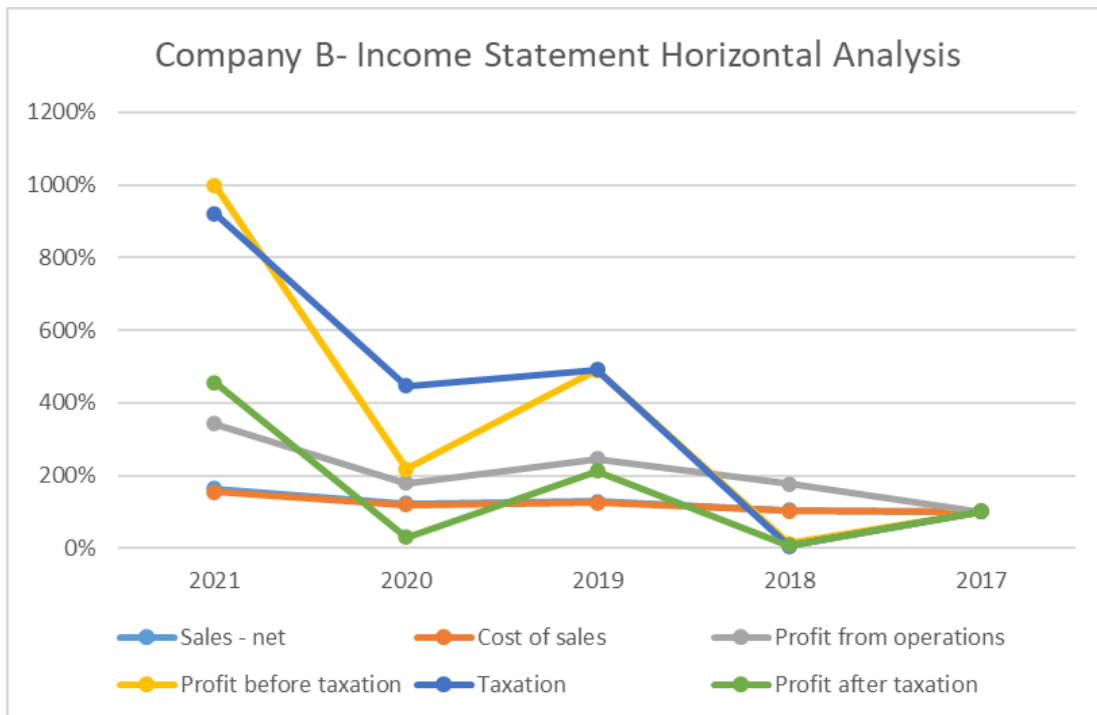


Figure 34. Horizontal Analysis of Company B’s Income Statements.

The third financial statement of Company B to horizontally analyze is its cash flow statements. Figure 35 graphically illustrates the horizontal analysis of Company B

from 2017 to 2021. Company B's net cash flow from operating activities was negative 100% in 2017 which increased to positive 322% in 2019. In 2020 it decreased to 96% and further reduced to 37% in 2021. Although there is an increase in sales in the same period, most cash is tied up in trade debts. Net cash outflow from investing activities was negative during 2017 to 2021 because the company was investing in PP&E. Cash flow from financing activities was positive in four out of five years; however, it declined in 2021 because Company B used the cash inflow to repay long-term debt.

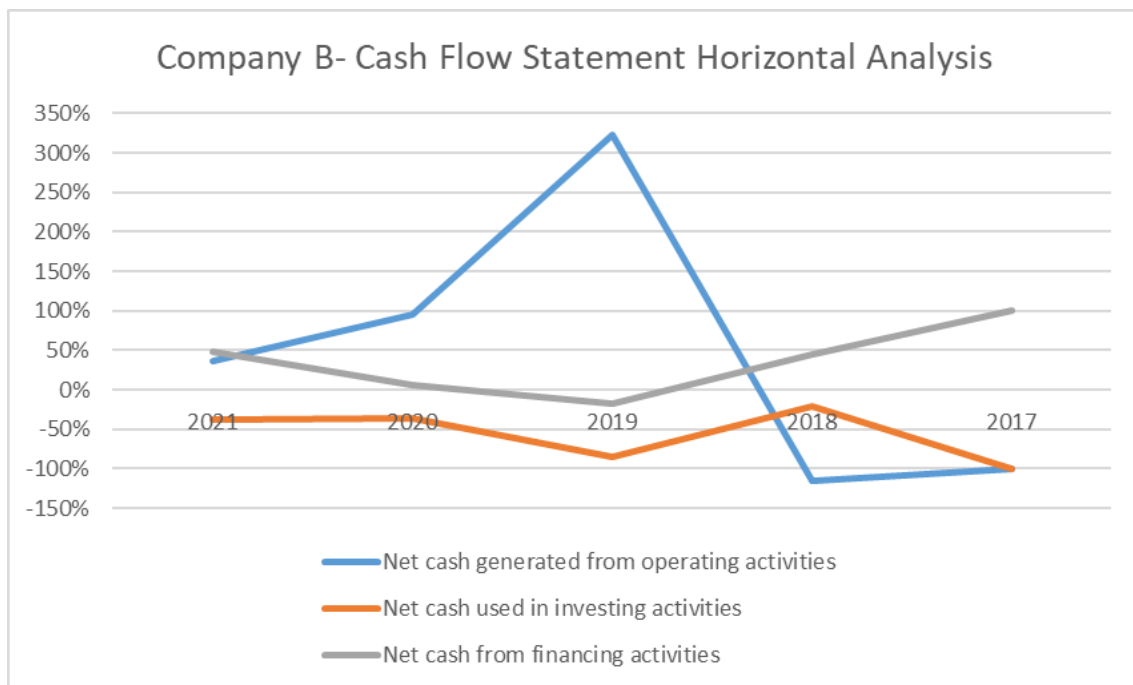


Figure 35. Horizontal Analysis of Company B's Cash Flow Statements.

## 2. Vertical Analysis

Company B's financial statements are also vertically analyzed for a period of five years, from 2017 to 2022. These include balance sheets and income statements. The financial data of 2017 serves as the base year to analyze the data for the rest of the years. Table 18 depicts the vertical analysis of Company B and includes only the main line items of financial statements. The detailed vertical analysis of Company B's financial statements is shown in Appendices E, F, and G. The vertical analysis of the income statements is conducted based on sales while vertical analysis of the balance sheets is

based on total assets. All accounts are proportionate to sales in the case of income statements and proportionate to total assets in case of balance sheets.





Table 18. Company B's Financial Statements Vertical Analysis

<b>Balance Sheet</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Revenue Reserves	16%	15%	16%	15%	14%
Total Equity	49%	46%	46%	48%	54%
Total Non-Current Liabilities	5%	6%	6%	5%	6%
Total Current Liabilities	46%	48%	48%	48%	40%
Total Liabilities	51%	54%	54%	52%	46%
Total Equity and Liabilities	100%	100%	100%	100%	100%
Total Non-Current Assets	55%	60%	61%	58%	64%
Total Current Assets	45%	40%	39%	42%	36%
Total Assets	100%	100%	100%	100%	100%
<b>Profit and Loss Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Sales – <i>net</i>	100%	74%	78%	64%	61%
Cost of sales	86%	66%	69%	57%	56%
<b>Profit before taxation</b>	5%	1%	2%	0%	0%
Taxation	2%	1%	1%	0%	0%
<b>Profit after taxation</b>	3%	0%	1%	0%	1%

The first financial statement of Company B to analyze is the balance sheet. Figure 36 graphically illustrates the vertical analysis of Company B's balance sheets from 2017 to 2021. During the five years, the percentages of total equity and total liabilities maintained their trend. However, percentages of non-current assets and percentages of current assets show upward and downward movement over the five-year period. The detailed analysis of Company B's annual reports shows that the company regularly re-evaluates its intangible assets.

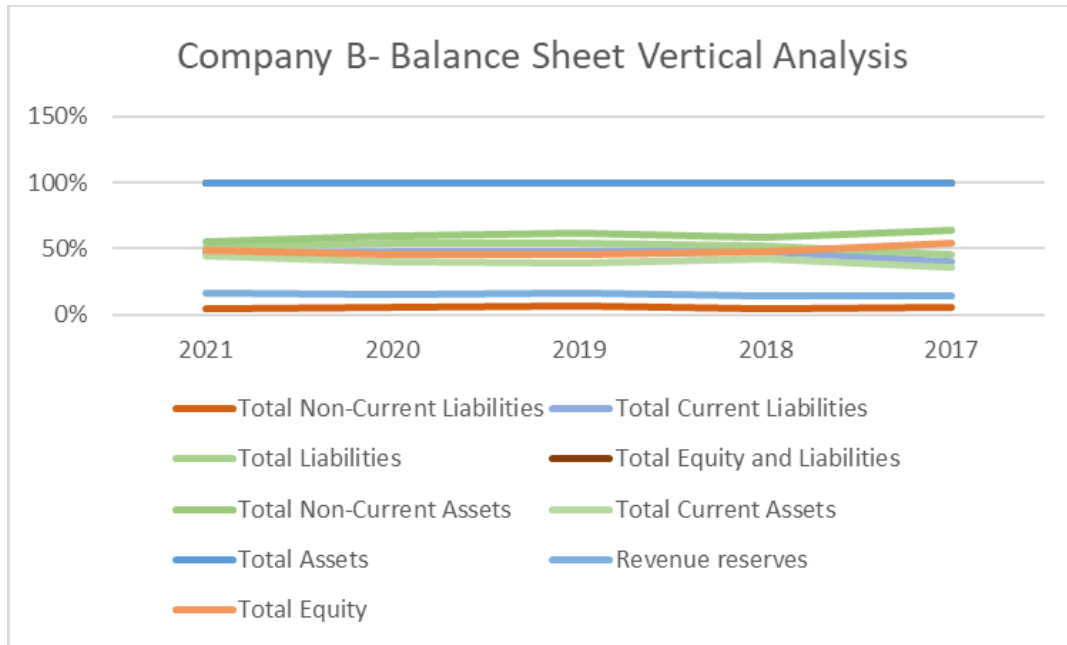


Figure 36. Vertical Analysis of Company B’s Balance Sheets.

The second financial statement of Company B to vertically analyze is the income statement. Figure 37 graphically illustrates the vertical analysis of Company B’s income statements from 2017 to 2021. Company B’s cost of sales dropped from 91% in 2017 to 86% in 2021 resulting in an increase in profits (for example profit from operations rose from 3% in 2017 to 7% in 2021). The global financial effect due to the COVID-19 pandemic is visible from the company’s financials of 2020 where profit after taxation reached zero percentage. The global pandemic had unprecedented impacts on all industries worldwide including supply chain disruptions. However, the progress in 2021 is important to note as the company’s profit after taxation went to 3%.

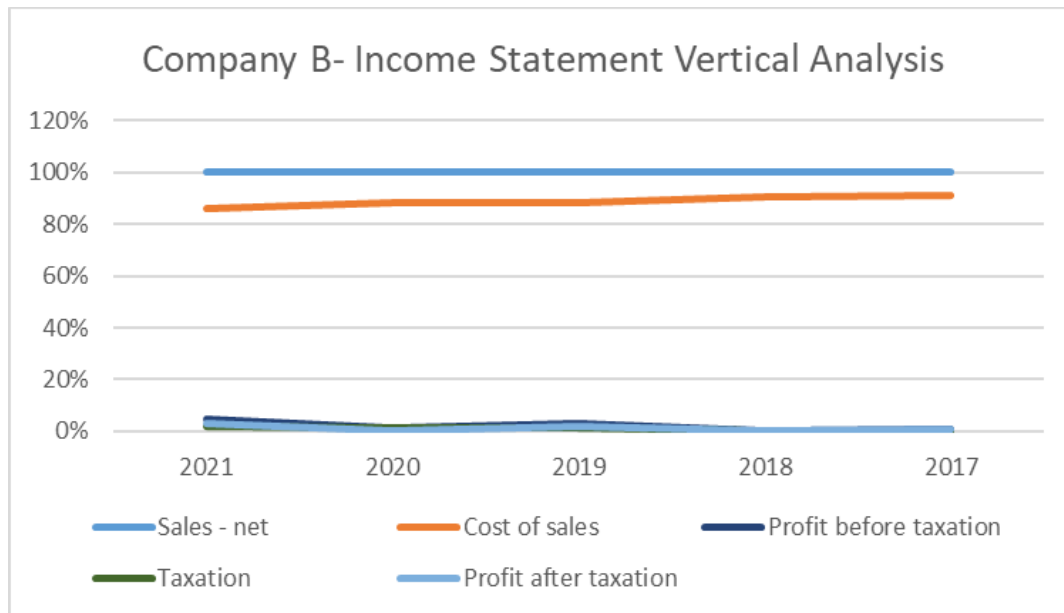


Figure 37. Vertical Analysis of Company B’s Income Statements.

### 3. Ratio Analysis

Company B’s financial statements from 2017 to 2021 are analyzed for ratios. The financial ratios have been calculated under five major categories: Liquidity, Debt Management, Efficiency, Profitability, and Market Value. The two ratios from each category are calculated and analyzed as per the developed Integrated Financial Analysis Framework. The ratios utilized in this analysis are specific to the textile industry, however; these ratios can also be used for any industry after some adjustment. These ratios are further compared with the U.S. textile industry averages. U.S. textile industry averages have been taken for comparison due to the non-availability of the Pakistan textile industry averages on any official or authorized document or website.

#### a. Liquidity Ratios

The first category of ratios computed from the financial statements of Company B are liquidity ratios. Liquidity ratios were analyzed for Company B’s financial statements from 2017 to 2021 to assess its ability to make short term payments when due (Samo & Murad. 2018). The analysis is further compared to the U.S. textile industry averages and presented in Table 19.

Table 19. Company B's Liquidity Ratios Analysis

Liquidity Ratios	2021	2020	2019	2018	2017
Cash Ratio	0.04	0.00	0.00	0.00	0.00
<b>Industry Averages</b>	<b>0.22</b>	<b>0.57</b>	<b>0.18</b>	<b>0.04</b>	<b>0.14</b>
Current Ratio	1.19	1.245	1.277	1.216	1.622
<b>Industry Averages</b>	<b>2.59</b>	<b>2.56</b>	<b>2.84</b>	<b>3.13</b>	<b>2.86</b>

The first liquidity ratio of Company B to analyze is the cash ratio. The five-year cash ratios of Company B show that the company has significantly highest current liabilities as compared to its cash resources. During the period under analysis, the company's liquidity position is very weak to pay its current liabilities when due to the creditors. In comparison with the U.S. textile industry averages, the company's liquidity position is a concern, which is not a good sign for a business in the short term and to sustain in the long term. Figure 38 shows the five-year cash ratio comparison between Company B and the U.S. textile industry averages.

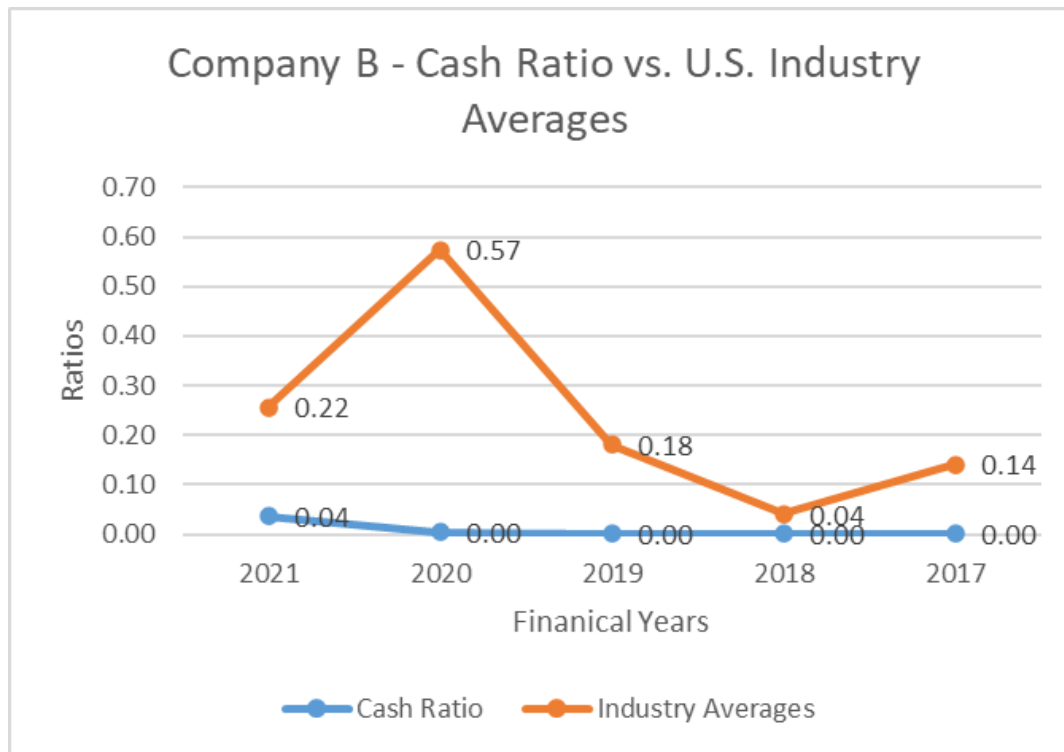


Figure 38. Comparison of Company B's Cash Ratio against U.S. Industry Averages.

The second first liquidity ratio of Company B to analyze is the current ratio. The current ratio evaluates Company B’s liquidity state by comparing current assets with current liabilities from 2017 to 2021. A company’s operations and revenue will be impacted if it has trouble paying its current and future financial obligations (Samo & Murad, 2018). A current Ratio of 1 and above is considered better but it depends on the industry (Rist & Pizzica, 2015) and a current ratio below 1 is concerning since it indicates heavy debt. Company B’s current ratios are above 1 during 2017 to 2021; however, 66% to 74% of the current assets amount are tied up in stock in trade and trade debts. The liquidity position of Company B is at risk for paying its current liabilities immediately. Company B’s current ratio is lower than the U.S. textile industry averages, that indicates that Company B might face issues related to liquidity in the short term. Figure 39 graphically illustrates current ratio of Company B and U.S. textile industry averages from 2017 to 2021.

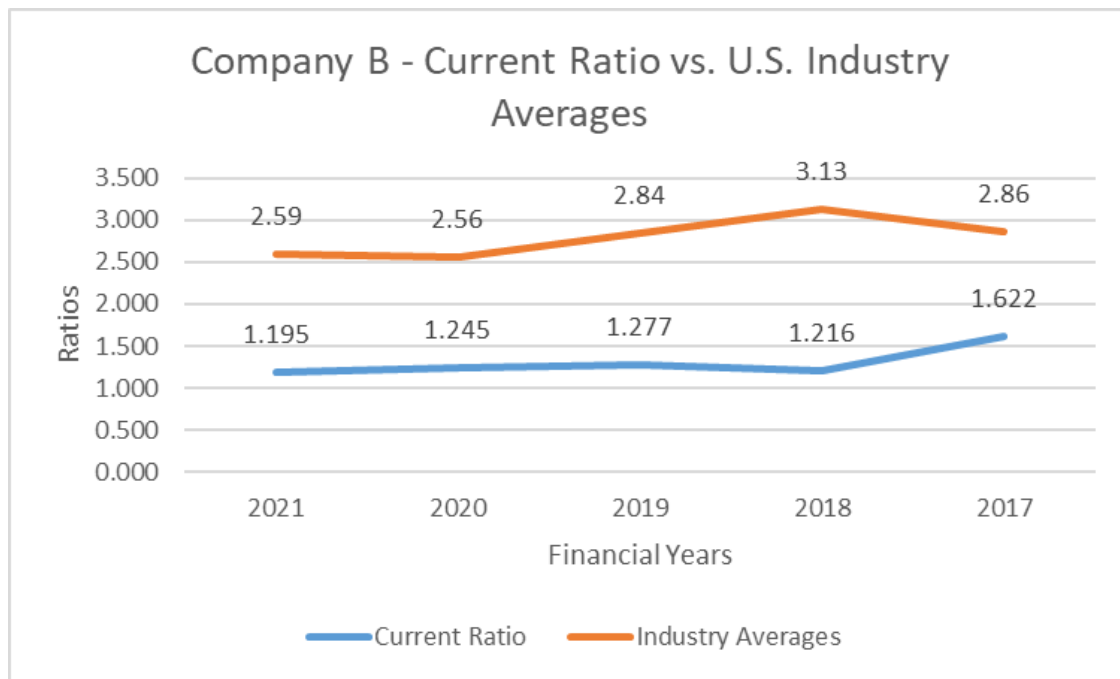


Figure 39. Comparison of Company B’s Current Ratio against U.S. Industry Averages.

**b. Debt Management Ratios**

The second category of ratios computed from the financial statements of Company B are debt management ratios. Debt management ratios are also called



solvency ratios or leverage ratios. The level of financial leverage a company employs is a crucial factor in assessing its financial risk. A company that is more dependent on loans or debt for financing its business is more prone to financial default. The inappropriate combination of capital structure reduces a company’s operational performance and profit earning capability. The capital composition of the Pakistan textile industry appears problematic. The ineffective choice of financing options deteriorates operations and the performance of textile enterprises suffers (Samo & Murad, 2018). Company B’s financial statements from 2017 to 2021 are analyzed for debt management using debt ratio and debt-to-equity ratios. Table 20 shows both debt management ratios for five years along with the U.S. textile industry averages.

Table 20. Analysis of Company B’s Debt Management Ratios

<b>Debt Management Ratios</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Debt Ratio	0.51	0.54	0.54	0.52	0.46
<b>Industry Averages</b>	<b>0.41</b>	<b>0.40</b>	<b>0.46</b>	<b>0.43</b>	<b>0.41</b>
Debt-to- Equity Ratio	1.05	1.18	1.20	1.10	0.84
<b>Industry Averages</b>	<b>0.69</b>	<b>0.68</b>	<b>0.87</b>	<b>0.76</b>	<b>0.54</b>

The first debt ratio of Company B to analyze is the debt ratio. Figure 40 graphically illustrates the debt ratio analysis which shows that Company B’s total debt remained constant, approximately half of the total assets during 2017–2021. This is a good ratio that indicates Company B maintains double the assets than total liabilities. However, compare to the U.S. textile industry averages, Company B’s debt ratio is higher. The U.S. textile industry peers maintain less debt, approximately 40% of their assets. To remain at par with the U.S. textile industry debt ratio, Company B needs to review its debt position.



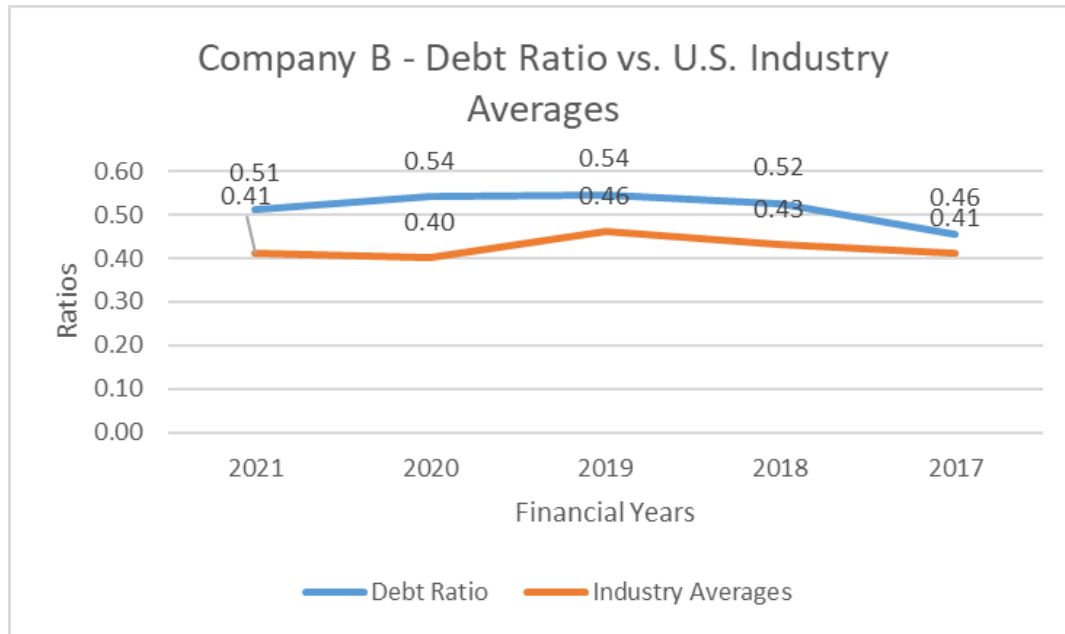


Figure 40. Comparison of Company B's Debt Ratio against U.S. Industry Averages.

The second debt liquidity ratio of Company B to analyze is the debt-to-equity ratio. This ratio compares Company B's total debts against total equities and determines its financial leverage. The ratios presented in Figure 41 show that Company B's total debts are higher than total equity which means that the business is generating its finances more from debtors and less from the shareholders' equity. In addition, Company B's debt-to-equity ratio is significantly more, almost twice to the U.S. textile industry averages. A high debt-to-equity ratio is considered unfavorable for businesses and are considered risky when analyzing the financial health of a company. Company B needs to review its business financing structure.

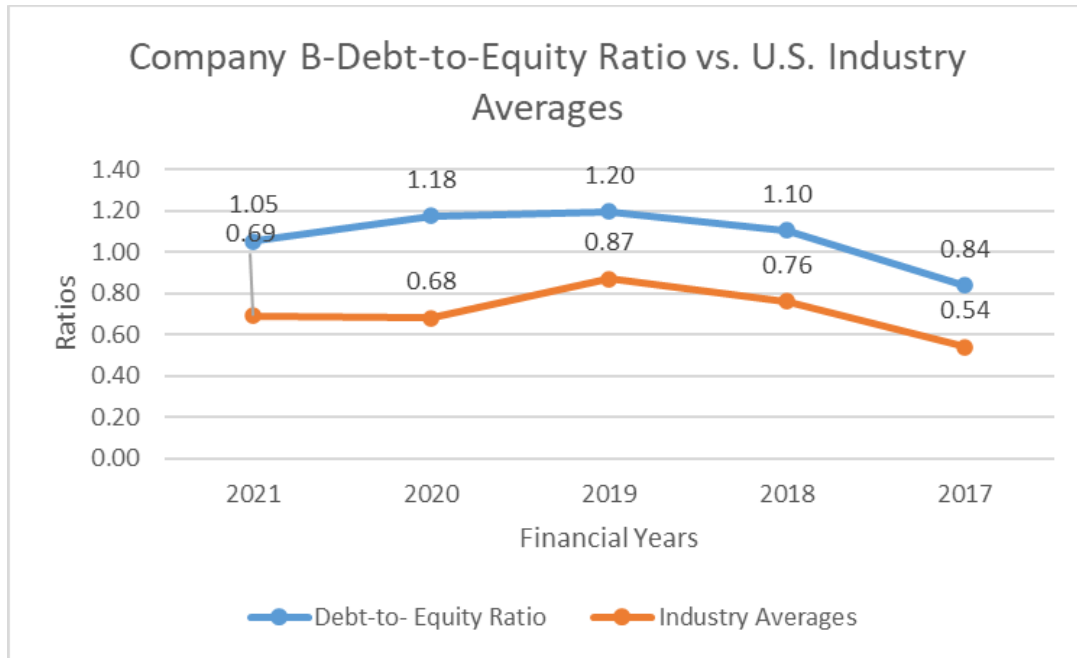


Figure 41. Comparison of Company B’s Total Debt-to Equity Ratio against U.S. Industry Averages.

**c. Efficiency Ratios**

The third category of ratios analyzed from the financial statements of Company B are efficiency ratios. Efficiency ratios are also called turnover ratios or performance ratios. Efficiency ratios analyze a company’s capacity to generate revenue from their assets. As a result, companies strive to maintain greater efficiency ratios to be considered financially sound (Rist & Pizzica, 2015). Higher ratios are indicative of financially sound companies. Companies should correctly manage investments in their assets because sometimes they inappropriately excessively invest in long-term assets that fall short of their sales goals. (Grant, et. al., 2016). In efficiency analysis, Company B’s financial statements are evaluated for total asset turnover ratios and inventory turnover ratios (Table 21).

Table 21. Company B’s Efficiency Ratio Analysis

Efficiency Ratios	2021	2020	2019	2018	2017
Total Assets Turnover	0.88	0.71	0.80	0.64	0.60
<b>Industry Averages Ratio</b>	<b>1.36</b>	<b>1.01</b>	<b>1.23</b>	<b>1.37</b>	<b>1.22</b>
Inventory Turnover	4.14	3.68	5.39	3.95	4.88
<b>Industry Averages Ratio</b>	<b>3.69</b>	<b>3.38</b>	<b>3.54</b>	<b>3.44</b>	<b>3.92</b>





The first efficiency ratio of Company B to analyze is the total asset turnover ratio. The total asset turnover ratios of Company B measure the revenue that the company earned by using all its assets. Company B's asset turnover ratio shows an increasing trend from 2017 to 2019. Effects of COVID-19 are evident from the lower ratio in 2020. However, the ratio had an increasing trend in 2021. The five-year trend indicates that Company B utilized total assets effectively in generating sales revenue. Comparing Company B's total asset turnover ratio with the U.S. textile industry averages, it is visible that the company's performance is significantly lower than its U.S. peers. The company needs to utilize its assets more efficiently to remain at par with its competitors. Figure 42 graphically illustrates total asset turnover ratios of Company B and the U.S. textile industry averages.

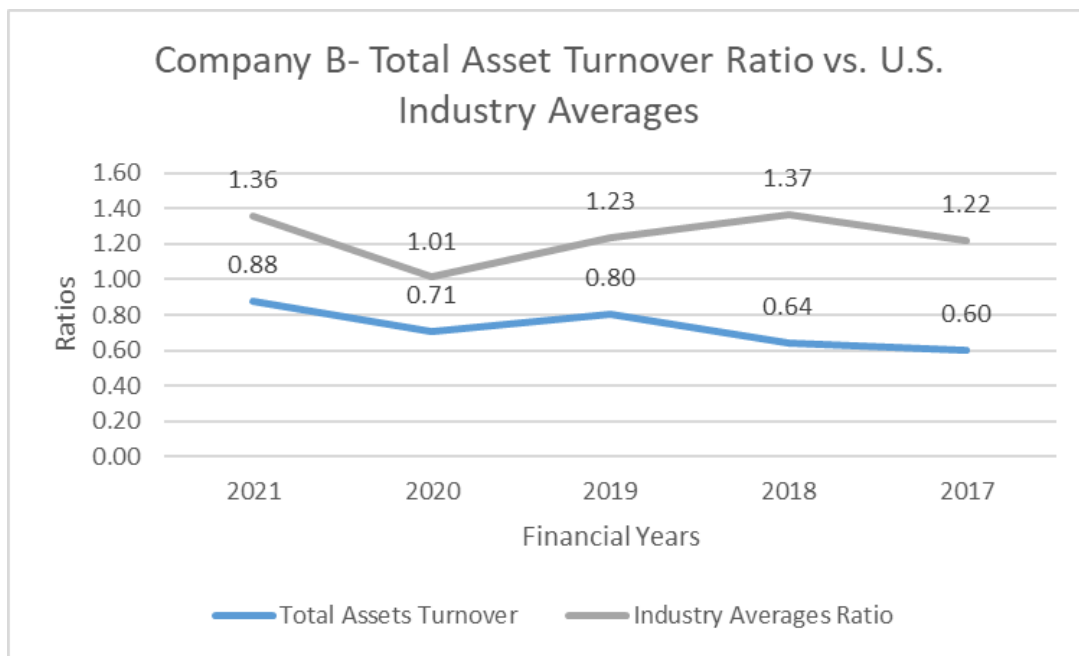


Figure 42. Comparison of Company B's Total Asset Turnover Ratio against U.S. Industry Averages.

The second efficiency ratio of Company B to analyze is the inventory turnover ratio. The ratio compares Company B's cost of goods sold with average inventory. During 2017 to 2021, Company B's inventory turnover ratio is higher than the U.S. industry averages. Company B's increasing inventory turnover ratio was slightly affected by the COVID-19 pandemic in 2020. A rising trend in the inventory ratio demonstrates

Company B’s proficiency in managing, selling, and replenishing inventory promptly. Figure 43 graphically illustrates the inventory turnover ratios of Company B and the U.S. textile industry averages.

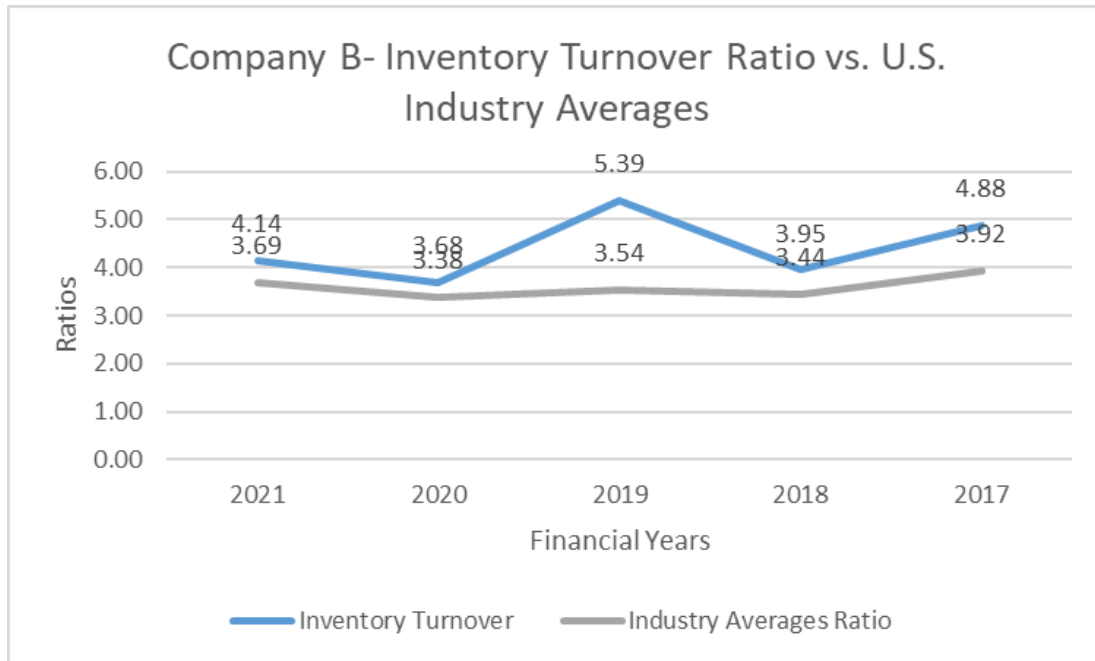


Figure 43. Comparison of Company B’s Inventory Turnover Ratio against U.S. Industry Averages.

**d. Profitability Ratios**

The fourth category of ratios computed from the financial statements of Company B are profitability ratios. Profitability ratios are among the primary tools utilized to evaluate a company’s profitability based on financial statement data. They exhibit a company’s overall effectiveness in terms of profitability, asset management, debt-to-liquidity ratio, and the reputation of the company from the perspective of shareholders (Samo & Murad, 2018). Profitability ratios are computed on a dual basis – one in relation to sales, and the other in the context of investments (Samo & Murad, 2018). As a part of the Integrated Financial Analysis Framework, two profitability ratios are computed, which are the return on assets ratio and net profit margin ratio. Table 22 shows the profitability ratios of Company B and the U.S. textile industry averages from 2017 to 2021.



Table 22. Company B's Profitability Ratio Analysis

Profitability Ratios	2021	2020	2019	2018	2017
Return on Assets %	2.5%	0.2%	1.4%	0.0%	0.6%
<b>Industry Averages</b>	<b>5.3%</b>	<b>-3.8%</b>	<b>5.7%</b>	<b>6.0%</b>	<b>5.8%</b>
Net Profit Margin %	2.9%	0.3%	1.7%	0.1%	1.0%
<b>Industry Averages</b>	<b>12.2%</b>	<b>-13.4%</b>	<b>12.5%</b>	<b>12.3%</b>	<b>8.8%</b>

The first profitability ratio of Company B to analyze is the return on Assets (ROA). The ratio determines how much net income a business is generating from its total assets. Based on the data obtained from financial statements, Company B generated a minimum profit from its assets during 2017 (0.6%), 2018 (0.0 %) and 2020 (0.2%). The years 2019 (1.4%) and 2021 (2.5%) are better than the other three years. During 2020, The U.S. textile industry ROA ratio showed a significant decline (-3.8%) because of the COVID-19 pandemic effect. However, the ratio improved considerably in 2020 (5.3%). Compared to the U.S. textile industry averages, Company B did not have a loss in 2020. However, its performance in 2021 is lower than the U.S. textile industry averages. Company B needs to restructure its assets so that they can generate proportionate profit. Figure 44 shows the ROA ratio of Company B and its U.S. textile industry averages.

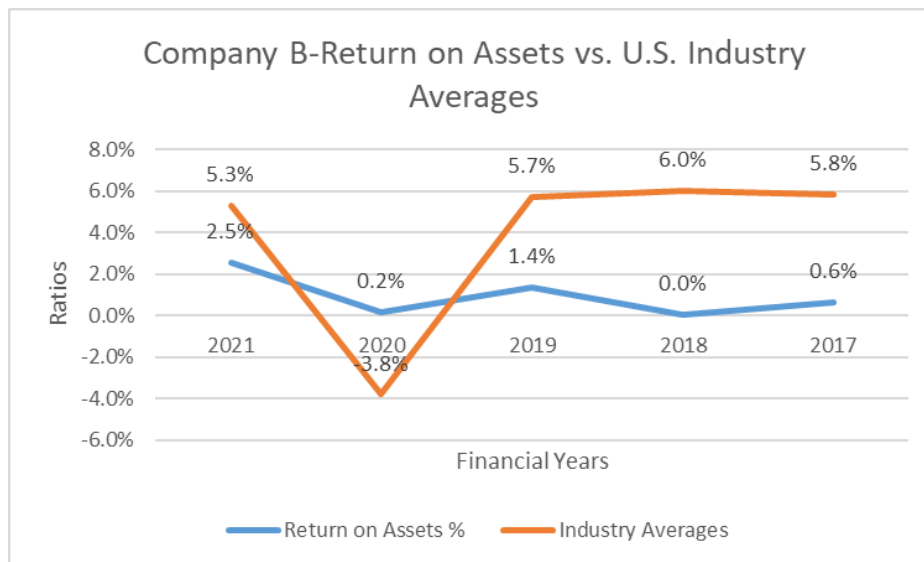


Figure 44. Comparison of Company B's Return on Assets Ratio against U.S. Industry Averages.

The second profitability ratio of Company B to analyze is the net profit margin ratio. The ratio calculates the net profit that Company B has earned from sales revenue.



Company B's net profit margin is significantly lower than the U.S. textile industry averages during 2017 to 2019 and 2021. The detailed analysis of Company B's income statement shows a considerable amount of sales revenue (from 86% to 91%) utilized on cost of goods sold. Company B has a minimum net profit after paying a significant amount of sales, general, and administrative expenses from 2017 to 2021. Company B needs significant efforts to lower the cost of goods sold in order to improve its net profit margin. During 2020, the U.S. textile industry was facing a negative net profit margin while company B sustained a positive 0.2% net profit margin ratio. It indicates that Company B and the Pakistan textile industry has the potential to offset the negative financial effects of pandemic like COVID-19. Company B requires serious administrative effort to reduce its expenses so that its profit increases. Figure 45 shows a graphical depiction of Company Bs Net Profit Margin ratio compared to the U.S. textile industry averages during the five-year analysis.

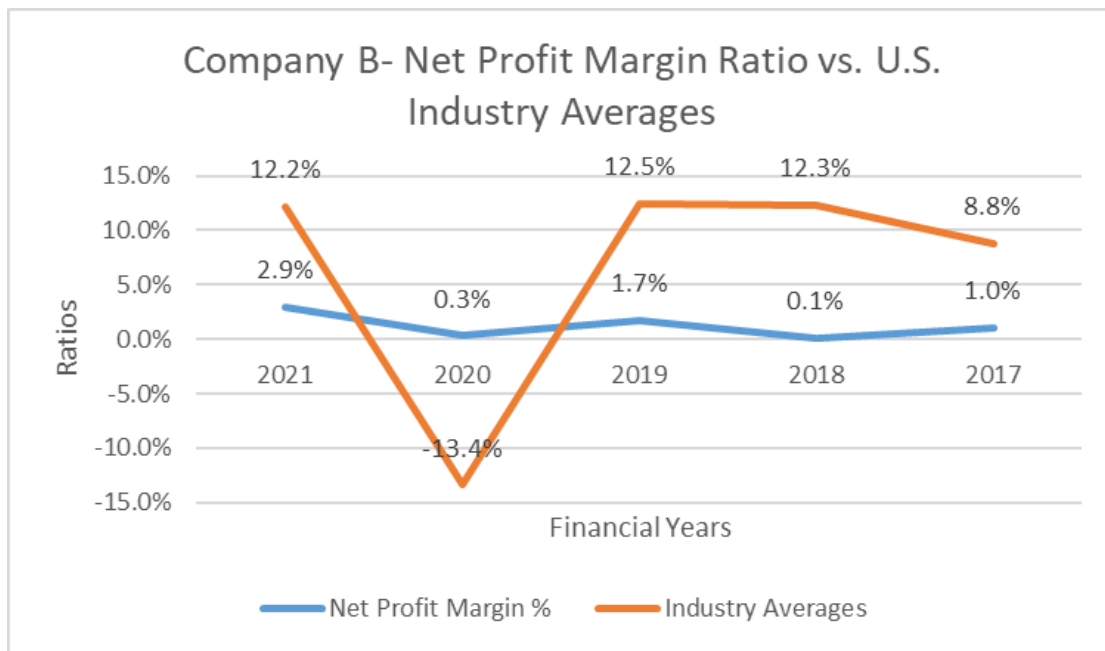


Figure 45. Comparison of Company B's Net Profit Margin Ratio against Industry Averages.

**e. Market Value Ratios**

The fifth category of ratios computed from the financial statements of Company B are market value ratios. Market value ratios assist investors in making stock investment

decisions (Malik, 2017). Higher market value ratios are desirable for an investor as well as for the company to grow. Table 23 shows the two market value ratios of Company B, price earnings (P/E) and dividend payout ratios, calculated from company's financial statements. Companies generally prefer higher P/E and dividend payout ratios due to the potential for increased returns linked with higher market value ratios.

Table 23. Company B's Market Value Ratios Analysis

<b>Market Value Ratios</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Price Earnings Ratio	4	50	7	238	26
<b>Industry Averages</b>	<b>21.48 (TTM-Trailing 12 Months)</b>				
Dividends Payout Ratio	0.00	1.40	0.00	0.02	2.03
<b>Industry Averages</b>	<b>0.96</b>	<b>-0.15</b>	<b>0.82</b>	<b>1.33</b>	<b>0.32</b>

The first market value ratio of Company B to analyze is the P/E ratio. It shows the relationship of stock price against earnings per share. Company B's P/E ratio shows significant ups and downs every year. It is greater than the U.S. textile industry trailing 12 months averages in 2017, 2018 and 2020. The ratio is considerably lower than the U.S. textile industry averages in 2019 and 2021. The analysis shows that the stock price is not stable, and the market is speculative about setting the real price of Company B's share. The administration needs to take serious steps so that shareholders' confidence is maintained in Company B's stock, and they prefer to retain them rather than selling frequently. Figure 46 graphically illustrates price earnings ratios of Company B and the U.S. industry averages from 2017 to 2021.



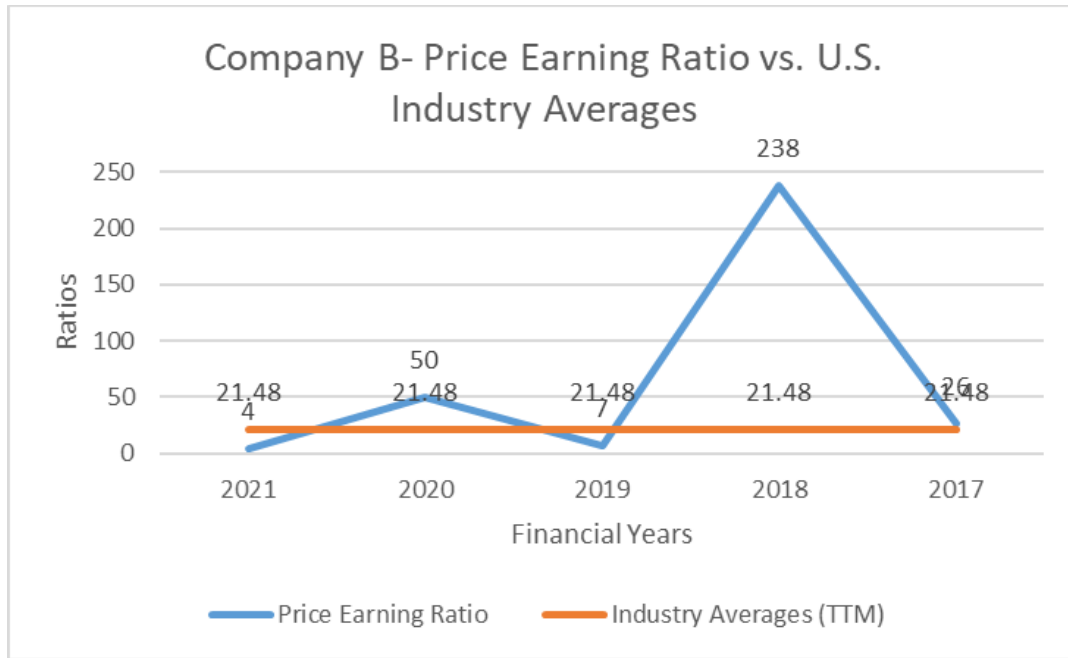


Figure 46. Comparison of Company B’s Price Earnings Ratio against U.S. Industry Averages.

The second market value ratio of Company B to analyze is the dividend payout ratio. The dividend payout ratio of Company B is volatile and shows opposite trends than the U.S. textile industry averages during 2017 to 2021. Company B utilizes a significant amount of sales revenue to bear the cost of goods to be sold. The meager revenue from sales revenue remains as net income after taxation. Company B paid dividends in years 2017, 2018 and 2020. The dividend payout ratio was higher than the U.S. textile industry averages in 2017, and 2020 but lower in 2018. The unpredictable dividend payout ratio of Company B shows its instability. Prospective investors and shareholders cannot predict the company’s future. Due to the speculative nature of financial statements, Company B may face difficulty in getting finances and investments from the financial market. Figure 47 graphically illustrates dividend payout ratios of Company B and the U.S. textile industry averages.

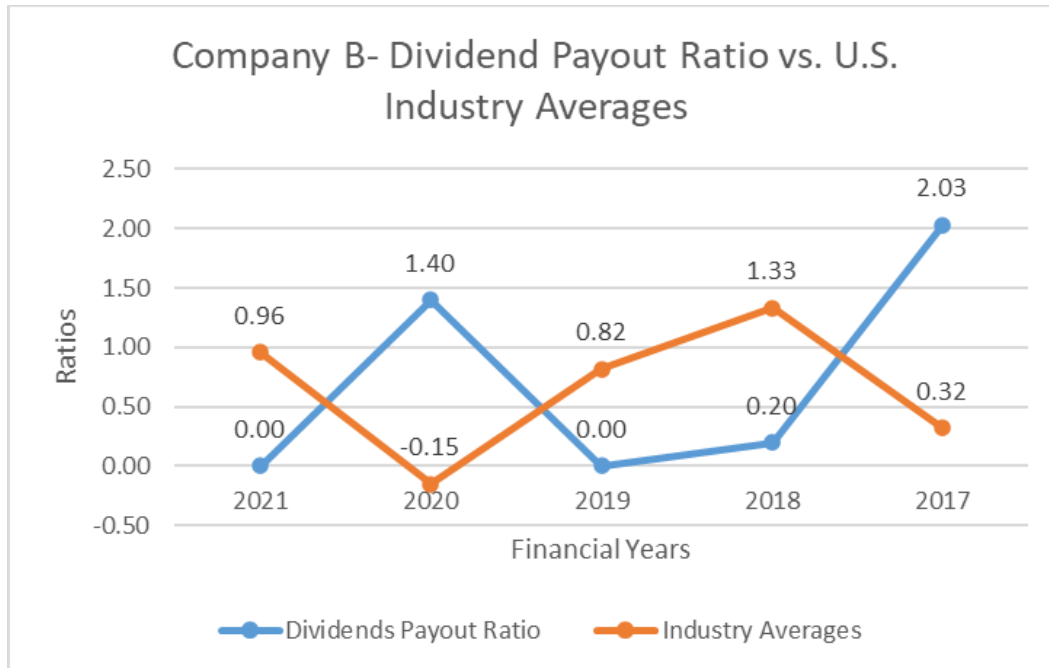




Figure 47. Comparison of Company B’s Dividend Payout Ratio against U.S. Industry Averages.

#### 4. Fraud Analysis

A company’s M-score analysis signals the prospect of possible manipulation of financial data and financial statement fraud. Company B’s M-score analysis for the five years is calculated as per Table 24. The M-score for 2018 to 2021 show no possible fraud (< 2.22) while score of 2017 raises red flags (>2.22). A detailed analysis of 2017 data of each variable shows a higher gross margin index (GMI) and depreciation index (DEPI) than the manipulator mean that may indicate possible manipulation of financial statement data of 2017. Company B’s financial statements do not suggest fraudulent activities. The sales, general, and administrative expenses index of 2019 (1.233) is greater than non-manipulator mean (1.134); however, the overall M-score is within the range as a non-manipulator. These are only possible fraud indicators which do not necessarily mean that the company is actually involved in fraudulent practices.

Table 24. Fraud Analysis of Company B

Company B's M-Score						
Derived Variables	2021	2020	2019	2018	2017	Manipulator/Non-Manipulator Means
DSRI	0.823	1.006	0.677	1.050	1.006	1.465/1.031
GMI	0.848	1.005	0.828	0.919	1.417	1.193/1.014
AQI	0.924	0.906	1.025	0.770	1.151	1.254/1.039
SGI	1.343	0.951	1.233	1.041	1.028	1.607/1.134
DEPI	0.977	1.004	1.054	0.880	1.153	1.077/1.001
SGAI	0.975	0.995	1.113	0.783	0.985	1.041/1.001
TATA	0.021	-0.012	-0.036	0.018	0.021	0.031/0.018
LVGI	0.949	0.992	1.038	1.151	0.890	1.111/1.037
<b>M-score</b>	<b>-2.33</b>	<b>-2.61</b>	<b>-2.84</b>	<b>-2.47</b>	<b>-2.01</b>	

 M < -2.22, no possible fraud  
 M > -2.22, possible fraud

## 5. Bankruptcy Analysis

The Z-score analysis signals prospects of a company declaring bankruptcy. It does not mean that the company is actually involved in possible bankruptcy. In fact, it is only an indication of possible bankruptcy. The Z-score bankruptcy analysis of Company B shows that the company is facing possible bankruptcy. Table 25 shows Company B's Z-score from 2017 to 2021. The detail analysis of Company B's financial statements from 2017 to 2021 shows it is highly indebted. Very low cash and cash equivalents are available that pose liquidity risks for paying off debts. Debts keep on increasing every year especially short-term debts. The majority of the liquidity is tied either to the stock in trade or to the trade debts. On the revenue side, a significant amount of the cost of goods sold reduces the company's gross profit. Stock prices of Company B are volatile in the market which may not be an attractive entity for investors and financial markets. A combination of all these issues contribute to the Z-score calculation and predict the company possibly leading towards bankruptcy. Company B needs a major structural change with regards to the leadership, administration, and policies so that the company comes out of bankruptcy risk. The Pakistan textile industry and Company B have the



potential to grow because in the years following the pandemic when the U.S. textile industry was facing loss and decline ratios, Company B had positive trends.

Table 25. Bankruptcy Analysis Company B

Company B Z's-Score					
Variables	2021	2020	2019	2018	2017
X1= Working Capital / Total Assets	-0.016	-0.079	-0.094	-0.057	-0.042
X2= Retained Earnings/Total Assets	0.075	0.053	0.058	0.044	0.042
X3= EBIT/Total Assets	0.040	0.009	0.023	0.001	0.004
X4= Market Value of Equity / BV of Total Debts	0.077	0.079	0.085	0.087	0.097
X5= Sales / Total Assets	0.879	0.706	0.803	0.642	0.600
Z Score = $1.2X1+1.4X2+3.3X3+0.6X4+1.0X5$	<b>1.143</b>	<b>0.763</b>	<b>0.898</b>	<b>0.689</b>	<b>0.682</b>

	Z<1.81, Possible Bankrupt
	1.81<Z<2.99, Unknown
	Z>2.99, Possible Non-Bankrupt

The financial analysis of Company B is merely an example. Its purpose is to educate Pakistani defense contracting officers on the application of the Integrated Financial Analysis Framework in financial position assessment of prospective contractors before issuing a contract to ensure that the contractor has the financial capability. The financial analysis of Company C is discussed in the next section.

#### D. FINANCIAL ANALYSIS OF COMPANY C

Company C was established in Pakistan in 1953 as a private limited company. It was incorporated as a public limited company in 1955. Company C is a textile composite mill, and it produces and sells various textile products. It is registered in the Pakistan Stock Exchange Limited (<https://dps.psx.com.pk>) in the textile composite sector. In the next section, the Integrated Financial Analysis Framework, is used for the financial analysis of Company C's five years of financial statements; 2017 to 2021. The integrated Financial Analysis Framework includes five financial analyses: horizontal, vertical, ratio, bankruptcy, and fraud analysis. The financial statements primarily used to conduct Company C's financial analysis are income statements, balance sheets, and cash flow statements. These statements are highly integrated with each other. Therefore, to have an in-depth knowledge of a prospective contractors' financial situation, Pakistani defense contracting officers should review all of these financial statements.



## 1. Horizontal Analysis

Three financial statements, balance sheets, income statements, and cash flow statements of Company C, are horizontally analyzed from 2017 to 2022. The financial data of 2017 serves as the base year to analyze the data for the rest of the years. Table 26 shows the horizontal analysis of Company C and includes only the main line items of each financial statement. The detailed horizontal analysis of Company C's financial statements is available in Appendices H, I, and J.

Table 26. Company C's Financial Statements Horizontal Analysis

<b>Balance Sheet</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Reserves	196%	132%	160%	123%	100%
Total Equity	171%	128%	140%	116%	100%
Total Non-Current Liabilities	314%	212%	121%	94%	100%
Total Current Liabilities	258%	212%	164%	129%	100%
Total Liabilities	275%	212%	152%	119%	100%
Total Equity and Liabilities	244%	187%	148%	118%	100%
Total Non-Current Assets	229%	179%	120%	101%	100%
Total Current Assets	256%	193%	171%	131%	100%
Total Assets	244%	187%	148%	118%	100%
<b>Profit and Loss Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Sales – net	216%	135%	143%	114%	100%
Cost of sales	212%	137%	138%	110%	100%
Profit before taxation	502%	115%	325%	197%	100%
Taxation	756%	-9%	496%	288%	100%
Profit after taxation	10191%	4174%	4133%	2623%	100%
<b>Cash Flow Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Net cash generated from operating activities	2%	-1%	8%	-52%	100%
Net cash used in investing activities	-188%	-167%	-93%	-37%	-100%
Net cash from financing activities	157%	56%	21%	2%	100%

The first financial statement to analyze for Company C is the balance sheet.

Figure 48 graphically illustrates the horizontal analysis of Company C's balance sheets from 2017 to 2021. During 2017 to 2021, Company C's financial performance significantly increased in all line items.

Company C's total equity has increased by Rs. 7 billion since 2017, mainly because of the increase in sales volume and profitability. The company obtained long-term financing and utilized it to increase production capacity and acquire technology. However, current liabilities increased by Rs. 8.48 billion, mainly due to short-term borrowings and increased trade creditors. Non-current assets increased by Rs. 8.06 billion

in 2021 due to investment in PP&E and acquisition of Worldwide Developers. Current assets including inventory, trade debtors, and pending tax refunds increased by approximately Rs. 32 billion.

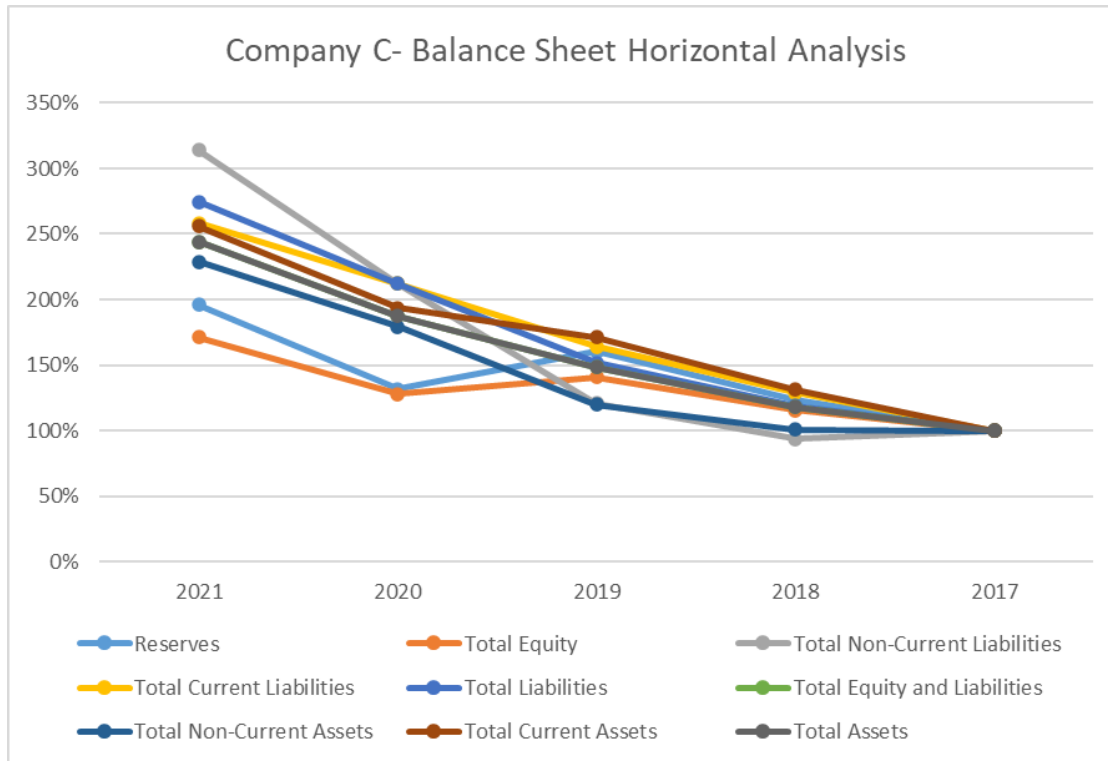


Figure 48. Horizontal Analysis of Company C’s Balance Sheets.

The second financial statement to analyze for Company C is the income statement. Figure 49 graphically illustrates the horizontal analysis of Company C. During the five years period, Company C’s revenue from sales has increased significantly. Like other Pakistan textile companies, Company C’s sales dropped during 2020 due to COVID-19; however, it showed profitability in 2021. The profits before and after taxation in 2021 are the best in the five years as Rs 6 billion and Rs 5 billion, respectively (502% and 10191% increase compared to 2017). Company C’s profitability increased by strategically investing in machinery, inventories, marketing, human resources, and financial sectors. In 2021, local retail had limited operating hours throughout the year due to safety procedures implemented by the Federal and Provincial Government of Pakistan. However, the company effectively utilized its production capacity to enhance export by Rs 54 million in 2021 compared to Rs 34 million in 2020 (59% increase during the

period). The increased profit is a result of additional capacity, replacement of inefficient machinery and processes. In 2017, companies have tax credits that expired in later years. As a result, taxation significantly increased (10191% in 2021 with respect to 2017). Deferred liabilities including deferred taxation and staff retirement benefits increased after the end of the tax credits available in 2020.

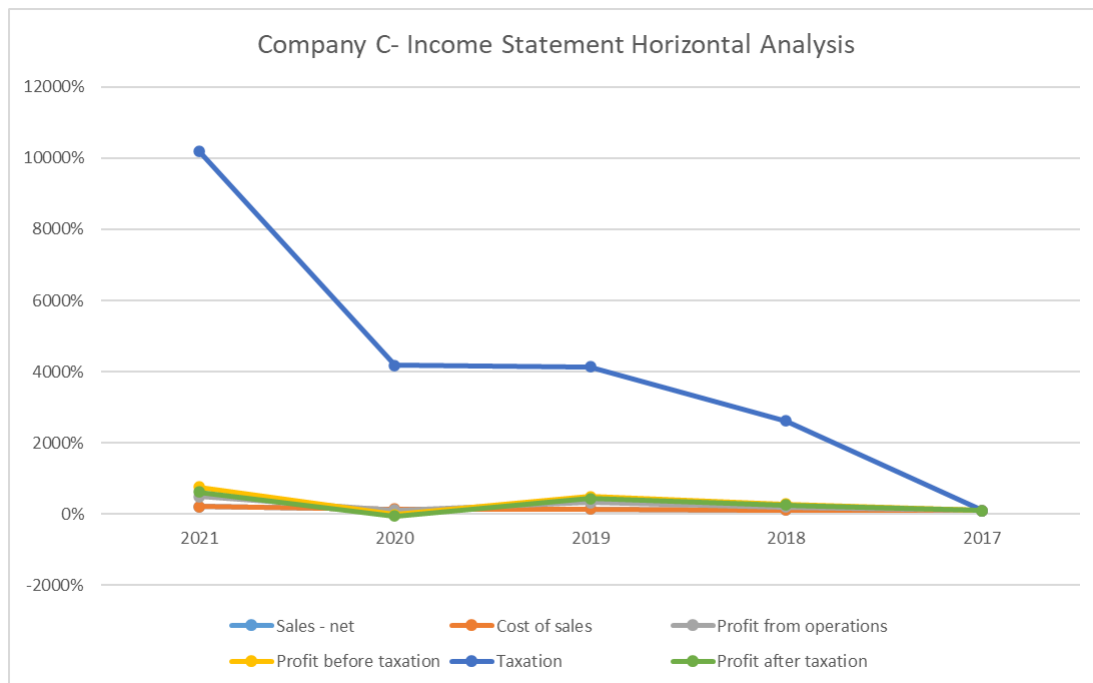


Figure 49. Horizontal Analysis of Company C’s Income Statements.

The third financial statement to analyze for Company C is the cash flow statement. Figure 50 graphically illustrates the cash flow statement of Company C from 2017 to 2021. During 2017 to 2021, cash flow from operating activities of Company C was either negative or very low. Even though the company increased the sales, most of it was credit sales. Cash flow from investment activities is negative during 2017 to 2021. The deficit of cash from investment activities increased every passing year because of heavily investing in PP&E and the acquisition of a subsidiary company. The cash flow from financing activities is positive during 2017 to 2021 with the major increase in 2021 due to long-term loans from the State Bank of Pakistan. Capital expenditures that could not be financed by the State Bank of Pakistan’s concessionary financing, were financed with internal business sources that decreased Company C’s working capital.

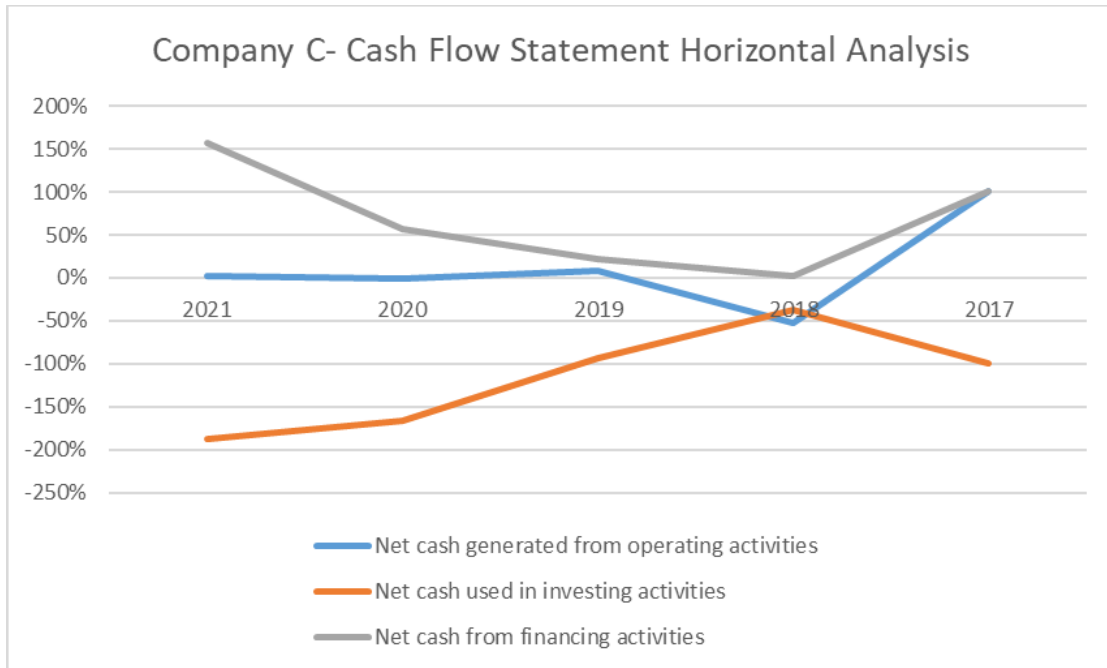


Figure 50. Horizontal Analysis of Company C’s Cash Flow Statements.

## 2. Vertical Analysis

Company C’s financial statements are also vertically analyzed for a period of five years, from 2017 to 2022. These include balance sheets and income statements. The financial data of 2017 is the base year to analyze the data for the rest of the years. Table 27 depicts the vertical analysis of Company C and includes only the main line items of financial statements. The detailed vertical analysis of Company C’s financial statements is shown in Appendices H, I, and J.

Table 27. Company C's Financial Statements Vertical Analysis

<b>Balance Sheet</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Reserves	16%	14%	22%	21%	20%
Total Equity	21%	20%	28%	29%	30%
Total Non-Current Liabilities	26%	23%	17%	16%	20%
Total Current Liabilities	53%	57%	55%	55%	50%
Total Liabilities	79%	80%	72%	71%	70%
Total Equity and Liabilities	100%	100%	100%	100%	100%
Total Non-Current Assets	42%	42%	36%	38%	44%
Total Current Assets	58%	58%	64%	62%	56%
Total Assets	100%	100%	100%	100%	100%
<b>Profit and Loss Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Sales – <i>net</i>	100%	100%	100%	100%	100%
Cost of sales	80%	83%	79%	79%	82%
Profit before taxation	7%	0%	7%	5%	2%
Provision for taxation	1%	1%	1%	1%	0%
Profit after taxation	6%	-1%	6%	5%	2%

The first financial statement to analyze for Company C is the balance sheet. Figure 51 graphically illustrates vertical analysis of Company C's balance sheet from 2017 to 2021. In total equity and liabilities, the liabilities increased, and equity decreased during the five years. Total equity decreased from 30 % in 2017 to 21% in 2021. While total liabilities increased from 70% in 2017 to 79% in 2021. The company borrowed short-term loans from the financial market and long-term from various Pakistan banks to invest in stock in trade. Post COVID-19, the company utilized the financing facilities extended by the Pakistan SBP and used the funds to acquire PP&E and technology. On the asset side, non-current assets decreased significantly during 2018 and 2019 (from 44% 2017 to 36% 2019). The company's heavy investment for PP&E is visible from the increasing amount of non-current assets during 2020 and 2021 (42%). Current assets are a significant portion of the balance sheet. However, it consists of inventory and trade debts.

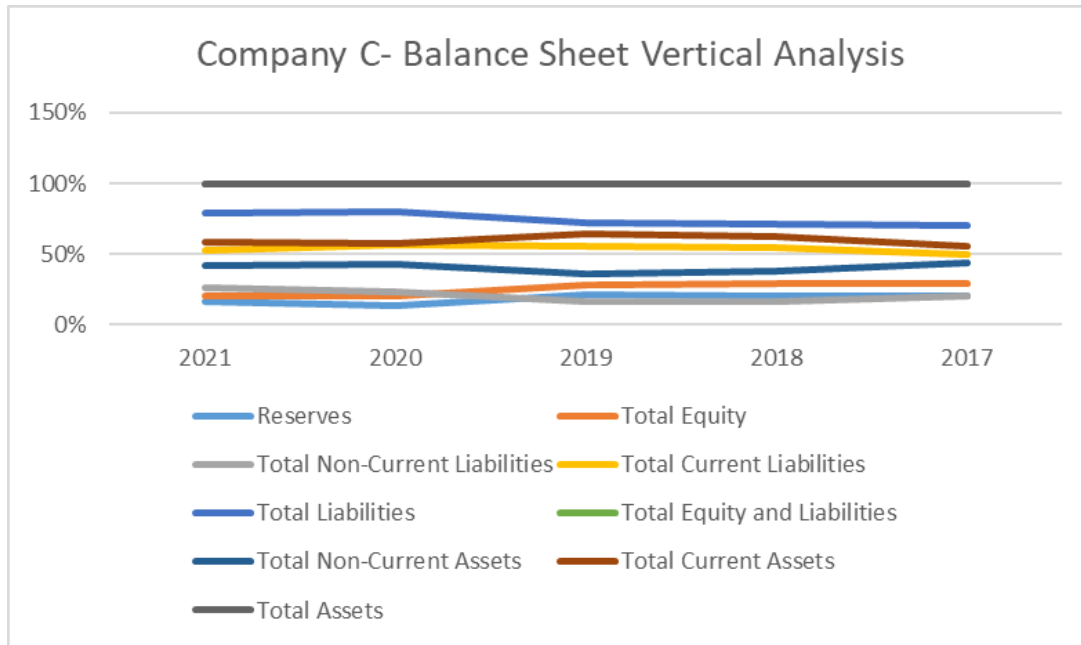


Figure 51. Vertical Analysis of Company C’s Balance Sheets.

The second financial statement to analyze for Company C is the income statement. A graphical illustration of five years of vertical analysis from 2017 to 2021 is depicted from Figure 52. The cost of goods sold percentage with reference to total sales is almost constant i.e., 82% in 2017 to 80% in 2021. The percentage of profit before and after taxation increased from 2017 to 2019, declined in 2020, and increased considerably in 2021. A thorough analysis of income statements reveals that Company C has expanded its export sales in 2021 by Rs. 20.26 billion because of venturing into new global markets. In addition, local sales rose by Rs. 12.23 billion in 2021 due to the loosening of COVID-19 restrictions. The surge in sales has also led to an increase in the gross profit margin from 16.79% in 2020 to 19.53% in 2021.

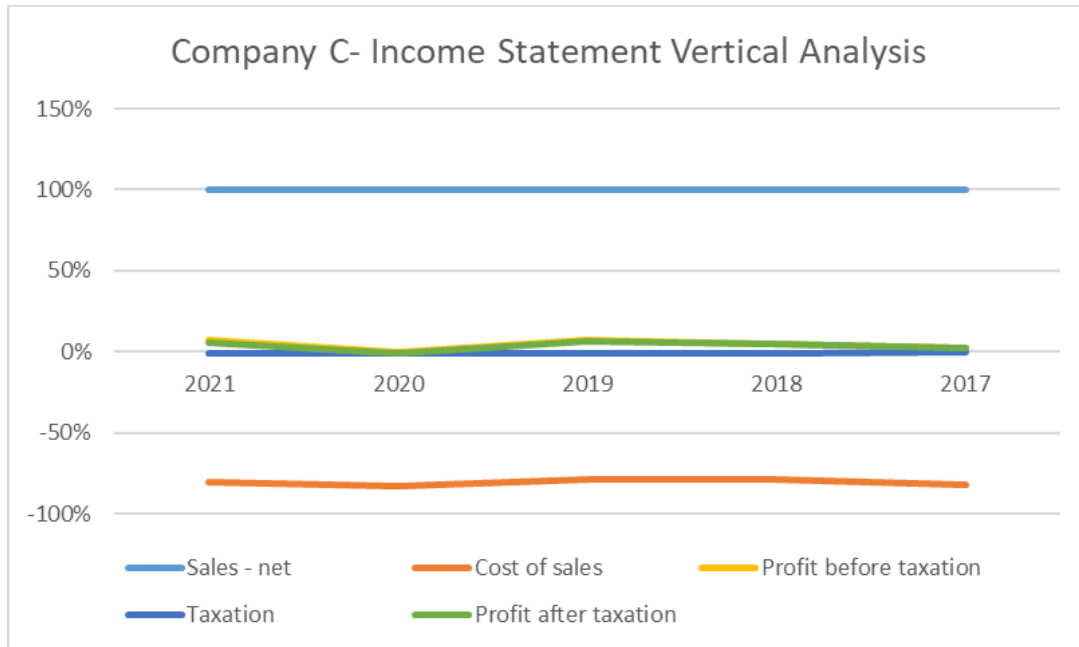


Figure 52. Vertical Analysis of Company C’s Income Statements.

### 3. Ratio Analysis

Company C’s financial statements from 2017 to 2021 are analyzed for ratios. The financial ratios have been calculated under five major categories: Liquidity, Debt Management, Efficiency, Profitability, and Market Value. The two ratios from each category are calculated and analyzed as per the developed Integrated Financial Analysis Framework. The ratios utilized in this analysis are specific to the textile industry; however, these ratios can also be used for any industry after some adjustment. These ratios are further compared with the U.S. textile industry averages. U.S. textile industry averages have been taken for comparison due to the non-availability of the Pakistan textile industry averages on any official or authorized document or website.

#### a. Liquidity Ratios

The first category of ratios analyzed from the financial statements of Company C are liquidity ratios. Liquidity ratios were analyzed for Company C’s financial statements from 2017 to 2021. Liquidity ratios ensure that businesses can fulfill their immediate responsibilities and that their ongoing cash flow can be ensured for a successful venture (Rahman, 2011). Two ratios from the category of liquidity ratios: Cash ratio and Current ratio, were calculated from the financial statements of five years from 2017 to 2021.



Liquidity analysis is part of the Integrated Financial Analysis Framework developed to assess a company’s financial position. The liquidity state of Company C is unsatisfactory because the company has a low state of current assets including inventory, accounts receivable, and cash compared to current liabilities. Table 28 shows the liquidity ratios of Company C and the U.S. textile industry averages from 2017 to 2021. With decreased ratios, Company C may need to be cautious in formulating a working capital policy.

Table 28. Company C’s Liquidity Ratios Analysis

<b>Liquidity Ratios</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Cash Ratio	-0.60	-0.64	-0.61	-0.62	-0.64
<b>Industry Averages</b>	<b>0.22</b>	<b>0.57</b>	<b>0.18</b>	<b>0.04</b>	<b>0.14</b>
Current Ratio	1.103	1.016	1.160	1.135	1.114
<b>Industry Averages</b>	<b>2.59</b>	<b>2.56</b>	<b>2.84</b>	<b>3.13</b>	<b>2.86</b>

The first liquidity value ratio of Company C to analyze is the cash ratio. During the five-year period, 2017 to 2021, the company’s cash ratio remained negative because of the negative balance of cash and cash equivalents. Company C invested cash generated from operating activities and cash generated from financing activities in inventory (35% of 2021 total assets). A significant amount of sales, 13% of 2021 total assets, is on credit which also created a cash shortfall. In addition, the company has taken considerable short-term debts (16% of 2021 total equity & liabilities) to expand exports in the international market. Over the period of five years, trade debts have increased to 248% and short-term payables increased to 255% which contributed to negative cash ratios. Compared to the U.S. textile industry averages Company C’s cash ratio is weak which poses a high liquidity risk. Figure 53 graphically illustrates the cash ratios of Company C and the U.S. textile industry averages from 2017 to 2021.



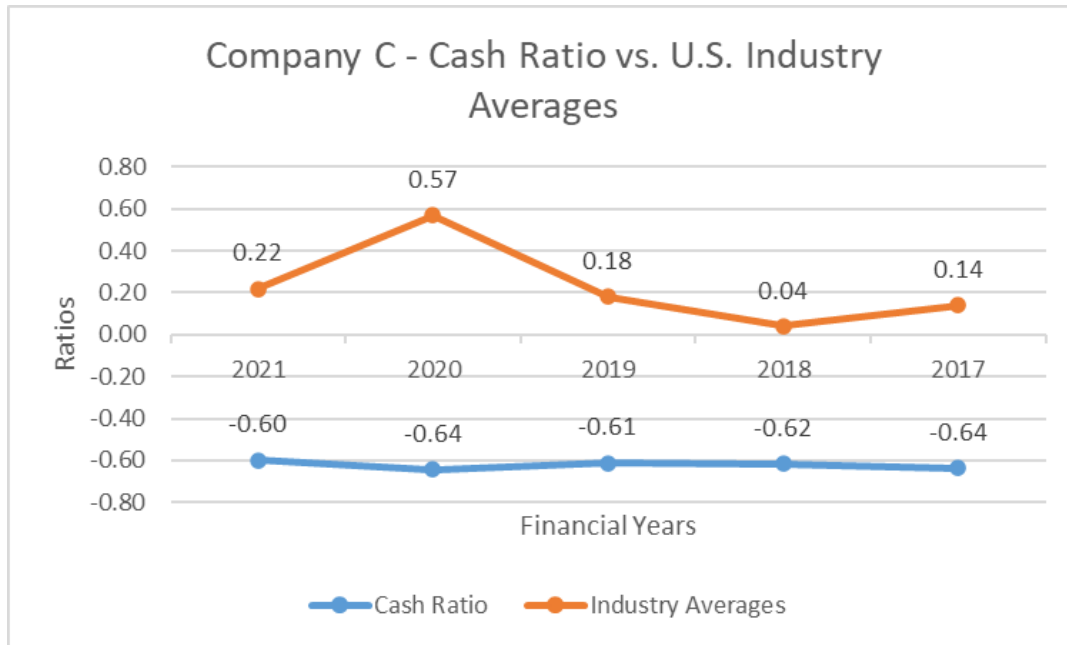


Figure 53. Comparison of Company C's Cash Ratio against U.S. Industry Averages.

The second liquidity ratio of Company C to analyze is the current ratio. The current ratio indicates Company C's capability to pay its current liabilities when due. It is an indication of the company's capacity to cover operational costs (Septyano et. al., 2022). The current ratio of Company C is consistent during the five-year period; approximately 1:1. It means that for payment of every \$ 1 of liabilities, the company has \$ 1 of current assets available. However, from the detail analysis of the company's balance sheet, 99% of the 2021 current assets amount (Rs 51.6 billion out of Rs 52.2 billion) is tied up in trade debts, inventory, and receivables from the Pakistan government. This is a sign of Company C's inability to immediately pay off short-term liabilities. Company C's current ratio is also lower than the U.S. textile industry averages from 2017 to 2021, which is a significant risk. Figure 54 graphically illustrates the current ratios of Company C and the U.S. textile industry averages from 2017 to 2021.

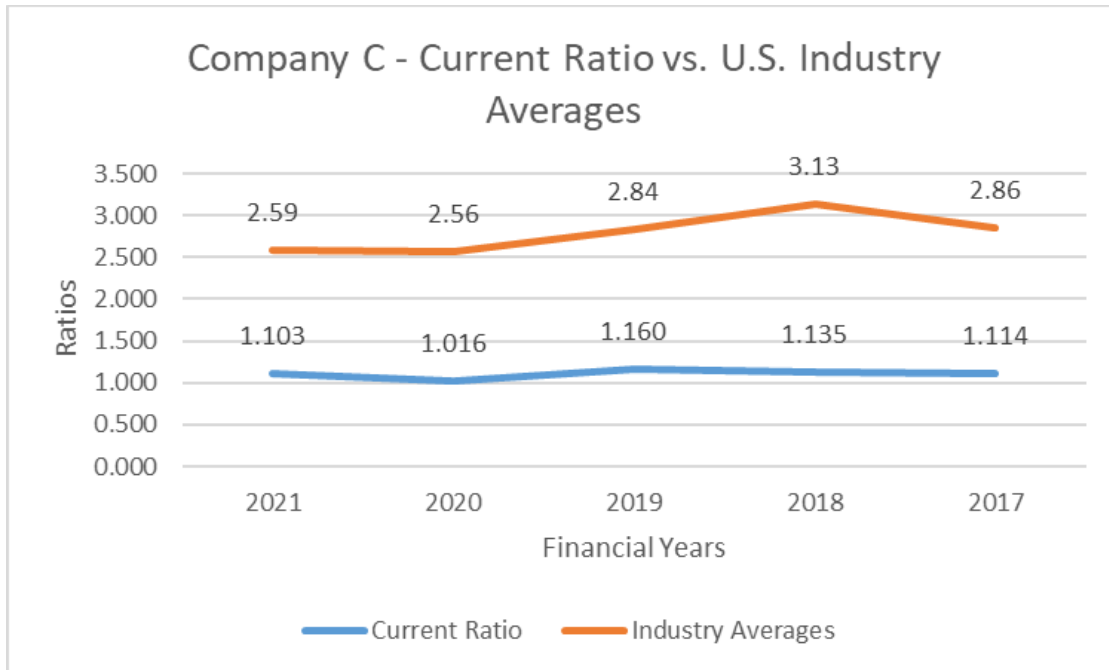


Figure 54. Comparison of Company C’s Current Ratio against U.S. Industry Averages.

**b. Debt Management Ratios**

The second category of ratios to be analyzed on Company C’s financial statements is debt management ratios. Also known as leverage ratios and solvency ratios, these ratios determine the quantity of company’s resources financed by debt. A company’s financial leverages measure its capacity to pay long-term liabilities (Septyano et. al., 2022). As a part of the developed Integrated Financial Analysis Framework, two debt management ratios are calculated for Company C from 2017 to 2021. These include debt ratio and debt-to-equity ratios. Table 29 shows Company C’s debt ratio and debt-to-equity for 2017 to 2021, along with the U.S. textile industry averages.

Table 29. Company C’s Debt Management Ratios Analysis

Debt Management Ratios	2021	2020	2019	2018	2017
Debt Ratio	0.79	0.80	0.72	0.71	0.70
<b>Industry Averages</b>	<b>0.41</b>	<b>0.40</b>	<b>0.46</b>	<b>0.43</b>	<b>0.41</b>
Debt-to- Equity Ratio	3.79	3.92	2.55	2.43	2.36
<b>Industry Averages</b>	<b>0.69</b>	<b>0.68</b>	<b>0.87</b>	<b>0.76</b>	<b>0.54</b>

The first debt management ratio of Company C to analyze is the debt ratio. The debt ratio shows how much debt a business has against its assets. A lower debt ratio is considered favorable for the business. However, a higher debt ratio may also be



considered favorable for the businesses that are also growing and expanding. Company C's debt ratio is higher than the U.S. textile industry averages. The U.S. textile industry maintains debts close to 40% of its assets while Company C's debts are around 70% to 80% of its assets. A detailed analysis of Company C's financial statements shows that the company has grown considerably during these years, and its sales improved significantly (216% compared to 2017). The company uses its debts to enhance business internationally, acquiring new machinery and the latest technology. However, a higher debt is considered a risk for the company in meeting its liabilities when due. Figure 55 graphically illustrates the debt ratios of Company C and the U.S. textile industry averages from 2017 to 2021.

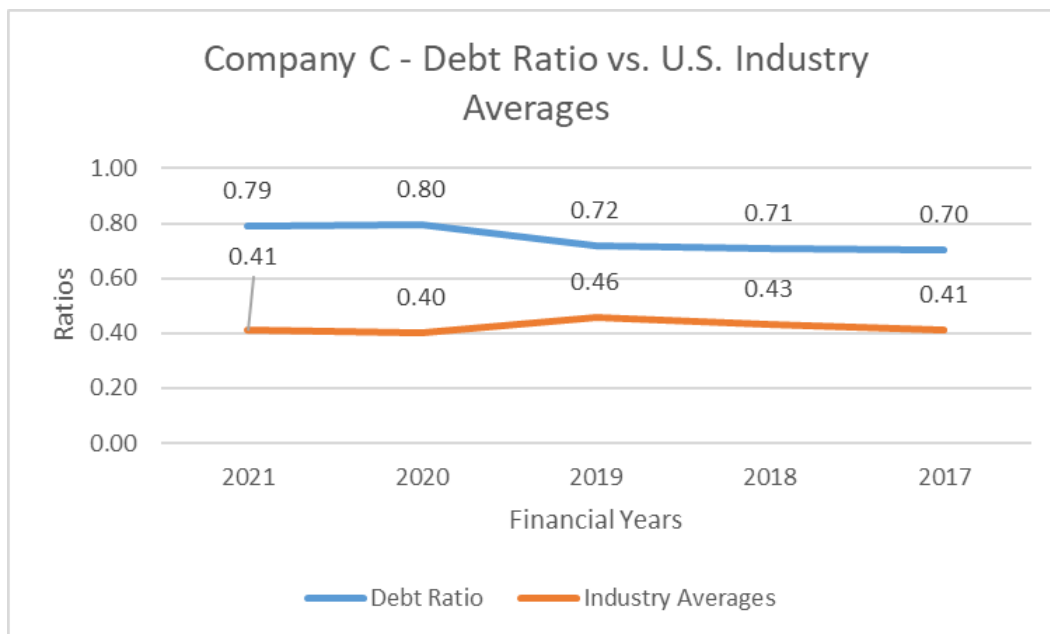


Figure 55. Comparison of Company C's Debt Ratio against U.S. Industry Averages.

The second debt management ratio of Company C to analyze is the debt-to-equity ratio. This ratio compares the debts of a company with its total equity to determine the company's financial leverage structure. Financial statements for 2017 to 2021 show that Company C is pursuing plans to balance, modernize, and replace its old machinery. It received long-term loans during 2020 and 2021 from State Bank of Pakistan on low interest rates. Despite repayments in 2021, the long-term borrowing levels of Company C increased by Rs. 7.67 billion, bringing the total to Rs. 18.57 billion. This additional loan

has increased debt and debt-to-equity ratios compared to 2019. Company C’s debt-to-equity ratio is more than the U.S. textile industry average, which may indicate a higher level of risk. Figure 56 graphically illustrates the debt-to-equity ratios of company C and the U.S. textile industry averages from 2017 to 2021.

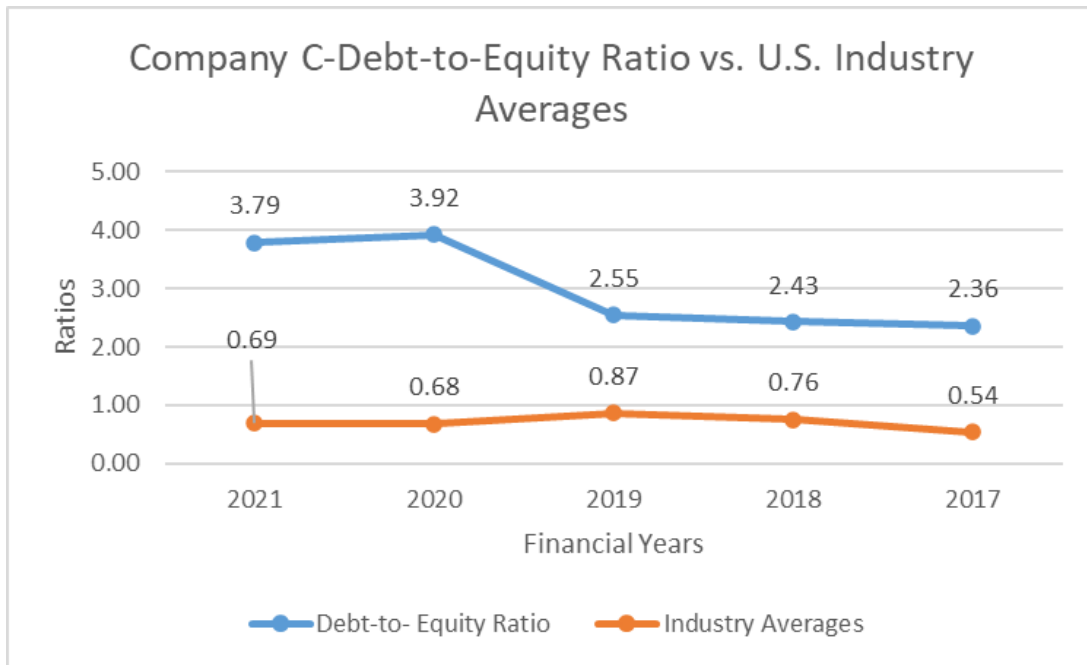


Figure 56. Comparison of Company C’s Debt-to Equity Ratio against U.S. Industry Averages.

**c. Efficiency Ratios**

Efficiency ratios are the third category of ratios analyzed on the financial statements of Company C. Efficiency ratios assist businesses in assessing their profit generation ability (Rist & Pizzica, 2015). Companies with a higher efficiency ratio are usually considered financially healthy. As a part of the developed Integrated Financial Analysis Framework, two efficiency ratios: total asset turnover ratio and inventory turnover ratio, were calculated from Company C’s financial statements from 2017 to 2021. Table 30 shows the efficiency ratios analysis of Company C and the U.S, textile industry averages for the five years, 2017 to 2021.



Table 30. Company C's Efficiency Ratio Analysis

<b>Efficiency Ratios</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Total Assets Turnover	0.97	0.78	1.05	1.05	1.09
<b>Industry Averages Ratio</b>	<b>1.36</b>	<b>1.01</b>	<b>1.23</b>	<b>1.37</b>	<b>1.22</b>
Inventory Turnover	2.25	1.66	2.12	2.23	2.63
<b>Industry Averages Ratio</b>	<b>3.69</b>	<b>3.38</b>	<b>3.54</b>	<b>3.44</b>	<b>3.92</b>

The first efficiency ratio of Company C to analyze is the total asset turnover ratio. The total asset turnover compares the net sales of Company C generated from total assets. The company's total asset turnover ratio was stable from 2017 to 2019, decreased in 2020 and improved in 2021. The global effects of the COVID-19 pandemic on company's financials are visible from the data. Comparing Company C's ratio with the U.S. textile industry averages from 2017 to 2021, it is noted that the company performed below the U.S. textile industry peers. This is because the company did not utilize assets to earn revenue as effectively as its U.S. industrial competitors did. The company has invested huge amounts to replace machinery and technology. Although the company is expanding in the international market and earning export revenue, there is a need to put more effort into efficiently utilizing these resources in generating proportionate revenues. Figure 57 graphically illustrates total asset turnover ratios of Company C and the U.S. textile industry averages from 2017 to 2021.



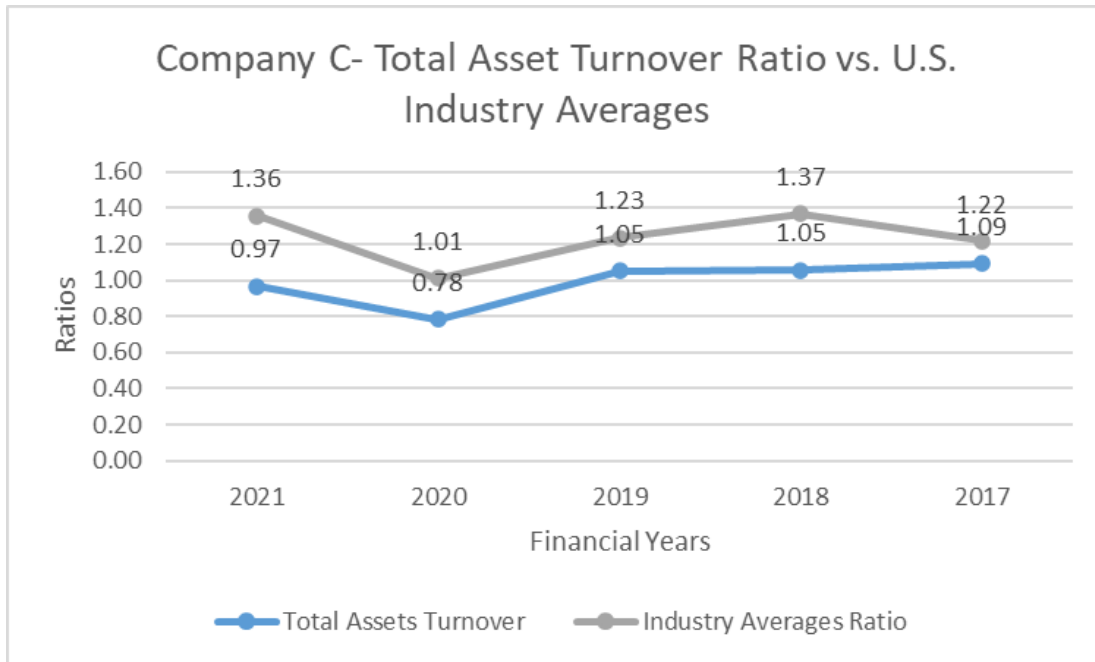


Figure 57. Comparison of Company C’s Total Assets Turnover Ratio against U.S. Industry Averages.

The second efficiency ratio of Company C to analyze is the inventory turnover ratio. This ratio displays how frequently a company turned over its inventory in relation to the value of goods sold over a certain period (Malik, 2017). A lower inventory turnover signifies the possibility of unnecessary inventory, while a higher ratio frequently indicates the possibility of shortage of goods, which affects customer service. The ratio should be higher because it indicates that the inventory is sold more frequently (Rahman, 2011). During 2017 to 2019 and in 2021, the inventory turnover ratio of Company C remained almost the same. Due to the COVID-19 pandemic, the ratio declined in 2020. The increase in the ratio during 2021 is further attributed to investments in additional production capacity. Compared to the U.S. textile industry averages, Company C operated below its industry competitors throughout the five-year analysis. Maintaining a higher inventory level results in increased expenses for warehousing, insurance, etc. These expenses reduce overall profit. Company C needs to increase the sales volume of goods to reduce its inventory costs. Figure 58 illustrates a graphical comparison of inventory turnover ratios between Company C and the U.S. textile industry averages from 2017 to 2021.

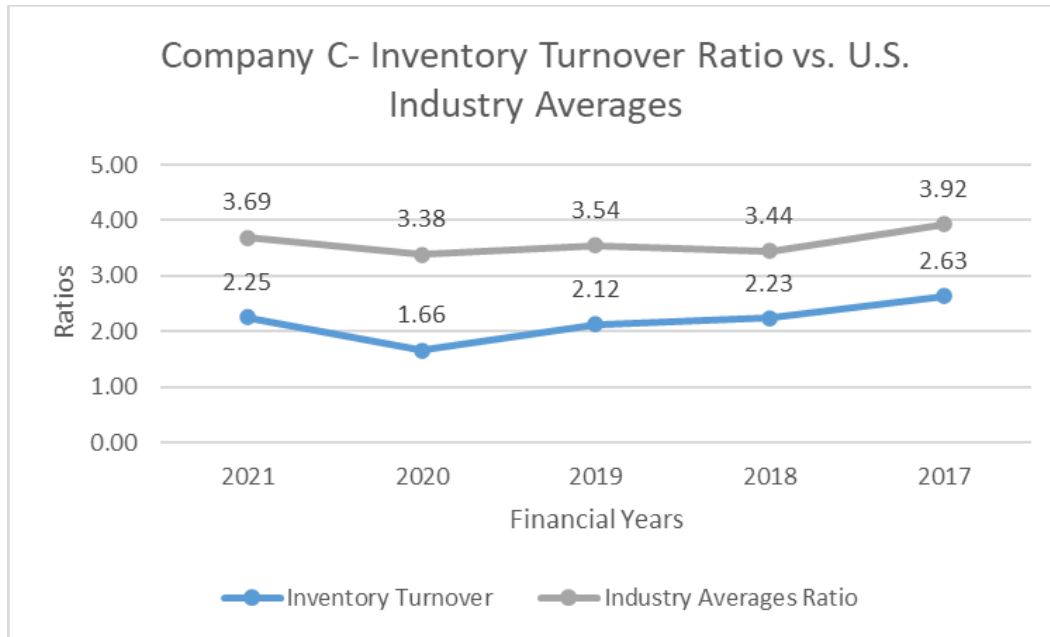


Figure 58. Comparison of Company C’s Inventory Turnover Ratio against U.S. Industry Averages.

**d. Profitability Ratios**

Profitability ratios are the fourth category of ratios analyzed on the financial statements of Company C. The profitability ratio evaluates a company’s capacity for making a profit. This ratio also indicates the degree of control efficacy inside an organization. Because strong returns enable them to fund most of their operations with internally produced funds, highly profitable companies do not require a lot of debt financing (Septyano et. al., 2022). Table 31 indicates two profitability ratios of Company C and the U.S. textile industry averages from 2017 to 2021. These profitability ratios are return on assets ratio and net profit margin ratio.

Table 31. Company C’s Profitability Ratios Analysis

Profitability Ratios	2021	2020	2019	2018	2017
Return on Assets %	5.7%	-0.7%	6.6%	4.8%	2.2%
<b>Industry Averages</b>	<b>5.3%</b>	<b>-3.8%</b>	<b>5.7%</b>	<b>6.0%</b>	<b>5.8%</b>
Net Profit Margin %	5.9%	-0.9%	6.3%	4.5%	2.0%
<b>Industry Averages</b>	<b>12.2%</b>	<b>-13.4%</b>	<b>12.5%</b>	<b>12.3%</b>	<b>8.8%</b>

The first profitability ratio of Company C to analyze is the return on assets ratio. The ratio measures a company’s profits generates from utilizing its assets. Company C’s return on asset ratio presents an increasing trend from 2017 to 2019 (2.2% to 6.6%), a





significant fall in the ratio during 2020 (-0.7%) and a considerable increase in 2021 (5.7%). Except for the COVID-19 pandemic year, the ratios for the rest of the years are analyzed as favorable. The company’s investment in replacing old assets and acquiring the latest technology has increased net profit. Compared to the U.S. textile industry averages, the return on asset ratio of Company C was below industry peers in 2017 and 2018. However, the same is higher than the industry averages from 2019 to 2021. From 2019 to 2021, the return on assets of the U.S. textile industry decreased, but Company C increased. Figure 59 graphically illustrates the return on assets ratios of Company C and the U.S. textile industry averages from 2017 to 2021.

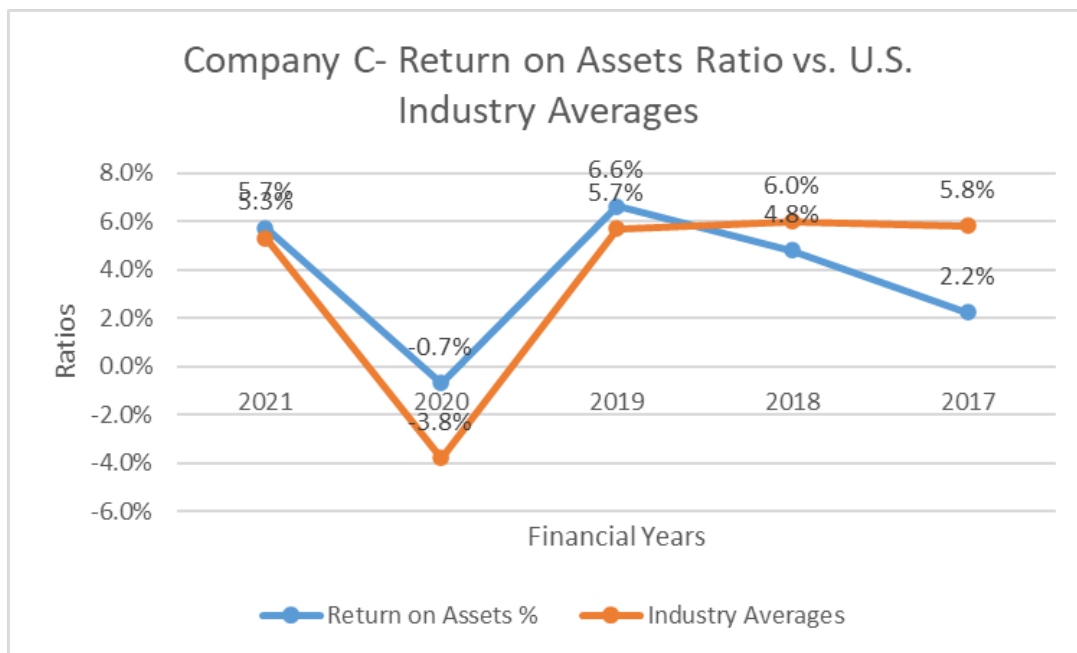


Figure 59. Comparison of Company C’s Return on Assets Ratio against U.S. Industry Averages.

The second profitability ratio of Company C to analyze is the net profit margin ratio. The ratio calculates the net profit percentage from sales. On a year-on-year basis, Company C’s net profit margin shows a similar trend to its return on assets ratio. Except for 2020, Company C showed growth in the rest of the years. Company C has effectively controlled selling & distribution and administrative costs during the five-year period (reduced 15% of total sales in 2017 to 10% of total sales in 2021). The control of expenditures increased the profit margin from 2% in 2017 to 6% in 2021. However, in comparison with the U.S. textile industry averages, the net profit margin of Company C

is significantly below than the industry averages. The company needs to make an effort to be more in line with its U.S. industry peers. Figure 60 shows a graphical depiction of Company C’s net profit margin ratios with the U.S. textile industry averages from 2017 to 2021.

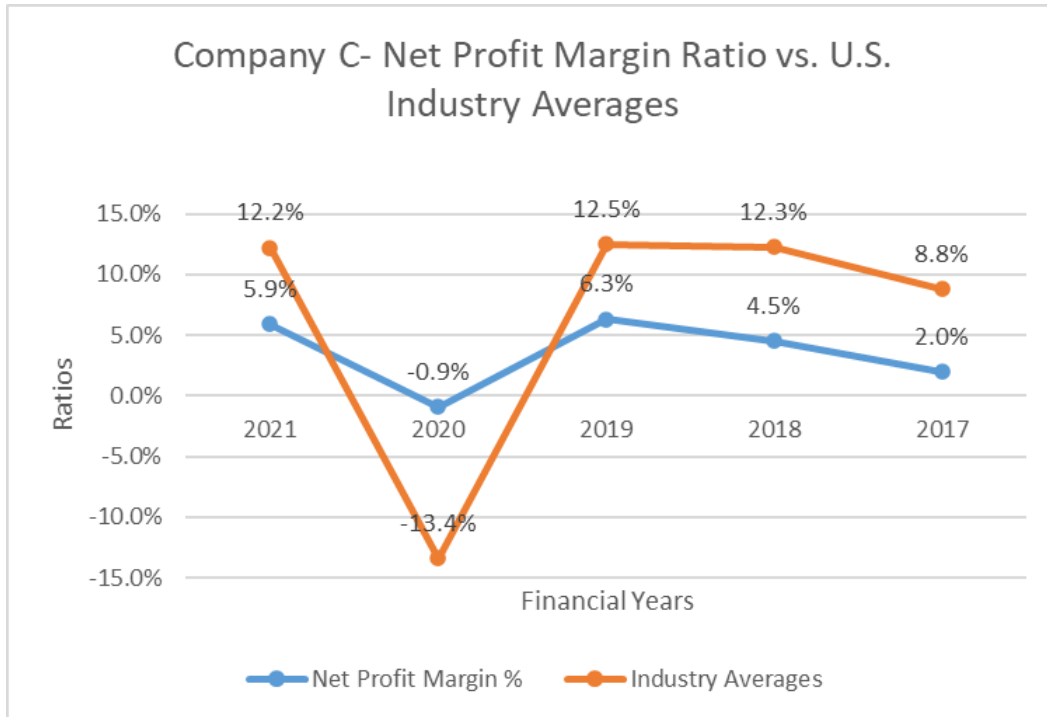


Figure 60. Comparison of Company C’s Net Profit Margin Ratio against U.S. Industry Averages.

**e. Market Value Ratios**

Market value ratios are the fifth category of ratios analyzed on the financial statements of Company C. Market value ratios link a company’s operations and activities related to stockholders’ equity. Potential stock investors frequently utilize these value ratios as analysis tools. These ratios frequently show correlations between shares of stock and dividends because investors want to see a good return on their investment (Koetter, 2014). As a part of the developed Integrated Financial Analysis Framework, two market value ratios, price earnings ratio and dividend payout ratio were calculated from Company C’s financial statements. Table 32 shows the market value ratios analysis of Company C from 2017 to 2021.



Table 32. Company C Market Value Ratios Analysis

Market Value Ratios	2021	2020	2019	2018	2017
Price Earnings Ratio	5.07	-25.56	4.65	7.38	16.36
<b>Industry Averages</b>	<b>21.48 (TTM-Trailing 12 Months)</b>				
Dividends Payout Ratio	0.03	-1.85	0.25	0.17	0.12
<b>Industry Averages</b>	<b>0.96</b>	<b>-0.15</b>	<b>0.82</b>	<b>1.33</b>	<b>0.32</b>

The first market value ratio of Company C to analyze is the price earnings ratio. Except for the year 2021, Company C’s earnings per share increased during 2017 to 2020 because of growing profits. The price earnings ratio of Company C declined to 5.07 times in 2021 from 16.36 times in 2017, mainly due to fluctuations in the shares’ market price. In 2020, the shares’ market price dropped substantially to Rs. 28.63 but recovered to Rs. 50.73 by the end of 2021. Company C’s performance is significantly below as compared to the U.S. textile industry averages. Figure 61 shows a trend analysis of Company C’s price earnings ratios compared to the U.S. textile industry averages from 2017 to 2021.

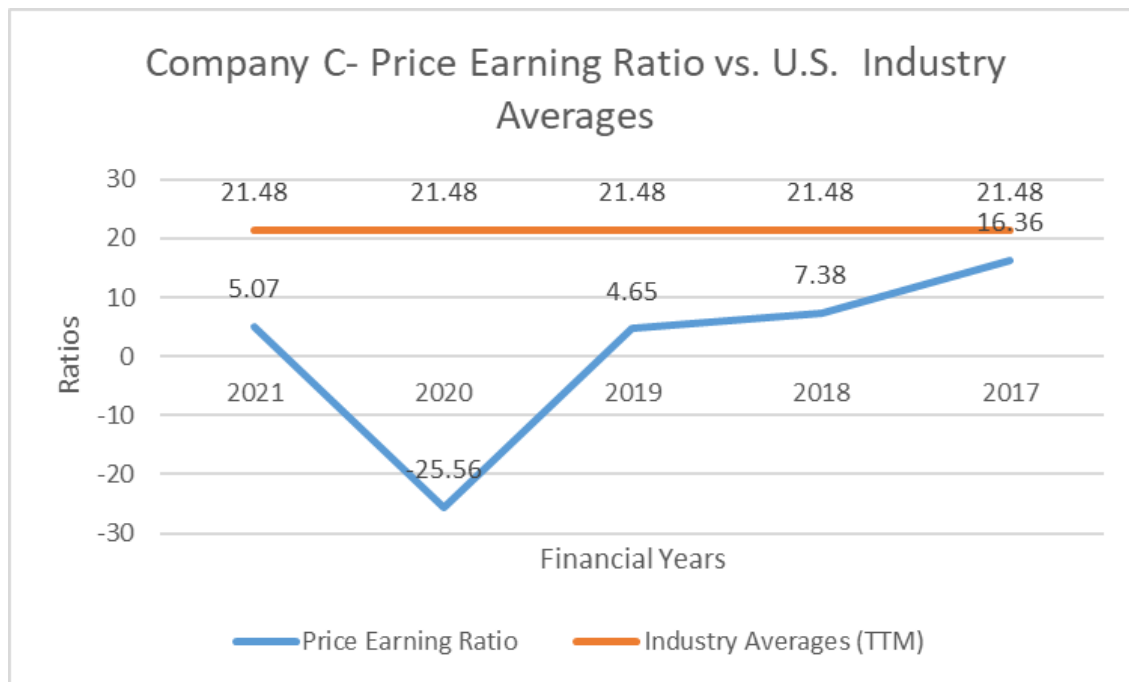


Figure 61. Comparison of Company C’s Price Earnings Ratio against U.S. Industry Averages.

The second market value ratio of Company C to analyze is the dividend payout ratio. This ratio is computed when dividing the dividend paid by net income. During the five years under review (2017 to 2021), Company C paid dividends to its shareholders,

although during 2020, the company could not make a net profit due to the COVID-19 pandemic. Company C raised dividend payments from Rs 95 billion (2017) to Rs 137 billion (2021), which is 44% increase. The company's dividend payout ratio aligns with its profitability ratios and demonstrates its strategy to raise dividends in proportion to profits. This is a positive indicator that could enhance the company's market worth. Compared to the U.S. textile industry averages, Company C's ratios are lower than the industry peers. The U.S. industry peers are making significantly high dividend payments to their shareholders that Company C. Figure 62 shows a graphical depiction of Company C's dividend payout ratios with the U.S. textile industry averages from 2017 to 2021.

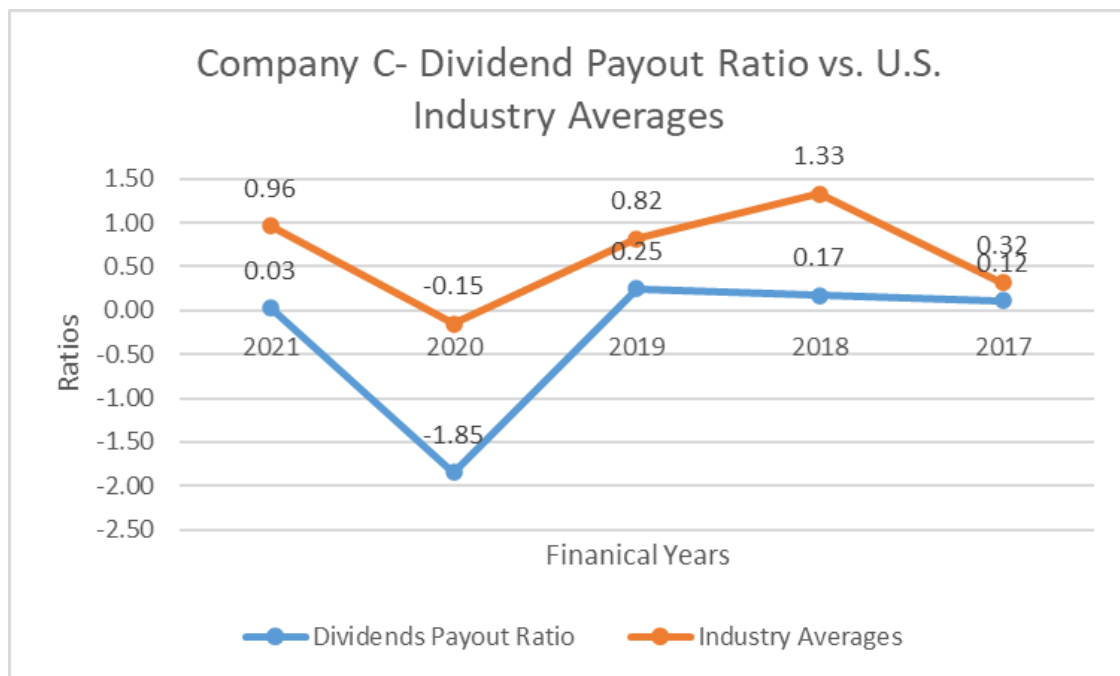


Figure 62. Comparison of Company C's Dividend Payout Ratio against U.S. Industry Averages.



#### 4. Fraud Analysis

Dr. Beneish's M-score model was calculated on the five years' financial data, 2017 to 2021, of Company C for fraud analysis. If the M-score is less than -2.22, it suggests that there is no indication of fraud, while a score greater than -2.22 signals the possibility of fraud. However, it does not conclude that a company is actually involved in fraudulent activities. Company C's M-score for 2017 to 2021 is less than -2.22 while the M-score for 2020 and 2021 is greater than -2.22. As per the M-score calculations, the

company's financial data of 2017 to 2019 is free from fraud while financial data of 2020 and 2021 indicates the possibility of fraud. Table 33 shows the M-scores of Company C. A detail analysis of the financial data of each variable shows a higher asset quality index (AQI) in 2019 and 2020, depreciation index (DEPI) in 2019 and total accrual to total assets index (TATA) in all five years which indicated that the financial statements may have been manipulated. Company C needs a thorough analysis of its financial statement for these periods to investigate the reasons for the fraud ratio indicators of possible manipulation and to take corrective measures.

Table 33. Fraud Analysis of Company C

Company C's M-Score						
Derived Variables	2021	2020	2019	2018	2017	Manipulator/Non-Manipulator Means
DSRI	1.162	0.804	0.997	1.167	0.795	1.465/1.031
GMI	1.015	0.978	1.000	1.017	0.974	1.193/1.014
AQI	0.911	7.781	1.320	0.843	1.142	1.254/1.039
SGI	1.602	0.942	1.256	1.139	1.241	1.607/1.134
DEPI	1.057	0.888	1.115	0.866	0.948	1.077/1.001
SGAI	0.811	1.345	0.981	0.991	0.964	1.041/1.001
TATA	-0.076	-0.081	-0.072	-0.074	-0.062	0.031/0.018
LVGI	0.993	1.109	1.014	1.008	0.964	1.111/1.037
<b>M-score</b>	<b>-2.13</b>	<b>-0.47</b>	<b>-2.45</b>	<b>-2.62</b>	<b>-2.69</b>	

 M < -2.22, no possible fraud  
 M > -2.22, possible fraud

## 5. Bankruptcy Analysis

The Z-score analysis was performed on the five-year of financial data, 2017 to 2021, of Company C to determine possible bankruptcy. A company with a Z-score less than 1.81 indicates possible bankruptcy and a Z-score more than 2.99 indicates no possible bankruptcy. While the bankruptcy status of a company with a Z score between 1.81 and 2.99 is termed as unknown. The Z-score for all years of Company C is less than 1.81 (Table 34) which shows that the company has a potential to become bankrupt. The bankruptcy state of Company C is also supported by the negative liquidity ratios. A higher Z-score indicates lower chances of financial distress or bankruptcy (Septyano et.

al., 2022). In the case of Company C, its five years of Z-scores is less than 1.81. Company C has limited cash and cash equivalent compared to liabilities. In addition, Company C's current liabilities are more than its current assets and total liabilities are significantly greater than total equities. The available current assets are tied to trade debts and inventories. Company C needs to take measures to stabilize its liquidity and financial leverage position.

Table 34. Bankruptcy Analysis of Company C

Company C's Z-Score					
Variables	2021	2020	2019	2018	2017
X1= Working Capital / Total Assets	0.055	0.009	0.088	0.074	0.057
X2= Retained Earnings/Total Assets	0.153	0.131	0.190	0.052	0.026
X3= EBIT/Total Assets	0.068	-0.001	0.074	0.054	0.022
X4= Market Value of Equity / BV of Total Debts	0.060	0.078	0.091	0.116	0.138
X5= Sales / Total Assets	0.965	0.785	1.052	1.055	1.091
Z Score = $1.2X1+1.4X2+3.3X3+0.6X4+1.0X5$	1.507	1.022	1.722	1.464	1.352

	Z<1.81, Possible Bankrupt
	1.81<Z<2.99, Unknown
	Z>2.99, Possible Non-Bankrupt

The financial analysis of Company C is only an illustration. Its purpose is to educate Pakistani defense contracting officers on the application of the Integrated Financial Analysis Framework to financial statements of prospective contractors before awarding contracts to ensure that the contractor has the financial capability. The next section discusses Company D's financial analysis.

## E. FINANCIAL ANALYSIS OF COMPANY D

According to the Companies Act of 1913, Company D was established in Pakistan as a public limited company and is registered in Pakistan Stock Exchange Limited (<https://dps.psx.com.pk>) in the textile composite sector. The company manufactures and sells textiles and yarns and offers a wide variety of high-quality, affordable products globally at competitive prices.

The following section analyzes Company D's financial statements from 2017 to 2021. The Integrated Financial Analysis Framework contains five different financial

analysis methods, which include horizontal, vertical, ratio, fraud, and bankruptcy analysis. The financial analysis of Company D is carried out on the income statements, balance sheets, and cash flow statements. These financial statements are highly integrated with each other. The Pakistani defense contracting officers should, therefore, analyze the company's all financial statements in order to have a thorough understanding of its financial health.

### 1. Horizontal Analysis

Three financial statements, balance sheets, income statements, and cash flow statements, of Company D are horizontally analyzed for five years, from 2017 to 2022. The financial data of 2017 serves as the base year to analyze the data for the rest of the years. Table 35 shows the horizontal analysis of Company D and includes only the main line items of each financial statement. The detailed horizontal analysis of Company D's financial statements is available at Appendices K, L, and M.

Table 35. Company D's Financial Statements Horizontal Analysis

<b>Balance Sheet</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Un-appropriated Profit	209%	136%	144%	118%	100%
Total Equity	224%	133%	140%	129%	100%
Total Non-Current Liabilities	190%	190%	148%	114%	100%
Total Current Liabilities	129%	147%	168%	110%	100%
Total Liabilities	157%	167%	159%	112%	100%
Total Equity and Liabilities	185%	152%	151%	119%	100%
Total Non-Current Assets	196%	147%	142%	122%	100%
Total Current Assets	168%	161%	165%	114%	100%
Total Assets	185%	152%	151%	119%	100%
<b>Income Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Sales – net	198%	151%	138%	119%	100%
Cost of sales	179%	143%	130%	116%	100%
Profit before tax	941%	10%	400%	244%	100%
Provision for tax	65%	309%	418%	112%	100%
Profit after tax	1399%	-147%	390%	313%	100%
<b>Cash Flow Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Net cash generated from operating activities	305%	156%	57%	64%	-100%
Net cash used in investing activities	-73%	-126%	-163%	-105%	-100%
Net cash generated from financing activities	-147%	-34%	38%	7%	100%

The first financial statement Company D to analyze is the balance sheet, as Figure 63 illustrates. Analysis of Company D shows an increasing trend in all line items from 2017, the base year, until 2021. Some publicly traded companies in Pakistan report unappropriated profit in their financial statements rather than retained earnings. Since Company D also states unappropriated profit as retained earnings in its financial statements, unappropriated profit, and retained earnings, therefore, correspond to each other in the analysis of Company D.

The total equity is inclusive of reserves, issued share capital, and unappropriated profit. As compared to the base year, 2017, total equity increased to 224% in 2021 indicating a progressively increasing trend over the last five years. Following a loss in 2020 that decreased the percentage of retained earnings and equity, Company D put forth a great deal of effort in its operations and achieved a record profit after taxes in 2021.

Company D's total non-current liabilities increased rapidly in 2020 and remained the same until 2021. The findings from the notes section of Company D's financial statements revealed that the non-current liabilities increased due to long-term loans acquired by the company in 2020 and 2021 offered by the State Bank of Pakistan under "Regulation R-8, Re-scheduling of Financing Facilities and Refinance Scheme for payment of wages and salaries (RFWS Scheme)" (p. 91). The aim of these schemes was to minimize the problems caused by COVID-19 by offering loans below those of standard bank rates. Under the RFWS Scheme, Company D obtained funds of 276.55 million for compensation of salaries to employees. The company also delayed certain payments of long-term loans under "Regulation R-8 and Rescheduling of Financing Facilities" (p. 91). Company D paid off short-term debt in 2021, which decreased the amounts of the current liabilities and the total liabilities.

The assets side is generally showing an increasing trend to 185% in 2021. The company's investment in PP&E has also increased. The global impact of COVID-19, however, caused a decline in tax receivables and stock during 2020, which decreased current assets.





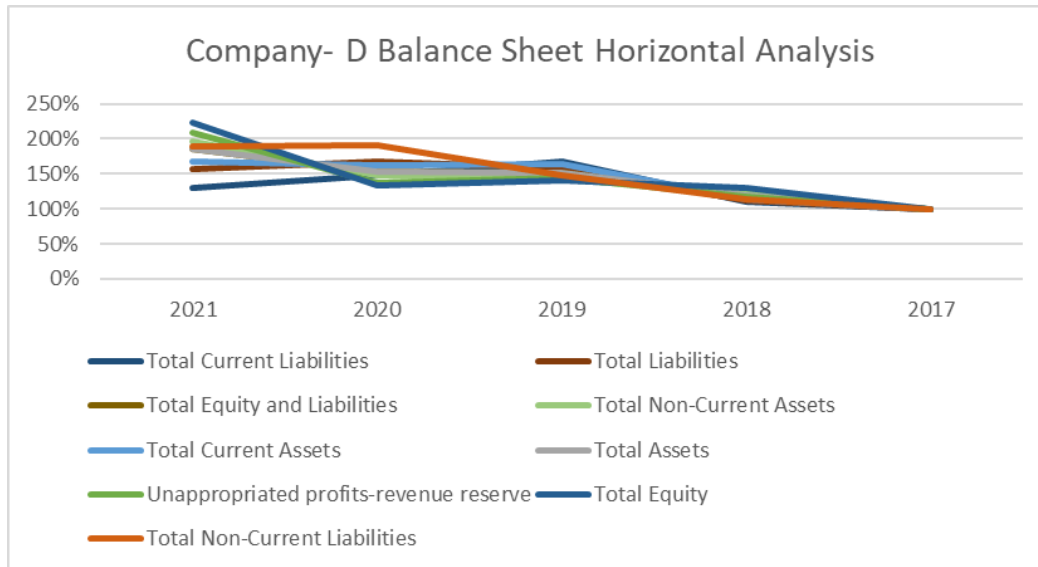


Figure 63. Horizontal Analysis of Company D’s Balance Sheets.

The second financial statement of Company D to analyze is the income statement, as Figure 64 illustrates. The analysis of Company D shows that sales are depicting a steady increase from 2017 to 2020 but a major increase in 2021; almost two-fold to 2017, the base year. The findings from the notes section of Company D’s financial statements revealed that the cost of sales during 2021 increased as a result of rising raw materials costs. Company D’s income after taxes was increased till 2019 but decreased to -147% in 2020. The significant devaluation of the rupee against the dollar, caused by COVID-19 and the ongoing rise in finance costs as a result of high interest rates, were the main causes of the loss. Contrary to that, in 2021, a decrease of 39.06% in finance costs (less interest rate & borrowings) resulted in a significant rise in total income after taxes. In fiscal year 2021, Pakistan’s textile industry made huge growth and high profitability due to domestic and international hikes in the prices of textile products, especially after COVID-19.

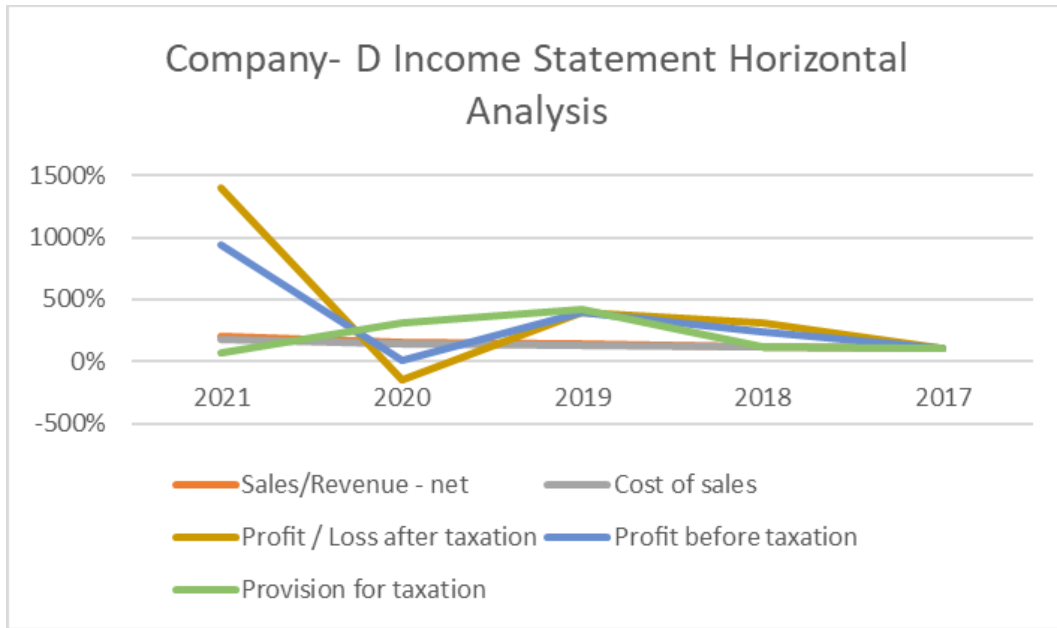


Figure 64. Horizontal Analysis of Company D’s Income Statements.

The third financial statement of Company D to analyze is the cash flow statement, as Figure 65 illustrates. The analysis of Company D shows that cash inflows from operating activities show a falling tendency in the base year, 2017, followed by an increasing and decreasing pattern every other year from 2018 to 2020. However, it shows a significant increase in 2021. For investing activities, net cash flow remained negative during the five years. The company continuously increased its fixed capital expenditure for the modernization and expansion of its plant; therefore, the investing activities cash flow remained negative, and the deficit rose from -100 % in 2017 to -73 % in 2021. Financing activities’ cash flow increases and decreases every alternate year. In 2021, financing activities’ cash flow is reduced from 100% to -147%.

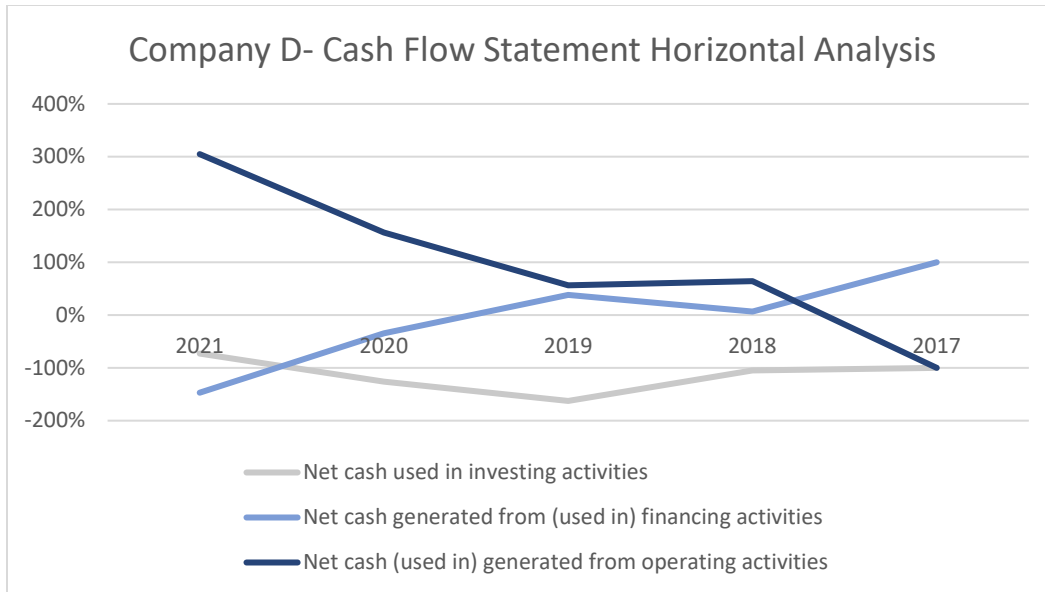


Figure 65. Horizontal Analysis Company D's Cash Flows Statements.

## 2. Vertical Analysis

Company D's financial statements are also vertically analyzed for a period of five years, from 2017 to 2022. These include balance sheets and income statements. The financial data of 2017 serves as the base year to analyze the data for the rest of the years. Table 36 depicts the vertical analysis of Company D and includes only the main line items of the financial statements. The detailed vertical analysis of Company D's financial statements is shown in Appendices K, L, and M.

Table 36. Company D's Financial Statements Vertical Analysis

<b>Balance Sheet</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Un-appropriated Profit	23%	18%	19%	20%	20%
Total Equity	52%	37%	40%	46%	43%
Total Non-Current Liabilities	26%	32%	25%	25%	26%
Total Current Liabilities	22%	30%	35%	29%	31%
Total Liabilities	48%	63%	60%	54%	57%
Total Liabilities and Equity	100%	100%	100%	100%	100%
Total Non-current Assets	66%	60%	59%	64%	63%
Total Current Assets	34%	40%	41%	36%	37%
Total Assets	100%	100%	100%	100%	100%
<b>Income Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Net sales	100%	100%	100%	100%	100%
Cost of sales	-85%	-89%	-88%	-91%	-93%
Profit before tax	11%	0%	7%	5%	2%
Provision for tax	0%	0%	-2%	-1%	-1%
Profit after tax	10%	-1%	4%	4%	1%

The first financial statement of Company D to vertically analyze is the balance sheet, as Figure 66 illustrates. Analysis of Company D shows that the equity increased from 43% to 52% in 2021. Between 2017 and 2021, the totals of liabilities and current liabilities decreased from 57% and 31% to 48% and 22%, respectively. In 2021, Company D decreased its reliance on total liabilities and increased its share of the total equity. However, there is minimal impact on the asset side.



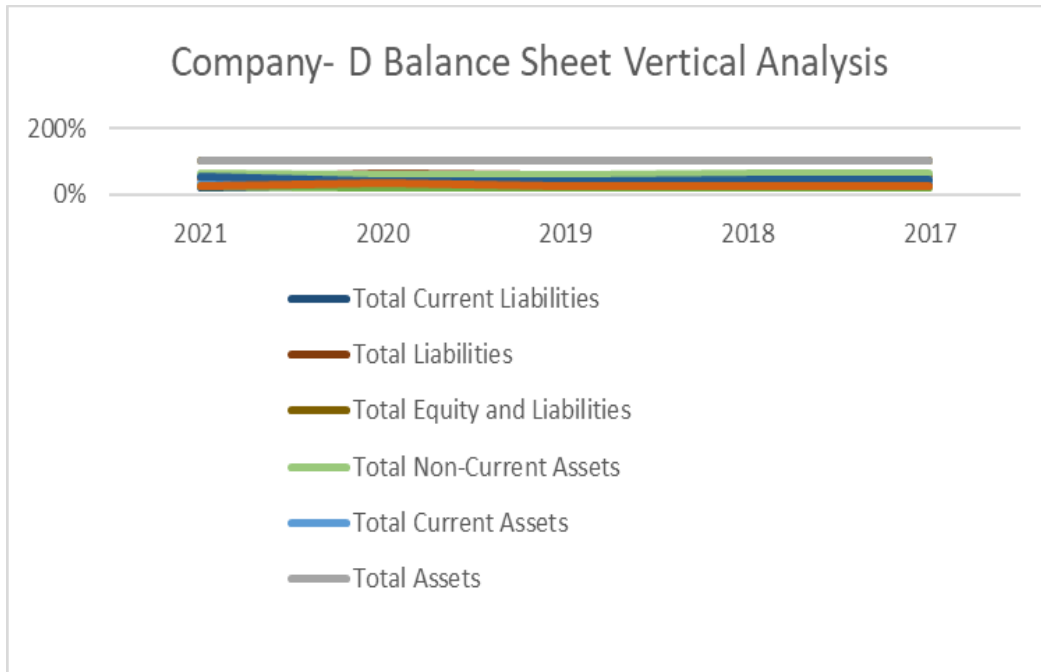


Figure 66. Vertical Analysis of Company D’s Balance Sheets.

The second financial statement of Company D to vertically analyze is the income statement, as Figure 67 illustrates. The analysis of Company D shows that from 2017 through 2020, the income statement’s composition exhibited a consistent trend; however, in 2021, a decrease in the cost of sales from 89% (2020) to 85% increased profit both before and after taxes.

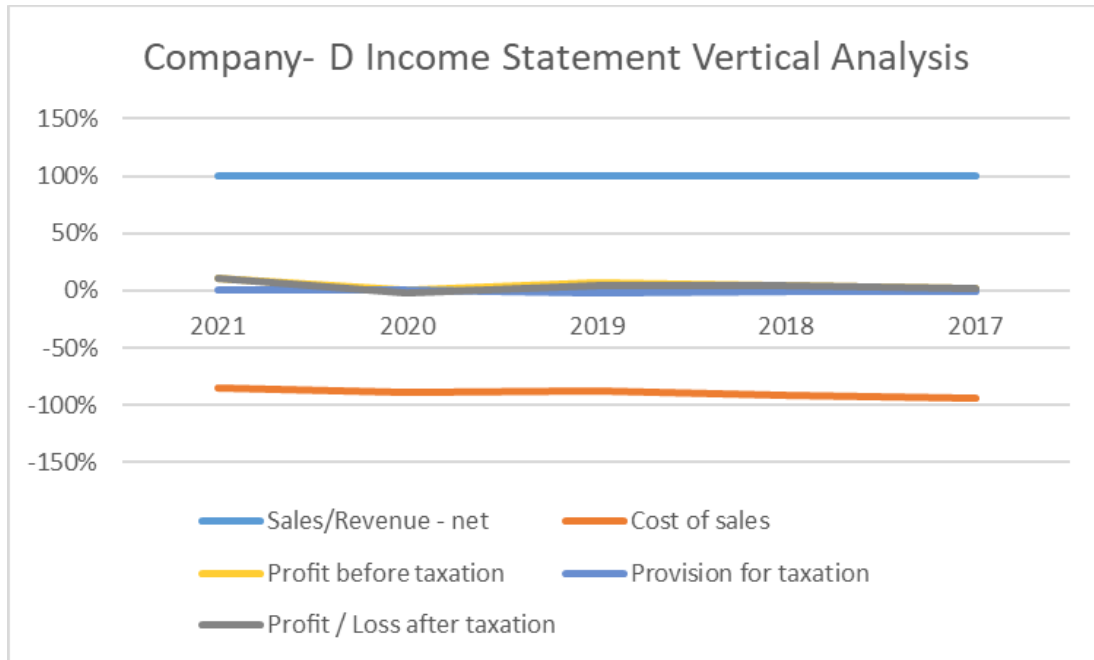


Figure 67. Vertical Analysis of Company D’s Income Statement

### 3. Ratio Analysis

The ratio analysis gives information on an industry or company’s performance over time. This section shows the ratio analysis conducted on Company D’s financial statements. The five main financial ratios used here are Debt Management, Liquidity, Profitability, Market Value, and Efficiency ratios. Further, two ratios from each category are calculated as per the developed Integrated Financial Analysis Framework. The health of a company’s financial structure is represented by each category of these ratios (Grant et al., 2017). The ratios utilized in this analysis are specific to the textile industry; however, after some modifications, they can also be applied to any industry. Furthermore, a comparison of Company D’s ratios has also been made against the U.S. textile industry averages because the Pakistan textile industry averages are not publicly available on any Pakistani government or authorized website. It is impossible to conduct an assessment of a company’s financial health by using a single set of ratios or all categories of ratios over the course of one year only. Therefore, Company D’s ratio analysis has been calculated under five different categories to measure the company’s performance for five years, from 2017 to 2021.

**a. Liquidity Ratios**

The first category of ratios computed from the financial statements of Company D are liquidity ratios. The analysis of Company D’s liquidity ratio is important because it reveals the company’s capacity to repay its current obligations by generating cash from all the current resources available to the company. Using Company D’s financial statements for five years between 2017 to 2021, the current ratio and cash ratio have been calculated. Table 37 provides the liquidity ratio analysis of Company D’s financial statements and its comparison with the U.S. textile industry averages.

Table 37. Company D’s Liquidity Ratios Analysis

<b>Liquidity Ratios</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Cash Ratio	0.01	0.02	0.01	0.01	0.01
<b>Industry Averages</b>	<b>0.22</b>	<b>0.57</b>	<b>0.18</b>	<b>0.04</b>	<b>0.14</b>
Current Ratio	1.55	1.30	1.17	1.23	1.19
<b>Industry Averages</b>	<b>2.59</b>	<b>2.56</b>	<b>2.84</b>	<b>3.13</b>	<b>2.86</b>

The first liquidity ratio of Company D to analyze is the cash ratio. By contrasting the cash equivalents and cash reported on Company D’s balance sheets, with its current obligations, the cash ratio of Company D is analyzed. Figure 68 is a graphical representation of Company D’s cash ratio. Analysis of the cash ratio reveals that Company D shows a consistent trend from 2017 to 2019. In 2021, it slightly increased but again decreased in 2021. However, Company D’s cash ratio from 2017 to 2021 is substantially less than the U.S. textile industry averages. The Company’s low cash ratio reflects the fact that it is heavily indebted and lacks the cash required to pay off its debts as compared to U.S. textile industry averages.



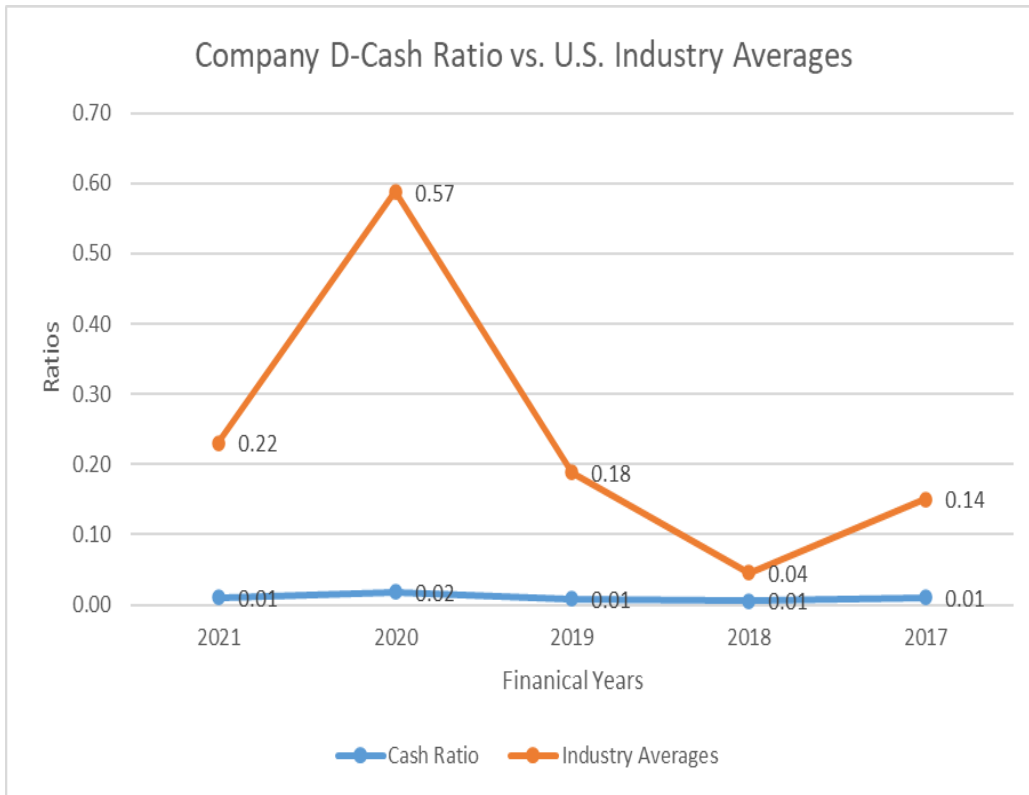


Figure 68. Comparison of Company D’s Cash Ratio against U.S. Industry Averages.

The second liquidity ratio of Company D to analyze is the current ratio. By contrasting the current assets stated on Company D’s balance sheets, with its current obligations, the current ratio of Company D is analyzed. The working capital ratio is another name for this ratio. Figure 69 is a graphical representation of Company D’s current ratio. For both external and internal oversight, the current ratio is analyzed, and it helps users in assessing how well current assets can pay for current liabilities (Grant, et. al., 2016). According to Rendon (2016), the current 2:1 ratio is considered advantageous, but it varies by industry. Company D’s current ratio is less than the U.S. textile industry averages from 2017 to 2021. The company received assistance from the Pakistan State Bank to help minimize the COVID-19 pandemic effects, which improved the company’s current assets in 2021.



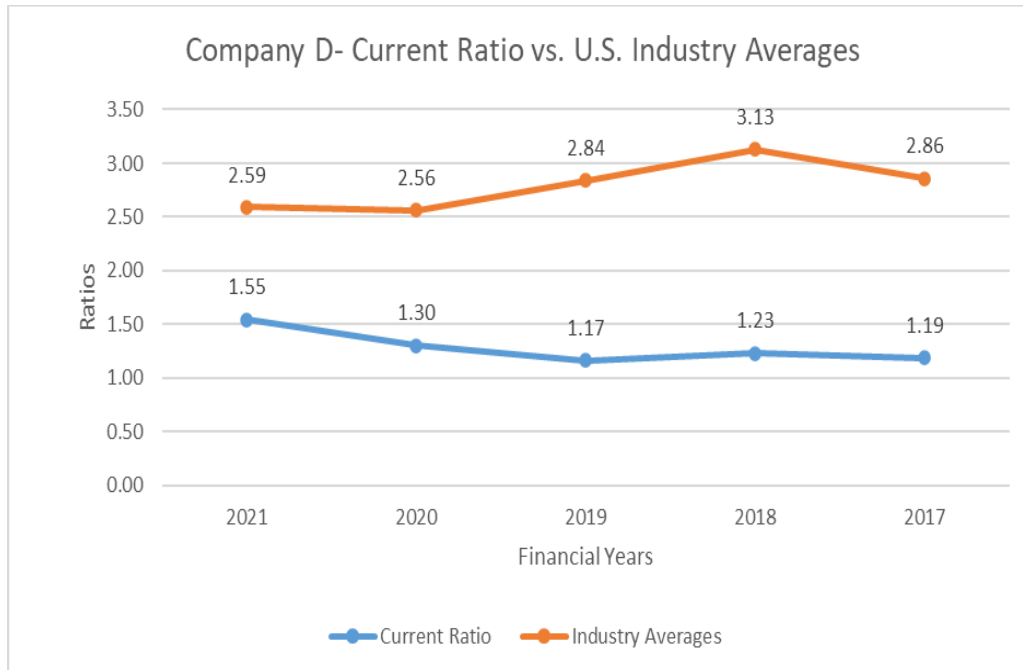


Figure 69. Comparison of Company D’s Current Ratio against U.S. Industry Averages.

**b. Debt Management Ratios**

The second category of ratio analysis of Company D is the debt management, which reveals that it is a vital indicator of a company’s financial position since it enables investors to determine a company’s ability to pay off its long-term debts. The debt management ratio is also called the solvency ratio (Grant, et. al., 2016). Debt ratio and debt-to-equity ratio are being utilized for this analysis. Whenever a debt’s potential to be repaid is discussed, these ratios are of the utmost significance for analyzing the company’s capital structure. Table 38 shows Company D’s debt management ratios against the U.S. textile industry averages for a period of five years from 2017 to 2021.

Table 38. Company D’s Debt Management Ratios Analysis

<b>Debt Management Ratios</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Debt Ratio	0.48	0.63	0.60	0.54	0.57
<b>Industry Averages</b>	<b>0.41</b>	<b>0.40</b>	<b>0.46</b>	<b>0.43</b>	<b>0.41</b>
Debt-to-Equity Ratio	0.93	1.67	1.51	1.16	1.33
<b>Industry Averages</b>	<b>0.69</b>	<b>0.68</b>	<b>0.87</b>	<b>0.76</b>	<b>0.54</b>

The first debt management ratio of Company D that is analyzed is the debt ratio. By contrasting the total liabilities listed on Company D’s balance sheets, with its



total assets, the debt ratio of Company D is analyzed. The analysis reveals that this financial ratio assesses the number of assets backed by the debts. Due to lesser risk, a lower debt ratio is preferable. Company D's debt ratio is greater than the U.S. industry averages throughout the five years, from 2017 to 2021. It signifies that the company's assets are more leveraged on debts than the other U.S. textile companies. The graphical illustration is depicted in Figure 70.

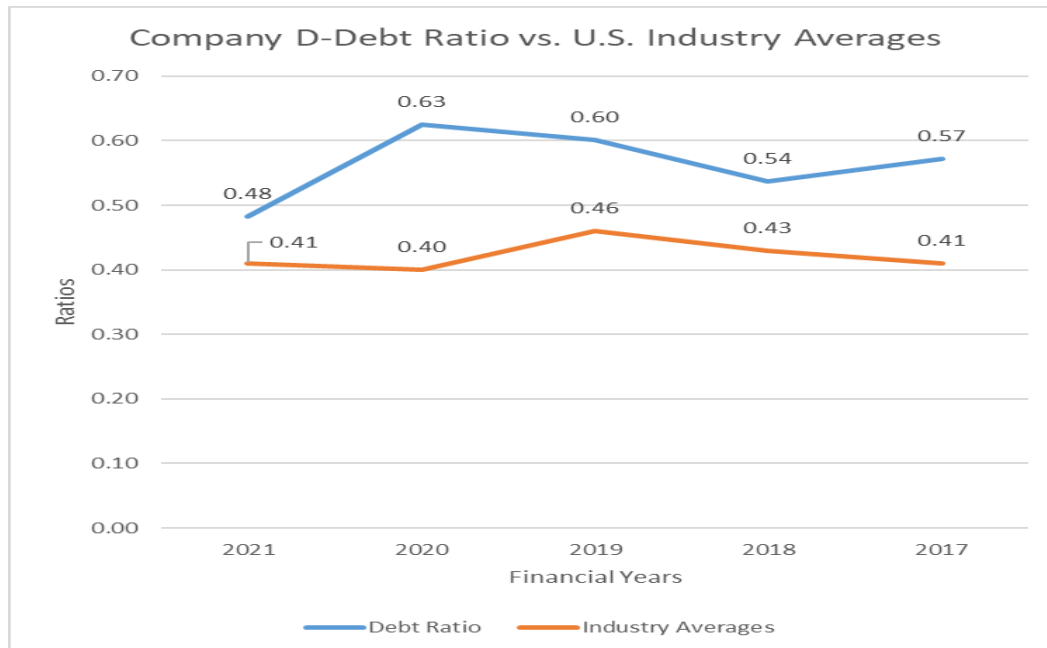


Figure 70. Comparison of Company D's Debt Ratio against U.S. Industry Averages.

The second debt management ratio of Company D to analyze is the debt-to-equity ratio. By contrasting the total liabilities stated on Company D's balance sheets with its equity of shareholders, the debt-to-equity ratio of Company D is analyzed. This financial ratio assesses a company's debt load in comparison to the amount invested by its shareholders. Figure 71 shows the trend analysis of Company D, which indicates that it is considerably higher as compared to U.S. textile industry averages from 2017 to 2021. Hence, Company D can be viewed as risky, in terms of repaying debt. However, the higher sales revenue in 2021 increased unappropriated profit and shareholders' equity; thus, the ratio improved as compared to the rest of the years.

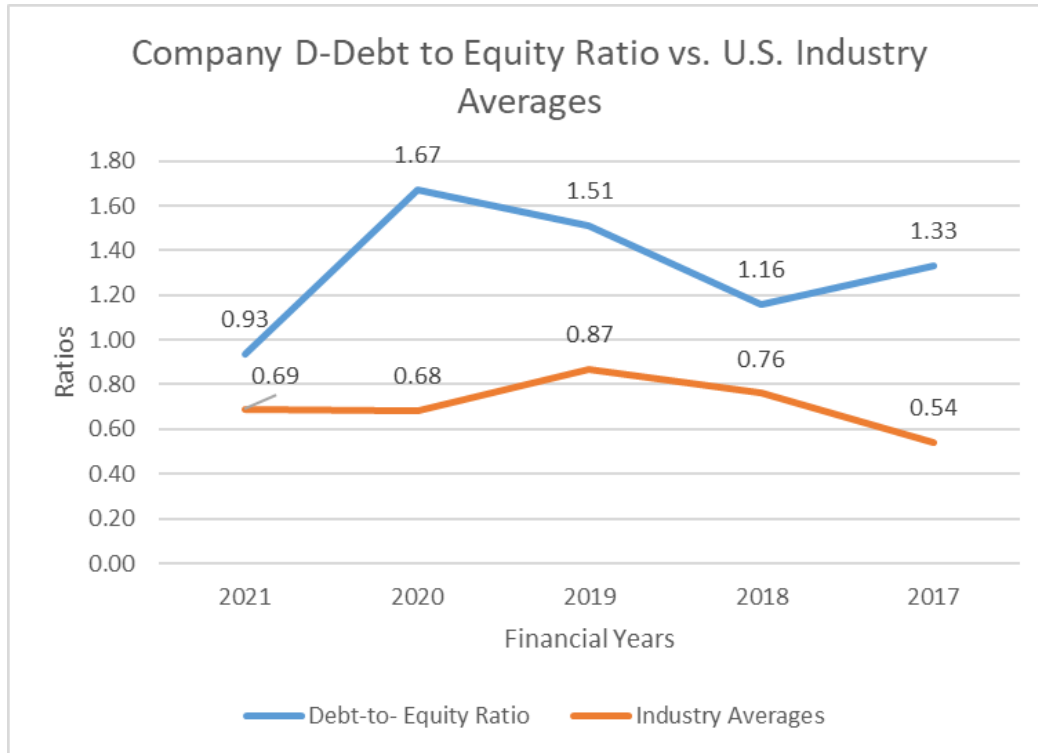


Figure 71. Comparison of Company D’s Debt-to-Equity Ratio against U.S. Industry Averages.

**c. Efficiency Ratios**

Efficiency ratios are the third category of ratios analyzed on the financial statements of Company D. Company D’s analysis of efficiency ratios reveals that when a company utilizes its assets to produce sales and earn a profit, then, to assess a company’s performance, these ratios are utilized. The higher efficiency ratios indicate that the company is financially healthier. Efficiency ratios calculated for Company D are total assets turnover and inventory turnover. Table 39 shows Company D’s efficiency ratios in comparison to the U.S. textile industry averages for 2017 to 2021.

Table 39. Company D’s Efficiency Ratio Analysis

Efficiency Ratios	2021	2020	2019	2018	2017
Total Assets Turnover	0.78	0.72	0.67	0.72	0.73
<b>Industry Averages Ratio</b>	<b>1.36</b>	<b>1.01</b>	<b>1.23</b>	<b>1.37</b>	<b>1.22</b>
Inventory Turnover	2.85	2.42	2.46	3.51	3.83
<b>Industry Averages Ratio</b>	<b>3.69</b>	<b>3.38</b>	<b>3.54</b>	<b>3.44</b>	<b>3.92</b>

The first efficiency ratio of Company D to analyze is its total assets turnover ratio. The analysis of the total assets turnover ratio reveals that Company D shows a



downward trend from 2017 to 2019, and then an increasing trend from 2020 to 2021. The results showed that a significant rise in sales volume relative to the other years was the root cause of the upward trend from 2020 to 2021. However, the ratio is lesser than the U.S. textile industry averages for all the years, from 2017 to 2021. The graphical illustration is depicted in Figure 72.

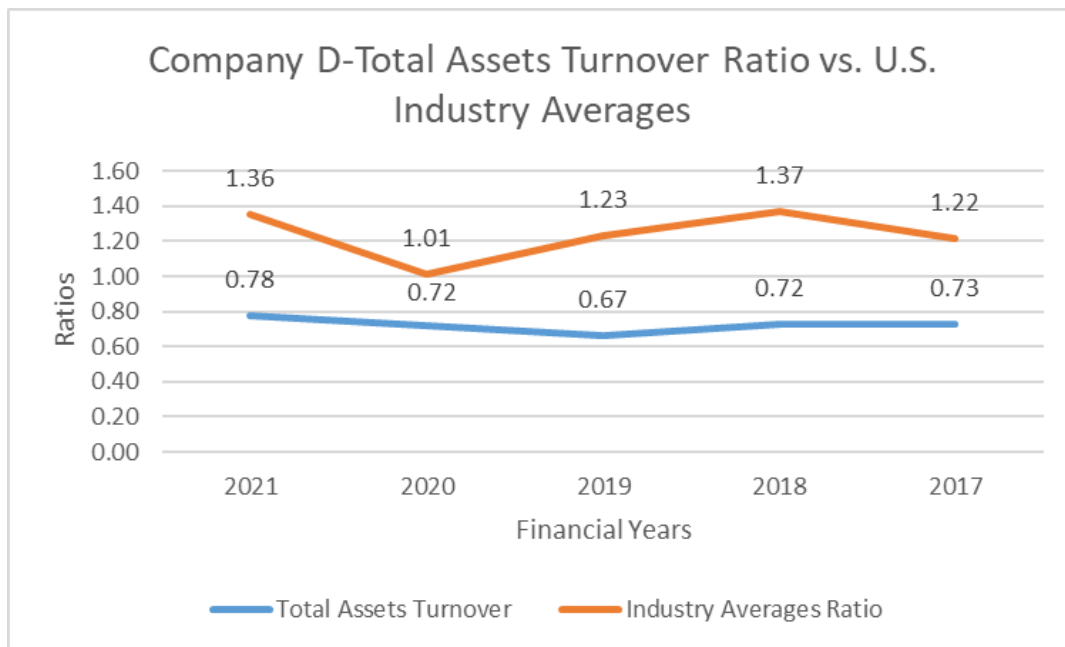


Figure 72. Comparison of Company D’s Total Assets Turnover Ratio against U.S. Industry Averages.

The second efficiency ratio of Company D to analyze is the inventory turnover ratio. The analysis of the inventory turnover ratio reveals that Company D shows an alternative increasing and decreasing trend throughout the five-year period, from 2017 to 2021. In 2018, the company performed better than its peers, but thereafter, its performance decreased until 2021. The performance of the company was severely hampered by COVID-19 during 2019 and 2020; however, the company has improved in 2021. As compared to the U.S. textile industry averages, the company’s ratios were below than those of industry peers except for 2018 as depicted in Figure 73.

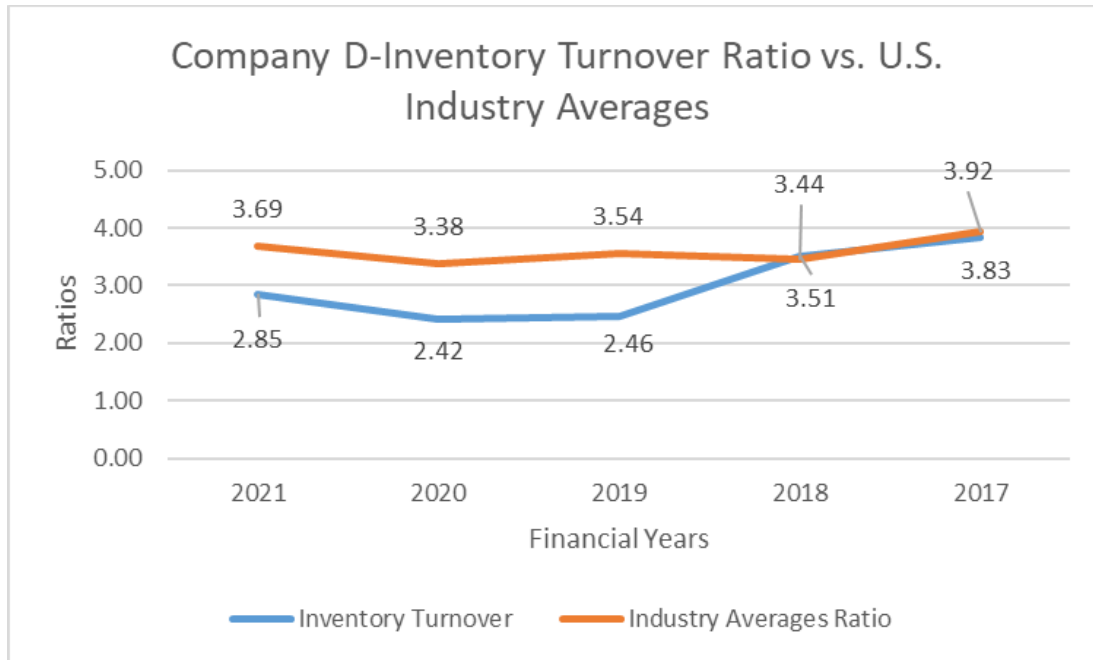


Figure 73. Comparison of Company D’s Inventory Turnover Ratio against U.S. Industry Averages.

**d. Profitability Ratios**

Profitability ratios are the fourth category of ratios analyzed on the financial statements of Company D. Profitability ratios illustrate that they are being utilized by the owners, stockholders, and creditors to assess the company’s financial picture; therefore, they are known as the king of all ratios (Grant, et. al., 2016). The return on assets and net profit margin ratios have been used as the two profitability ratios for this research. Table 40 shows Company D’s two profitability ratios in comparison to the U.S. textile industry averages for a period of five years.

Table 40. Company D’s Profitability Ratios Analysis

Profitability Ratios	2021	2020	2019	2018	2017
Return on Assets %	8.1%	-1.0%	2.8%	2.8%	1.1%
<b>Industry Averages</b>	<b>5.3%</b>	<b>-3.8%</b>	<b>5.7%</b>	<b>6.0%</b>	<b>5.8%</b>
Net Profit Margin %	10.4%	-1.4%	4.2%	3.9%	1.5%
<b>Industry Averages</b>	<b>12.2%</b>	<b>-13.4%</b>	<b>12.5%</b>	<b>12.3%</b>	<b>8.8%</b>

The first profitability ratio of Company D to analyze is its return on assets (ROA). By contrasting the company’s net income stated on Company D’s income statements, with its total assets on the balance sheet, the ROA ratio of Company D is analyzed. The



analysis of the ROA ratio shows that it increased from 2017 to 2019 and decreased in 2020 as a result of COVID-19 worldwide effects, but it made a significant improvement in 2021. Table 33 shows that despite the impacts of COVID-19, Company D maximized its profit in 2021. According to the financial data, Company D's sales in 2021 were higher than the previous years, which led to a higher ROA (8.1%) as compared to the U.S. industry averages for the same year (5.3%). The graphical illustration is depicted in Figure 74.

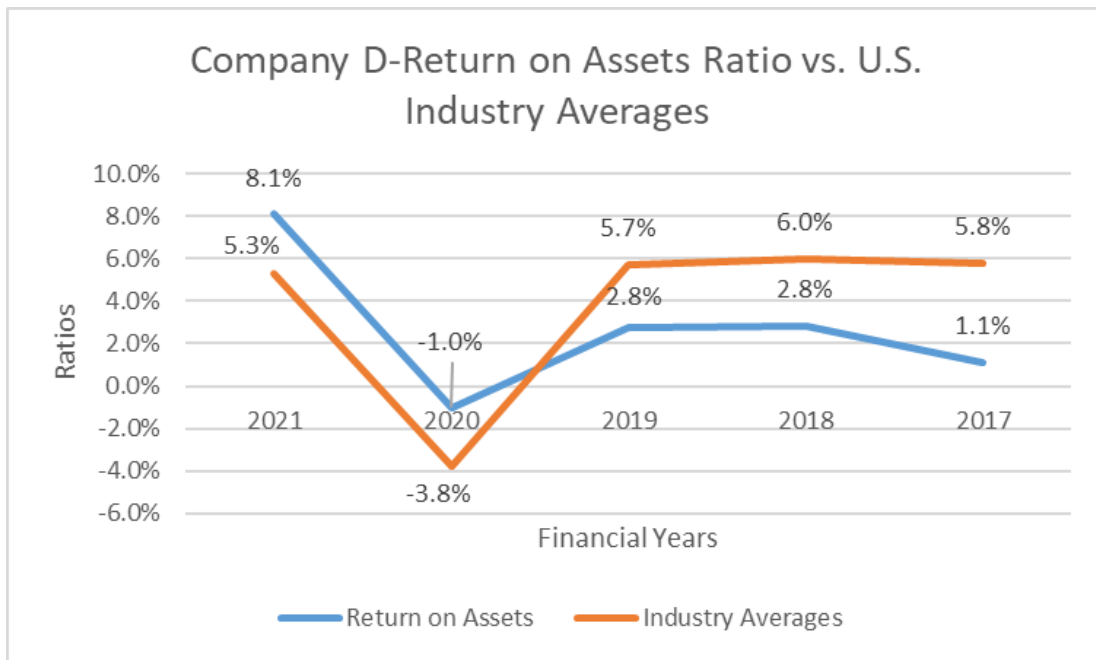


Figure 74. Comparison of Company D's Return on Assets Ratio against U.S. Industry Averages.

The second profitability ratio of Company D to analyze is the net profit margin ratio. By contrasting the company's net profit recorded on Company D's income statements with its total sales, the net profit margin ratio of Company D is analyzed. The analysis reveals that Company D was also affected by COVID-19 in 2020, which is reflected in that year's ratio. However, Company D improved its ratio significantly in 2021 as a result of higher sales volume. The graphical representation is shown in Figure 75.

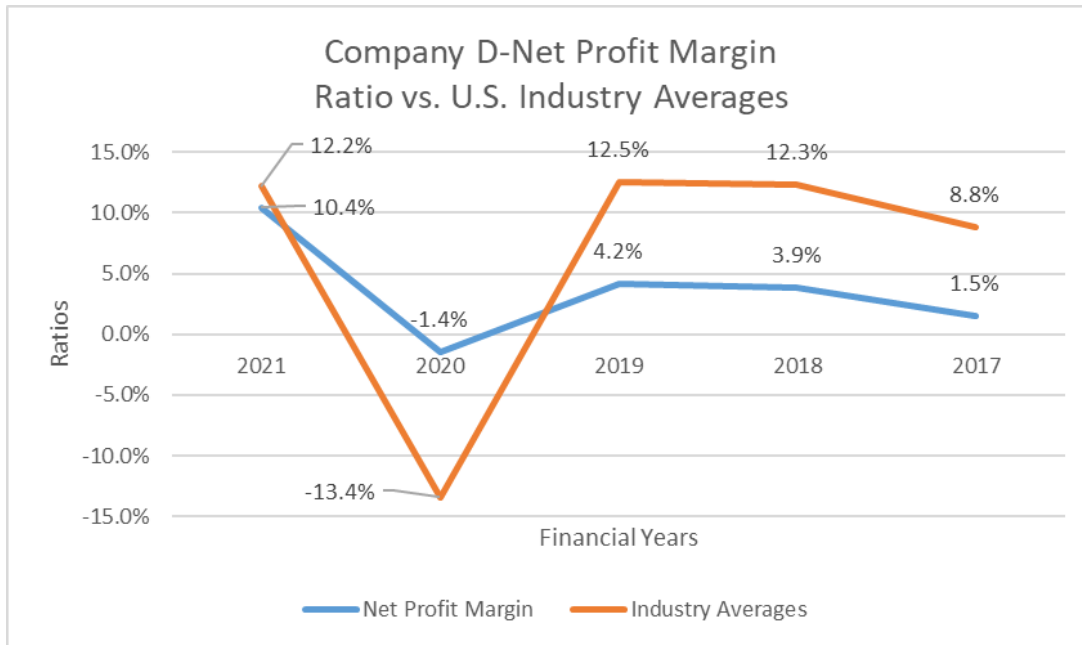


Figure 75. Comparison of Company D’s Profit Margin Ratio against U.S. Industry Averages.

**e. Market value ratios**

Market value ratios are the fifth category of ratios analyzed on the financial statements of Company D. These ratios are used by investors to analyze the stock trend of publicly traded companies. These ratios also show the value of publicly traded stock shares (Malik, 2017). The market value ratios used for this research are Price Earning (P/E) ratio and dividend payout ratio. Companies with higher P/E ratio and dividend payout ratio usually indicate the higher return associated with higher market value ratios, but it depends on the investor, who is willing to buy shares at a greater price with the expectation of receiving higher returns on their investment. Table 41 shows Company D’s market value ratios as compared to the U.S. textile industry averages for each particular year, from 2017 to 2021.

Table 41. Company D’s Market Value Ratios Analysis

Market Value Ratios	2021	2020	2019	2018	2017
Price Earnings Ratio	181.06	-18.98	50.52	40.45	12.94
<b>Industry Averages</b>	<b>21.48 (TTM-Trailing 12 Months)</b>				
Dividends Payout Ratio	0.11	-0.55	0.17	0.13	0.18
<b>Industry Averages</b>	<b>0.96</b>	<b>-0.15</b>	<b>0.82</b>	<b>1.33</b>	<b>0.32</b>



The first market value ratio of Company D to analyze is its price earnings ratio. The analysis of the price-earnings ratio reveals that Company D's P/E ratio is lower than the U.S. textile industry trailing 12 months averages in 2017 only, whereas, for the rest of the years, it is greater than that. Company D's higher P/E ratio than U.S. industry TTM averages means that Company D's shares are overvalued. The higher price indicates that investors anticipate higher growth in the future; therefore, they are willing to purchase shares at a higher price. Figure 76 represents Company D's P/E ratios in comparison to the U.S. textile industry averages for a period of five years.

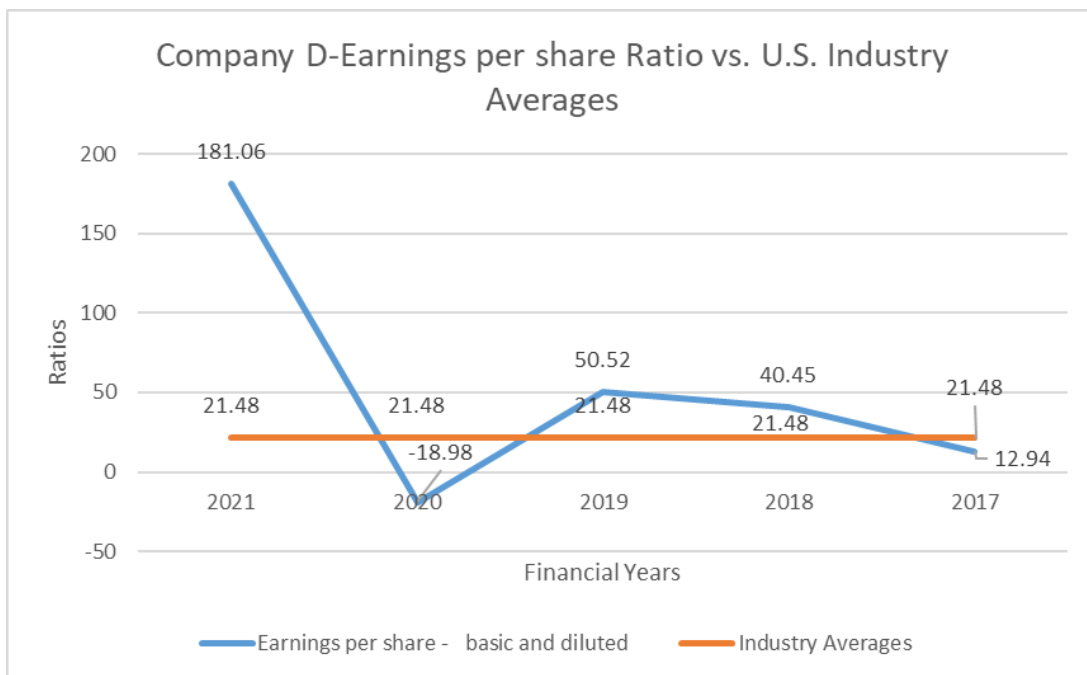


Figure 76. Comparison of Company D's Price Earnings Ratio against U.S. Industry Averages.

The second market value ratio of Company D to analyze is the dividend payout ratio. This ratio entails the number of dividends paid out of a company's net earnings. Analysis of this ratio indicates that Company D paid dividends every year; however, its dividend payout ratio is lower than the U.S. textile industry averages from 2017 to 2021. The analysis of financial statements shows that Company D used its cash flow throughout the five years to pay down long-term loans and made fixed capital expenditures. Many well-established companies defend their lesser or zero percent payout ratio by increasing their business investments and making sure that the money invested by stockholders is





used more effectively to generate higher returns (Malik, 2017). The comparison between Company D and the U.S. textile industry average is depicted in Figure 77.

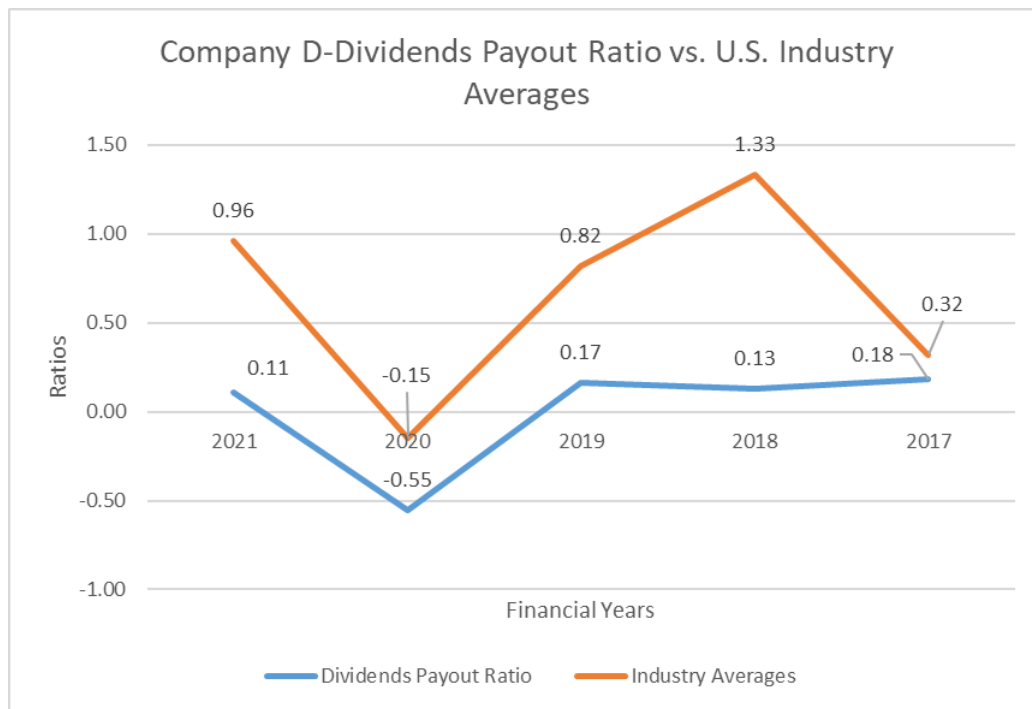


Figure 77. Comparison of Company D’s Dividend Payout Ratio against U.S. Industry Averages.

#### 4. Fraud Analysis



The M-score of Company D was calculated for five years, from 2019 to 2021. In order to identify earnings manipulation, a statistical model developed by Beneish is utilized. This model is used for detecting any possible financial fraud. Using information from the company’s financial statements, the eight variables are needed to calculate the M-score. If a company’s M-score is less than -2.22, it does not indicate manipulation. On the other hand, the company may be a manipulator if its M-Score exceeds -2.22.

The analysis of Company D’s M-scores does not indicate any possible fraud, with the exception of one period, 2017. Table 42 shows the M-scores of Company D. When compared to the fraud ratios from other years, 2017 data reveals a high Days Sales in Receivables Index (DSRI), Sales Growth Index (SGI), Leverage Index (LVGI), and Total Accruals to Total Assets (TATA) ratios. The fraud analysis shows that unusual variations in these fraud ratios are only indicative of potential financial fraud in the company, but

this does not suggest that the company is necessarily involved in fraudulent activities. However, the company needs to thoroughly review and analyze its financial statements to determine the causes of the abnormal rise in ratios during the period indicating fraud.

Table 42. Fraud Analysis of Company D

Company D's M-Score						
Derived Variables	2021	2020	2019	2018	2017	Manipulator / Non-Manipulator Means
DSRI	0.707	0.786	0.970	0.886	1.201	1.465/1.031
GMI	0.938	0.978	1.003	1.025	0.957	1.193/1.014
AQI	0.946	1.005	0.746	0.959	0.918	1.254/1.039
SGI	1.313	1.093	1.161	1.187	1.279	1.607/1.134
DEPI	1.168	0.835	1.059	1.087	1.100	1.077/1.001
SGAI	0.819	1.638	0.944	0.801	0.805	1.041/1.001
TATA	-0.044	-0.088	-0.001	-0.013	0.087	0.031/0.018
LVGI	0.773	1.039	1.122	0.939	1.122	1.111/1.037
<b>M-score</b>	<b>-2.61</b>	<b>-3.16</b>	<b>-2.49</b>	<b>-2.42</b>	<b>-1.69</b>	

 M<-2.22, no possible fraud  
 M>-2.22, possible fraud

## 5. Bankruptcy Analysis

In order to assess bankruptcy, the Z-score analysis was conducted on Company D's financial statements from 2017 to 2021. A company is considered to be insolvent or bankrupt if its Z-score is below 1.81 and non-bankrupt if it is larger than 2.99. However, the bankruptcy status of a company is unknown if its Z-score lies between 1.81 and 2.99.

According to Company D's bankruptcy score, the possibility of bankruptcy was indicated in 2017, however later on, it turned out very well by improving its operations from 2018 to 2021. Table 43 displays Company D's Z-score results. One of the main contributors to the overall Z-score being low is when a company has too much debt in its capital structure. The results revealed that the company was financially stable and had no imminent risk of bankruptcy from 2018 to 2021. The Z-score is only an indication of potential bankruptcy, but it does not mean that the company will actually file for bankruptcy.



Table 43. Bankruptcy Analysis of Company D

Company D's Z-Score					
Variables	2021	2020	2019	2018	2017
X1= Working Capital / Total Assets	0.120	0.092	0.058	0.067	0.059
X2= Retained Earnings/Total Assets	0.227	0.180	0.192	0.199	0.202
X3= EBIT/Total Assets	0.840	0.910	0.865	0.820	0.079
X4= Market Value of Equity / BV of Total Debts	0.022	0.020	0.021	0.030	0.034
X5= Sales / Total Assets	0.777	0.720	0.666	0.724	0.728
Z Score = 1.2X1+1.4X2+3.3X3+0.6X4+1.0X5	4.025	4.099	3.873	3.807	1.362

	Z<1.81, Possibly Bankrupt
	1.81<Z<2.99, Unknown
	Z>2.99, Possibly Non-Bankrupt

The financial analysis of Company D is for illustration only. The purpose of this illustration is to explain to Pakistani defense contracting officers how to apply the Integrated Financial Analysis Framework to the prospective contractor's financial statements before awarding a defense contract. Company E's financial analysis is discussed in the next section.

#### F. FINANCIAL ANALYSIS OF COMPANY E

Company E was established in Pakistan as a Public Limited Company under Companies Act of 1984. Company E is registered in Pakistan Stock Exchange Limited (<https://dps.psx.com.pk>) in the textile composite sector. Company E has been primarily engaged in producing and selling fabrics. The company currently has 427 looms and 65,280 spindles with the latest technology. It has a monthly weaving capacity of around 6 million meters. The company has the capacity to produce greige cloth and premium cotton yarn. For decades, Company E has also engaged in exporting high-quality fabrics worldwide.

Company E is analyzed using five different financial analysis methods which include horizontal analysis, vertical analysis, ratio analysis, fraud analysis, and bankruptcy analysis. The financial analysis of Company E is conducted on the income statements, balance sheets, and cash flow statements. All of these financial statements are highly integrated. Therefore, the Pakistani defense contracting officers should review all of the company's financial statements to fully comprehend its financial condition.



## **1. Horizontal Analysis**

Three financial statements, balance sheets, income statements, and cash flow statements, of Company E are horizontally analyzed for five years, from 2017 to 2022. The financial data of 2017 serves as the base year to analyze the data for the rest of the years. Table 44 shows the horizontal analysis of Company E and includes only the main line items of each financial statement. The detailed horizontal analysis of Company E's financial statements is available at Appendices N, O, and P.



Table 44. Company E's Financial Statements Horizontal Analysis

<b>Balance Sheet</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Un-appropriated Profit	234%	141%	142%	113%	100%
Total Equity	212%	136%	136%	119%	100%
Total Non-Current Liabilities	165%	153%	107%	76%	100%
Total Current Liabilities	154%	138%	167%	129%	100%
Total Liabilities	157%	141%	153%	117%	100%
Total Equity and Liabilities	171%	140%	149%	117%	100%
Total Non-Current Assets	129%	105%	112%	104%	100%
Total Current Assets	223%	185%	195%	134%	100%
Total Assets	171%	140%	149%	117%	100%
<b>Profit and Loss Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Sales – <i>net</i>	212%	152%	146%	123%	100%
Cost of sales	198%	147%	143%	121%	100%
<b>Profit before taxation</b>	1203%	88%	376%	263%	100%
Taxation	430%	130%	193%	197%	100%
<b>Profit after taxation</b>	1712%	61%	497%	307%	100%
<b>Statement of Cash Flows</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Net cash generated from operating activities	55%	304%	-334%	-150%	-100%
Net cash used in investing activities	-200%	-86%	-165%	-39%	-100%
Net cash generated from financing activities	96%	-86%	235%	82%	100%

The first financial statement of Company E to analyze is the balance sheet, as Figure 78 illustrates. Several publicly traded companies in Pakistan report unappropriated profits in their financial statements instead of retained earnings. Company E also reported unappropriated profit as retained earnings in its financial statements; therefore, unappropriated profit and retained earnings correspond to each other.

The horizontal analysis of Company E shows that total equity is inclusive of reserves, issued share capital, and retained earnings. As compared to the base year, 2017, total equity increased to 212% in 2021 indicating a progressively increasing trend over the last five years. Company E could not progress in 2020 due to COVID-19, which decreased the percentage of retained earnings and equity. In spite of the COVID-19 pandemic outbreak and the growing prices of cotton, Company E earned the highest profit after taxes in 2021.

The analysis also reveals that the total non-current liabilities have increased rapidly in 2019 and 2020 specifically and continue to increase until 2021. A closer look at Company D's financial statements reveals that the non-current liabilities increased due

to long-term loans received by the company in 2019, 2020, and 2021 under the “Long-Term Financing Facility (LTFF) and Islamic Refinance Scheme” (p. 106) offered by the State Bank of Pakistan (<https://dps.psx.com.pk>). These schemes minimized the consequences of COVID-19 by offering financial assistance to Pakistani textile companies. Under the LTFF scheme, Company E obtained funds of 1256.451 million and 431.500 million under the Islamic Refinance Scheme. Additionally, by increasing short-term borrowing, Company E experienced a 54% increase in its current liabilities as compared to 2017, the base year. Consequently, the equity and liability section indicate that Company E is more financially dependent on creditors than the owners.

The assets side is generally showing an increasing trend to 171% in 2021. The company’s investment in PP&E and long-term deposits (details are not available on the company’s financial statements) has also increased. The global impact of COVID-19 caused a decline in tax receivables and stock during 2020, which decreased the current assets. Overall, Company E made a historic performance in the year 2021.

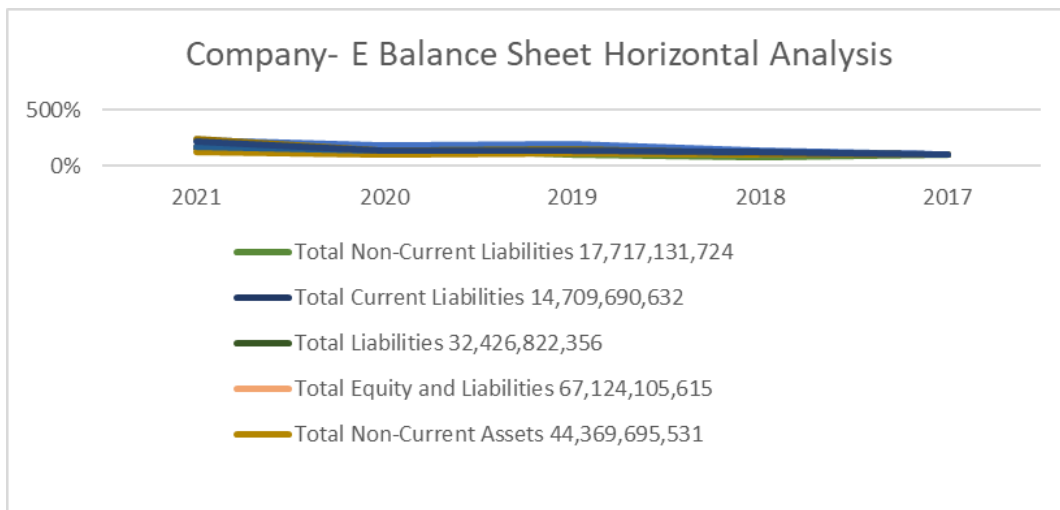


Figure 78. Horizontal Analysis of Company E’s Balance Sheets.

The second financial statement of Company E to analyze is the income statement, as Figure 79 illustrates. Analysis of Company E shows that sales are depicting a steady increase from 2017 to 2020, but a major increase in 2021; more than two-fold to the base year, 2017. A closer look at Company E’s financial statements reveals that the cost of sales during 2021 increased as a result of rising raw materials costs. A rise in gross profit (357% in 2021 as compared to 2017), an increase in ocean freight (to Rs 151 million

from Rs 76 million), and a decrease in finance costs (by Rs 249 million which is 21% less than 2020) as a result of lower interest rates, improved working capital management, which led to a significant increase in net income in 2021.

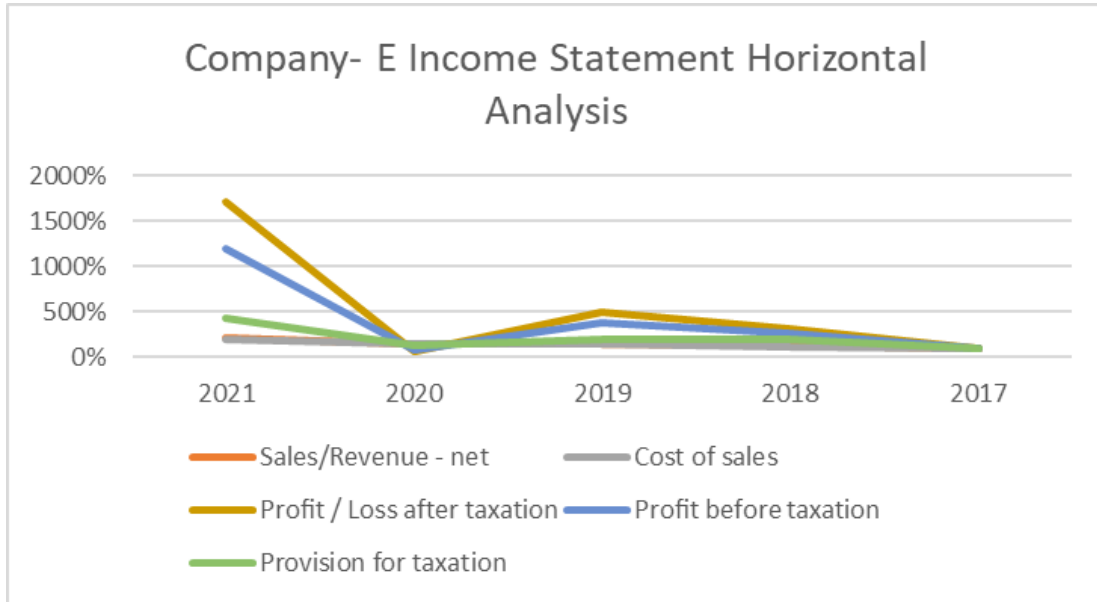


Figure 79. Horizontal Analysis of Company E’s Income Statement.

The third financial statement of Company E to analyze is the cash flow statement, as Figure 80 illustrates. The analysis of Company E shows that cash inflows related to operating activities remained negative until 2019 and after that, it started increasing from 2020 to 2021. Despite the company’s rising sales throughout that time, a significant amount of money is still being held up in trade debts. For investing activities, net cash flow remained negative during the five years. The company gradually increased its fixed capital expenditures for plant renovation and expansion, which is why the deficit doubled to the base year in 2021. The cash flow from financing activities exhibited an upward and downward trend throughout the five years from 2017 to 2021.

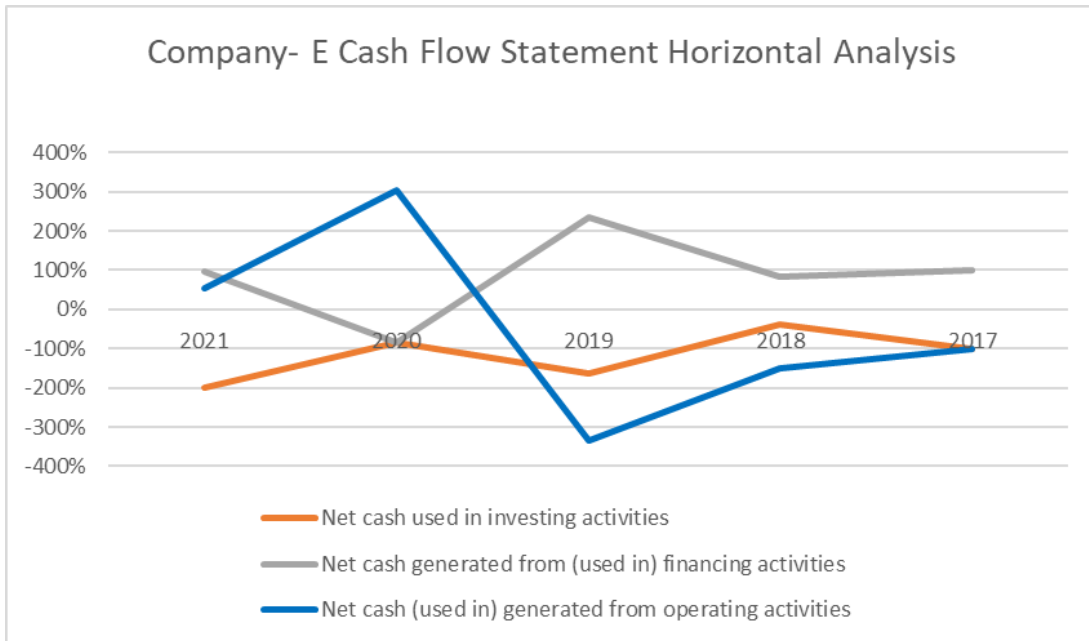


Figure 80. Horizontal Analysis of Company E’s Cash Flow Statements.

## 2. Vertical Analysis

Company E’s financial statements are also vertically analyzed for a period of five years, from 2017 to 2022. These include balance sheets and income statements. The financial data of 2017 serves as the base year to analyze the data for the rest of the years. Table 45 shows the vertical analysis of Company E and includes only the main line items of the financial statements. The detailed vertical analysis of Company E’s financial statements is shown in Appendices N, O, and P.



Table 45. Company E's Financial Statements Vertical Analysis

<b>Balance Sheet</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Unappropriated profit	21%	16%	15%	15%	15%
Total Equity	52%	37%	40%	46%	43%
Total Non-Current Liabilities	17%	19%	12%	11%	17%
Total Current Liabilities	52%	57%	65%	63%	57%
Total Liabilities	69%	75%	77%	74%	75%
Total Liabilities and Equity	100%	100%	100%	100%	100%
Total Non-current Assets	42%	42%	42%	49%	56%
Total Current Assets	58%	58%	58%	51%	44%
Total assets	100%	100%	100%	100%	100%
<b>Profit and Loss Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Net Sales	100%	100%	100%	100%	100%
Cost of sales	-85%	-88%	-89%	-90%	-91%
Profit before tax	8%	1%	4%	3%	1%
Provision for tax	-1%	0%	-1%	-1%	-1%
Profit after tax	7%	0%	3%	2%	1%

The first financial statement of Company E to analyze is the balance sheet, as Figure 81 illustrates. Analysis of Company E shows that both the current and total liabilities decreased by 5–6% from 2017 to 2021. In 2021, Company E decreased its reliance on total liabilities and increased its share of the total equity. However, there is no major change on the asset side.

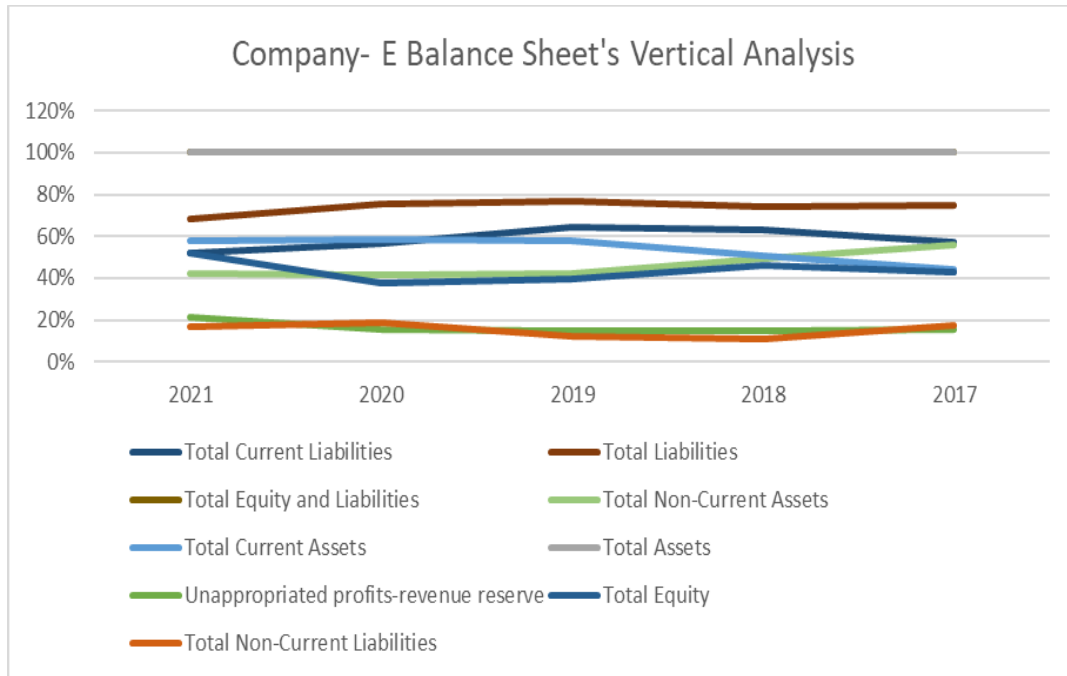


Figure 81. Vertical Analysis of Company E's Balance Sheets.

The second financial statement of Company E to vertically analyze is the income statement, as Figure 82 illustrates. Company E's analysis reveals that the composition of the income statement from 2017 to 2020 indicates a consistent trend. In 2021, the cost of sales decreased slightly (3% in 2020) resulting in an increased income from 1% in 2017 to 7% in 2021. A huge financial damage was caused by the COVID-19 epidemic on the world's economy, as evidenced by the company's 2020 financial reports, which reveal that the profit after tax decreased to zero percent. However, Company E's progress in 2021 is improved as the company's profit after taxes increased to 7%.

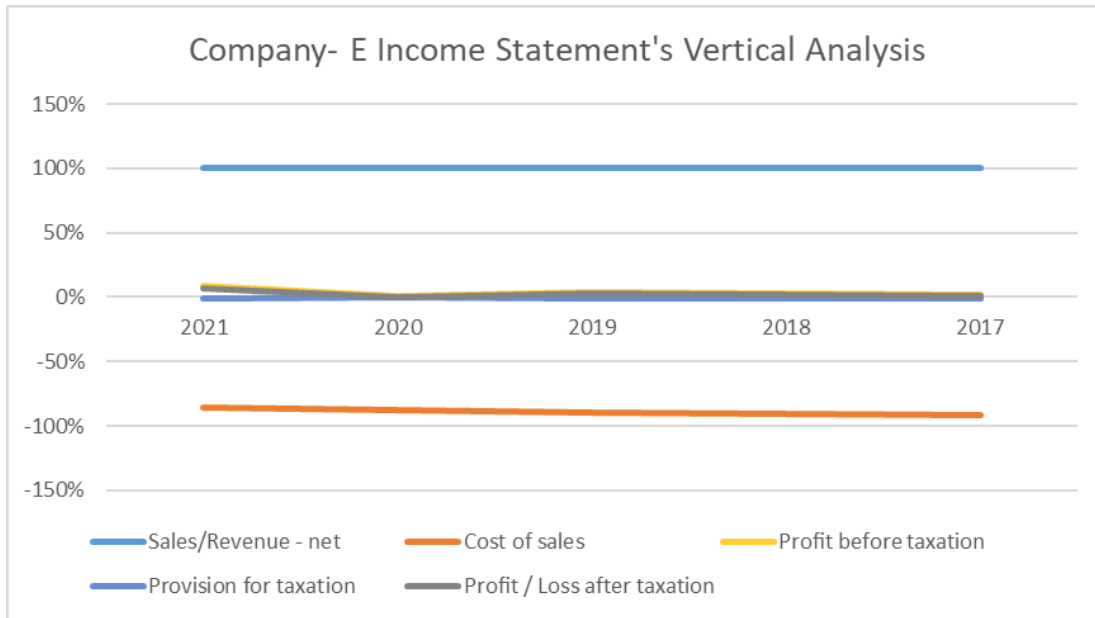


Figure 82. Vertical Analysis of Company E's Income Statements.

### 3. Ratio Analysis

The ratio analysis is carried out to analyze Company E's financial statements from 2017 to 2021 under five categories. These categories are Liquidity, Debt Management, Profitability, Efficiency, and Market Value. Further, two ratios from each category are calculated as per the developed Integrated Financial Analysis Framework. The ratios utilized in this study are specific to the textile industry; however, they can also be applied to any industry after some modifications. Then, a comparison of these ratio averages is conducted against the U.S. textile industry averages because the Pakistan textile industry averages are not publicly available on any Pakistani government or authorized website. It is impossible to conduct an assessment of a company's financial position by using only a set of ratios or all categories of ratios over the course of a single year. Therefore, Company E's ratio analysis is evaluated from 2017 to 2021.

#### a. Liquidity Ratios

The first category of ratios computed from the financial statements of Company E is the liquidity ratios. For the development of the Integrated Financial Analysis Framework, the researchers selected the two liquidity ratios: cash ratio and current ratio, particular to the textile industry. The company's liquidity ratios assess its capacity to

generate cash from all of its available current resources to pay the company’s current obligations. The liquidity ratio analysis of Company E’s financial statements and its comparison with the U.S. textile industry averages are presented in Table 46.

Table 46. Company E’s Liquidity Ratios Analysis

Liquidity Ratios	2021	2020	2019	2018	2017
Cash Ratio	0.01	0.00	0.01	0.01	0.01
<b>Industry Averages</b>	<b>0.22</b>	<b>0.57</b>	<b>0.18</b>	<b>0.04</b>	<b>0.14</b>
Current Ratio	1.11	1.03	0.90	0.80	0.77
<b>Industry Averages</b>	<b>2.59</b>	<b>2.56</b>	<b>2.84</b>	<b>3.13</b>	<b>2.86</b>

The first liquidity ratio of Company E to analyze is the cash ratio. The analysis of Company E’s cash ratio revealed that, from 2017 to 2021, the cash ratios were consistent, with the exception of 2020, where the ratio entirely decreased. Due to the low ratio, Company E is unable to meet its present liabilities with its cash and cash equivalents in hand and could face financial difficulties in the future. When compared to peers in the U.S. textile industry, Company E’s cash ratio from 2017 to 2021 is significantly lower. Figure 83 is a graphical representation of Company E’s cash ratio.

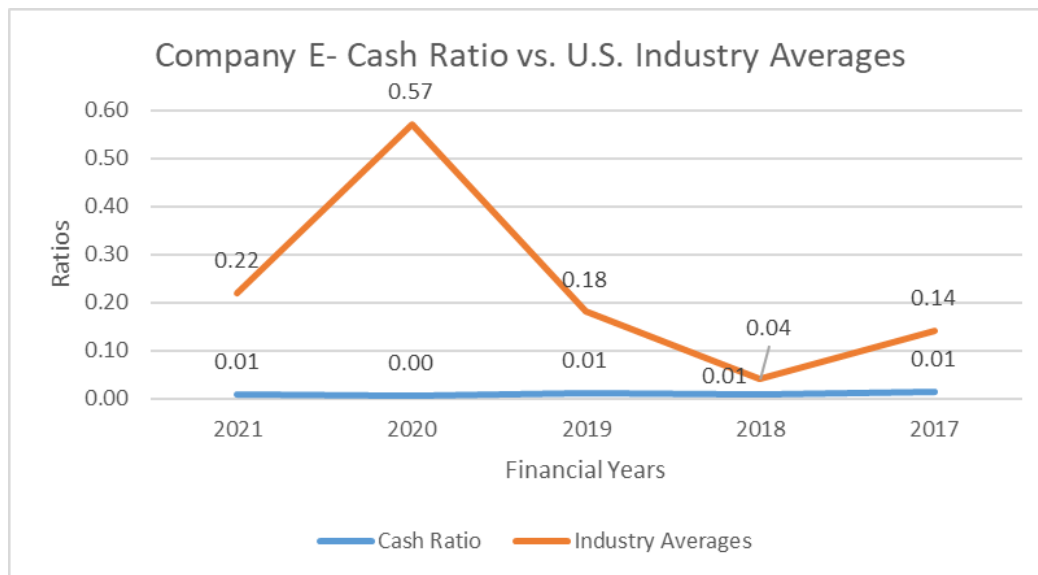


Figure 83. Comparison of Company E’s Current Ratio against U.S. Industry Averages.

The second liquidity ratio of Company E to analyze is the current ratio. The current ratio analysis gauges the company’s capacity to cover its immediate financial obligations for a period of a year. Grant et al. (2016) state that the working capital ratio is



another name for this ratio. According to Rist and Pizzica (2015), a current ratio of 1 or greater is preferable, while a current ratio of less than 1 is a warning sign because it indicates that the company may have difficulty with paying current obligations. The analysis of Company E’s current ratio revealed that from 2017 to 2019, it was less than 1. From 2020 to 2021, when the company’s current assets improved because of the Pakistan State Bank’s assistance, it began to rise. Company E’s current ratio is significantly lower than the U.S. textile industry averages from 2017 to 2021. This signifies that Company E may experience short-term liquidity issues. Figure 84 is a graphical representation of Company E’s current ratio.

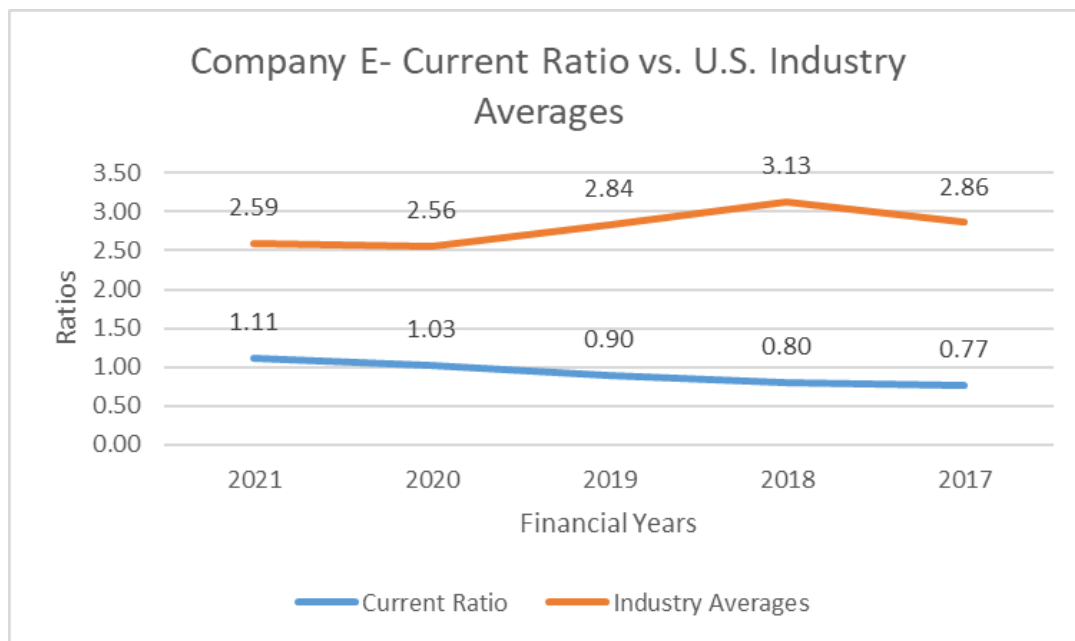


Figure 84. Comparison of Company E’s Current Ratio against U.S. Industry Averages.

**b. Debt Management Ratios**

The second category of ratios of Company E to be analyzed is the debt management ratios, also called the solvency ratios. For the analysis of Company E, the debt ratio and debt-to-equity ratio have been utilized. These ratios are essential for analyzing the organization’s capital structure when discussing the capacity to repay a debt. The company uses capital structure to finance its capital expenditures, acquisitions, and business operations. The capital structure of a company that optimizes market value and lowers capital costs is the one that combines equity and debt financing effectively.



An improperly combined capital structure makes it difficult for a company to operate and turn a profit. Therefore, for the better performance of the companies, it is very important to choose an appropriate level of capital structure. Table 47 shows Company E’s debt management ratios as compared to the U.S. textile industry averages for five years, from 2017 to 2021.

Table 47. Company E’s Debt Management Ratios Analysis

<b>Debt Management Ratios</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Debt Ratio	0.69	0.75	0.77	0.74	0.75
<b>Industry Averages</b>	<b>0.41</b>	<b>0.40</b>	<b>0.46</b>	<b>0.43</b>	<b>0.41</b>
Debt-to-Equity Ratio	2.18	3.08	3.32	2.90	2.95
<b>Industry Averages</b>	<b>0.69</b>	<b>0.68</b>	<b>0.87</b>	<b>0.76</b>	<b>0.54</b>

The first debt management ratio of Company E to analyze is the debt ratio. The analysis of this ratio reveals that between 2017 and 2021, Company E’s total debt is almost stable which indicates that Company E possesses sufficient resources to cover the cost of debts when they become due. However, the debt ratio of Company E is greater than the U.S. textile industry averages from 2017 to 2021. This means that Company E’s assets are more leveraged on debts than the other U.S. textile companies. The graphical illustration is depicted in Figure 85.



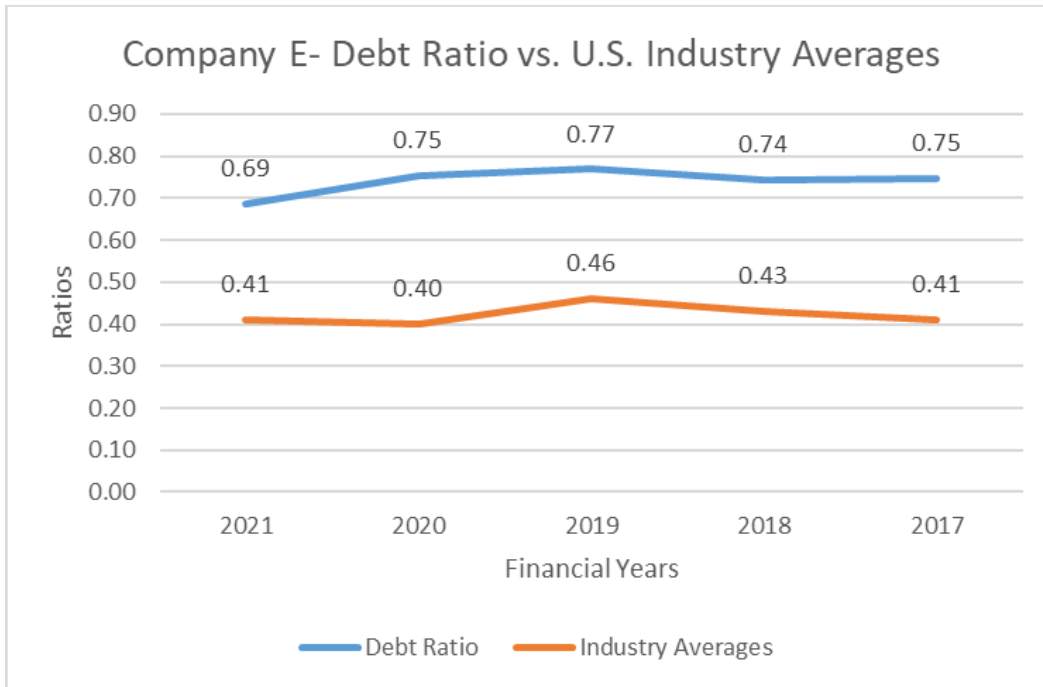


Figure 85. Comparison of Company E’s Debt Ratio against U.S. Industry Averages.

The second debt management ratio of Company E to analyze is the debt-to-equity ratio. This ratio shows the company’s level of external borrowing as compared to the amount invested by its shareholders. The analysis of Company E’s debt-to-equity ratio reveals total debts exceed total equity, which means that the company relies more on debtors for finances than on shareholders’ equity. Figure 86 depicts the trend analysis of Company E and shows that its debt-to-equity ratio is almost three times higher than the U.S. textile industry averages from 2017 to 2021. It means Company E may be viewed as risky when it comes to the payment of debt.

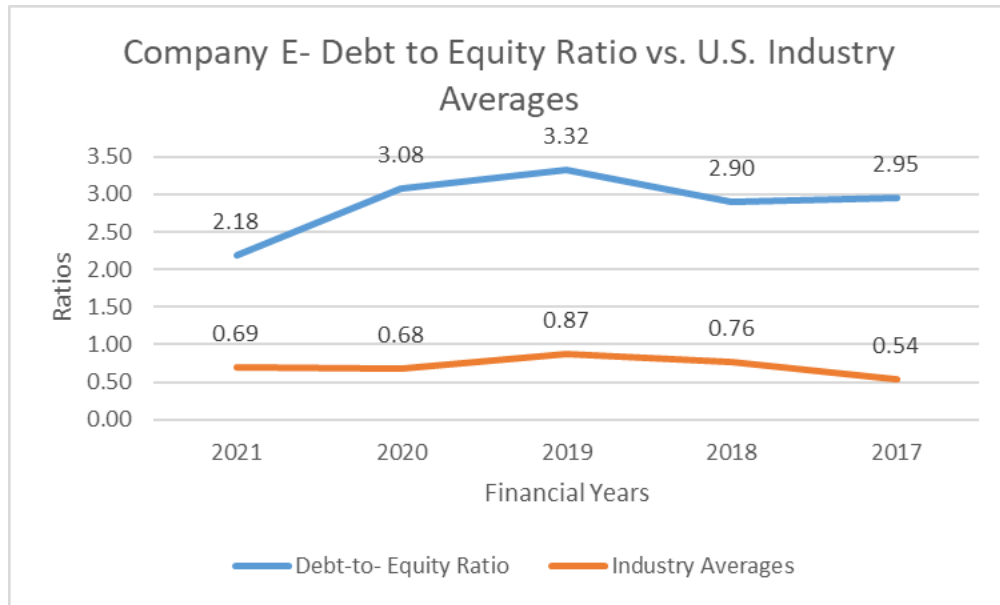


Figure 86. Comparison of Company E’s Debt to Equity Ratio against U.S. Industry Averages.

**c. Efficiency Ratios**

The third category of ratios of Company E to analyze is the efficiency ratios. These ratios quantify the capability of a company to utilize its resources to produce sales. Occasionally, businesses invest excessively in non-current assets that will not help them to achieve their sales targets (Grant, et. al., 2016). Therefore, highly efficient companies need to properly manage their net investments in assets so that they can effectively continue their operations with less equity and debt. A higher efficiency ratio indicates that the company is financially healthier. Efficiency ratios calculated for Company E are total assets turnover and inventory turnover. Table 48 shows Company E’s efficiency ratios in comparison to the U.S. textile industry averages for 2017 to 2021.

Table 48. Company E’s Efficiency Ratio Analysis

Efficiency Ratios	2021	2020	2019	2018	2017
Total Assets Turnover	1.24	1.09	0.99	1.05	1.00
<b>Industry Averages Ratio</b>	<b>1.36</b>	<b>1.01</b>	<b>1.23</b>	<b>1.37</b>	<b>1.22</b>
Inventory Turnover	4.06	3.26	2.49	3.90	3.44
<b>Industry Averages Ratio</b>	<b>3.69</b>	<b>3.38</b>	<b>3.54</b>	<b>3.44</b>	<b>3.92</b>





The first efficiency ratio of Company E to analyze is the total asset turnover ratio. The analysis of this ratio reveals that Company E shows an increasing trend from 2017 to 2018 and a decreasing trend in 2019. However, the ratio had an increasing trend from 2020 to 2021. The significant increase in sales volume from 2020 to 2021 compared to the other years caused the trend to increase. It shows that all of the company's resources are being utilized effectively to improve sales revenue. In comparison to the U.S. textile industry, the ratio is lower than the industry averages, with the exception of 2020, when Company E outperformed its U.S. industrial peers. The company's sales activities seem to be less affected by COVID-19 in 2020 than the U.S. textile industry. Company E's total assets turnover ratio is graphically depicted in Figure 87.

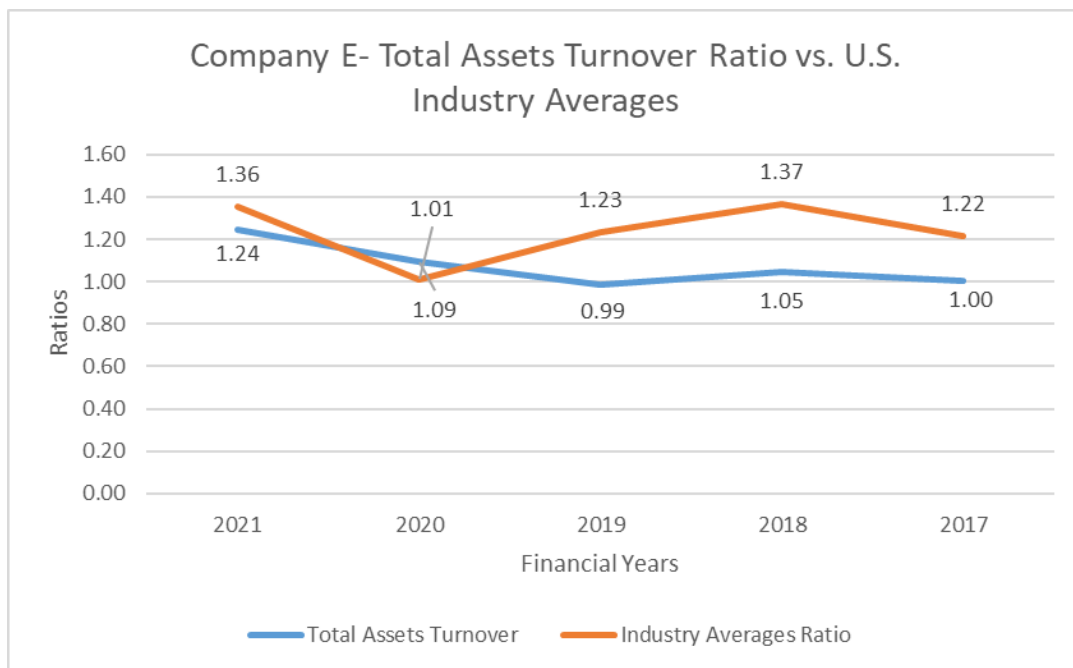


Figure 87. Comparison of Company E's Total Asset Turnover Ratio against U.S. Industry Averages.

The second efficiency ratio of Company E to analyze is the inventory turnover ratio. The analysis of this ratio illustrates that Company E displays an upward trend in 2017 and 2018, a slight decrease in 2019, an increase in 2020, and a sharp increase in 2021. The COVID-19 pandemic's slight impacts are evident on the company's performance during 2019. However, the company surpassed itself in 2021 with a significant increase, which means Company E has the capacity to manage its inventory,

make timely sales, and replacements. In comparison to the U.S. peers, the company's ratio was lower than that of U.S. textile industry averages in 2017, increased in 2018, decreased once again in 2019 and 2020, and then improved in 2021. Company E's efficiency ratio as well as its comparisons to the U.S. peers in the same industry reveals that Company E performed better during the research period. Figure 88 shows Company E's inventory turnover ratio in comparison to the U.S. textile industry averages from 2017 to 2021.

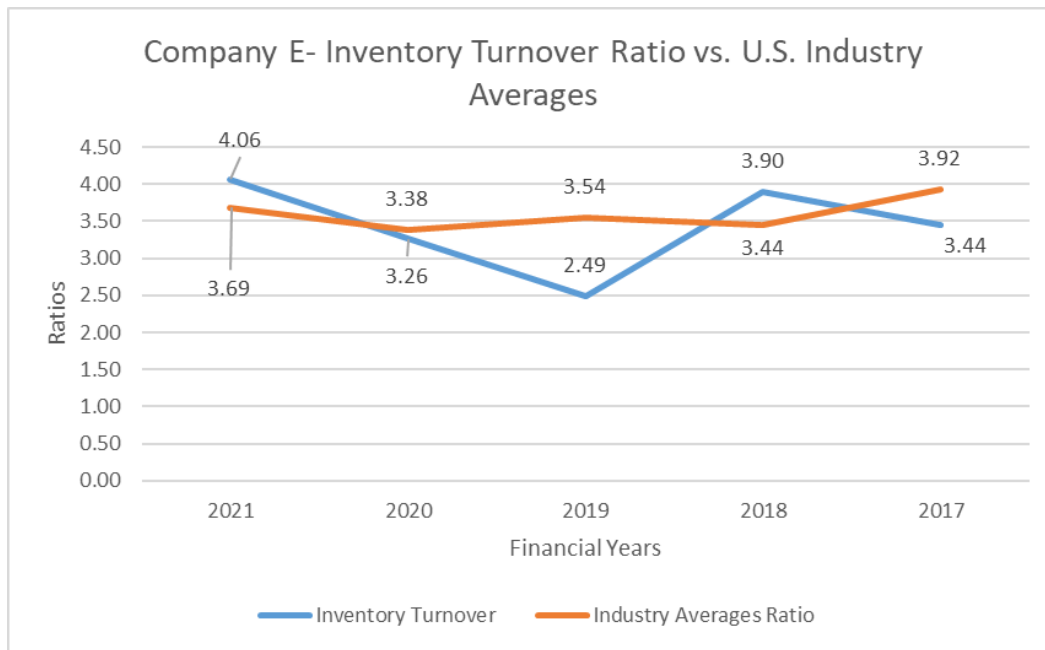


Figure 88. Comparison of Company E's Inventory Turnover Ratio against U.S. Industry Averages.

**d. Profitability Ratios**

The fourth category of ratio of Company E to analyze is the profitability ratios. A company's capacity to earn a profit is referred to as profitability. A company's profitability is essential both for creditors and stakeholders because revenue is derived from profit in the form of dividends. The owners, stockholders, and creditors make use of such ratios for the assessment of the company's financial picture; therefore, they are known as the king of all ratios (Malik, 2017). The return on assets and net profit margin ratios are used for the analysis of Company E. Table 49 shows Company E's two profitability ratios as compared to the U.S. textile industry averages.



Table 49. Company E’s Profitability Ratios Analysis

<b>Profitability Ratios</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Return on Assets %	9.0%	0.4%	3.0%	2.3%	0.9%
<b>Industry Averages</b>	<b>5.3%</b>	<b>-3.8%</b>	<b>5.7%</b>	<b>6.0%</b>	<b>5.8%</b>
Net Profit Margin %	7.2%	0.4%	3.0%	2.2%	0.9%
<b>Industry Averages</b>	<b>12.2%</b>	<b>-13.4%</b>	<b>12.5%</b>	<b>12.3%</b>	<b>8.8%</b>

The first profitability ratio of Company E to analyze is the return on assets (ROA) ratio. The analysis of this ratio shows that Company E performed less in 2017 than it did comparatively well in 2018 and 2019 relative to the previous year. In 2020, Company E was also affected by the COVID-19 pandemic but did not have a loss in that year as compared to the U.S. industry. Despite the COVID-19 pandemic, the company made a significant improvement in 2021 and maximized its profit. The greater ROA (9.0%) in 2021, much more than the U.S. textile industry averages (5.3%), was due to that year’s high sales. The graphical illustration is depicted in Figure 89.

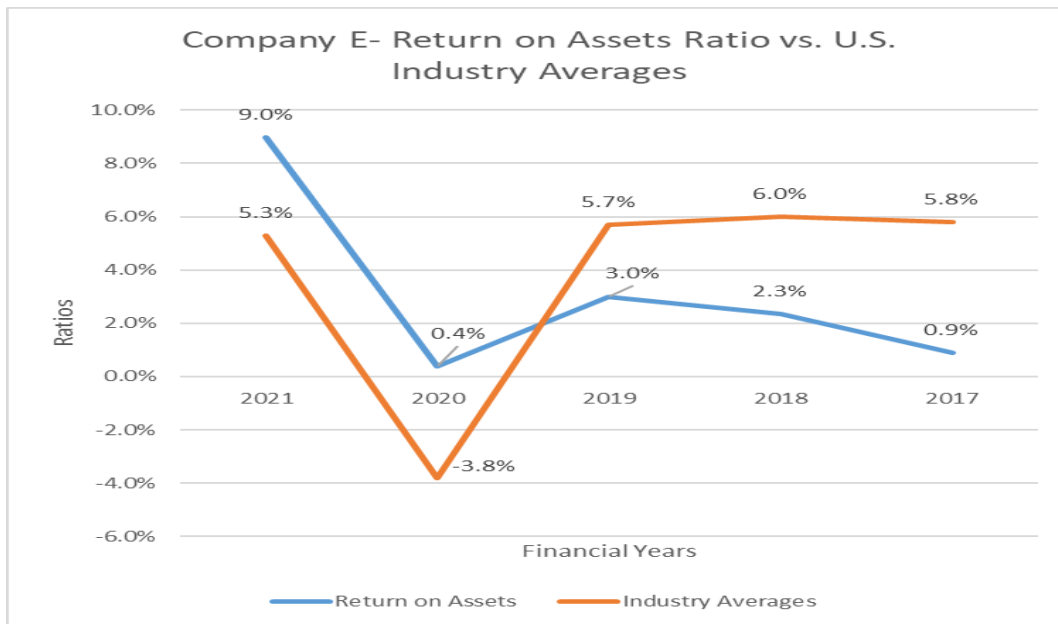


Figure 89. Comparison of Company E’s Return on Assets against U.S. Industry Averages.

The second profitability ratio of Company E to analyze is the net profit margin ratio. The analysis of this ratio of Company E indicates that it is considerably lower than the U.S. textile industry averages for the years 2017 to 2019 and 2021. However, it performed comparatively well in 2020 as compared to the U.S. industry averages. In

2020, U.S. textile industry averages showed a loss of 13.4% while Company E maintained a net profit of 0.4%. During the COVID-19 pandemic, Company E made the best use of its resources to boost sales and generate net income by utilizing its finances in 2021. In order to stay profitable, Company E needs to reduce its cost of goods sold, by negotiating better prices with suppliers or improving production efficiency. The graphical representation is shown in Figure 90.

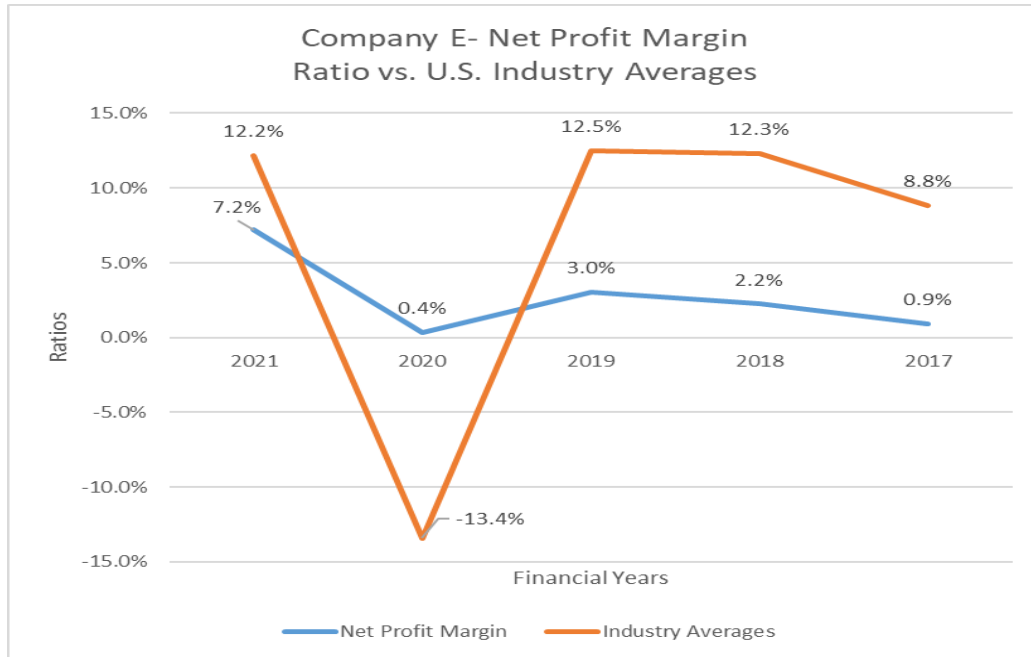


Figure 90. Comparison of Company E’s Net Profit Margin Ratio against U.S. Industry Averages.

**e. Market value ratios**

Market value ratios are the fifth category of ratios analyzed on the financial statements of Company E. These ratios are utilized by investors to assess whether stocks are fairly priced, over-valued, or under-valued. Such ratios also assist in the financial health assessment of publicly traded companies. The market value ratios used for this research are Price Earning (P/E) and dividend payout ratios. Companies with higher P/E and dividend payout ratios indicate the higher return associated with higher market value ratios, but it depends on the investor, who is willing to purchase shares at a higher cost due to anticipating higher growth in the future. Table 50 shows Company E’s market value ratios as compared to the U.S. textile industry averages.



Table 50. Company E’s Market Value Ratios Analysis

Market Value Ratios	2021	2020	2019	2018	2017
Price Earnings Ratio	56.24	1.99	16.32	10.08	3.29
<b>Industry Averages</b>	<b>21.48 (TTM-Trailing 12 Months)</b>				
Dividends Payout Ratio	0.09	1.90	0.14	0.11	0.15
<b>Industry Averages</b>	<b>0.96</b>	<b>-0.15</b>	<b>0.82</b>	<b>1.33</b>	<b>0.32</b>

The first market value ratio of Company E to analyze is the P/E ratio. This ratio is fundamental for investors and analysts to estimate a stock’s relative valuation. Analysis of Company E’s price-earnings ratio reveals that its P/E ratio exceeds the U.S. textile industry trailing 12 months averages only in 2021; in all other years, it is less than that. Company E’s lower P/E ratio than U.S. industry TTM averages means that Company E’s shares are undervalued. Investors may be encouraged to purchase the shares at this cheaper price to take advantage of the opportunity before the market conditions improve. Figure 91 represents Company E’s P/E ratios in comparison to the U.S. textile industry averages over a period of five years.

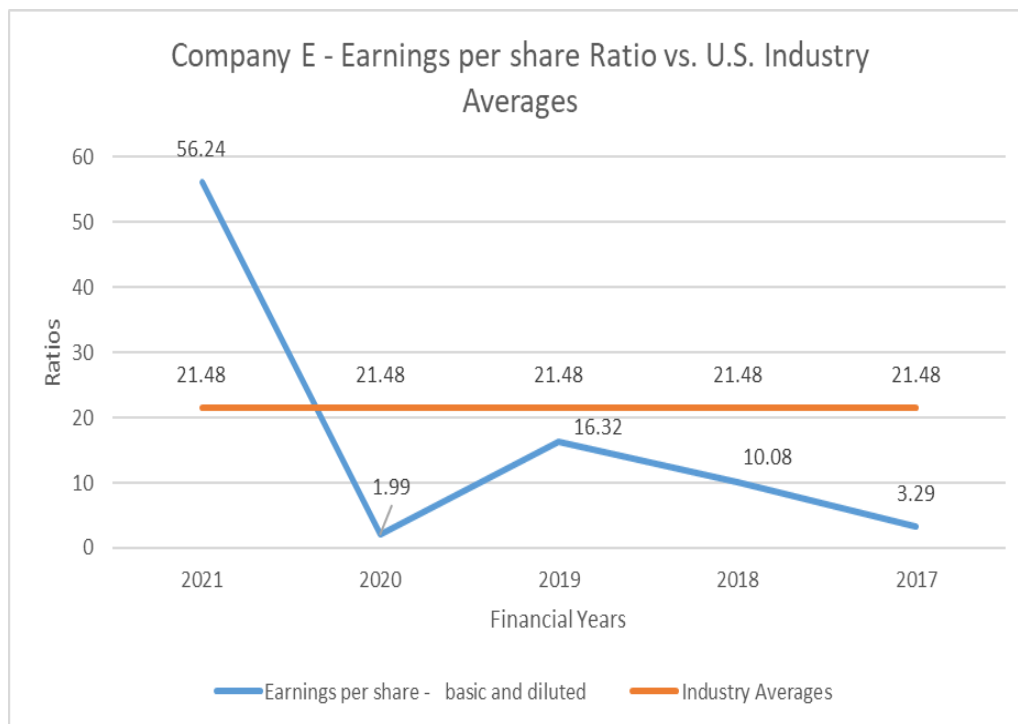


Figure 91. Comparison of Company E’s Earning per Share Ratio against U.S. Industry Averages.



The second market value ratio of Company E to analyze is the dividend payout ratio. The analysis of this ratio of Company E demonstrates that every year it pays dividends, but from 2017 and 2021 except for 2020, its dividend payout ratio is lower than the U.S. textile industry averages. Company E's irregular dividend payout ratio shows that the company may be unstable because the companies with the best dividend payment records have stable long-term payout ratios. Dividend policy is one of the most challenging issues for companies. In order to finance future expansion, Company E needs to determine how much of its profits should be retained in the company and how many dividends should be paid to investors. The comparison between Company E and the U.S. textile industry averages is depicted in Figure 92.

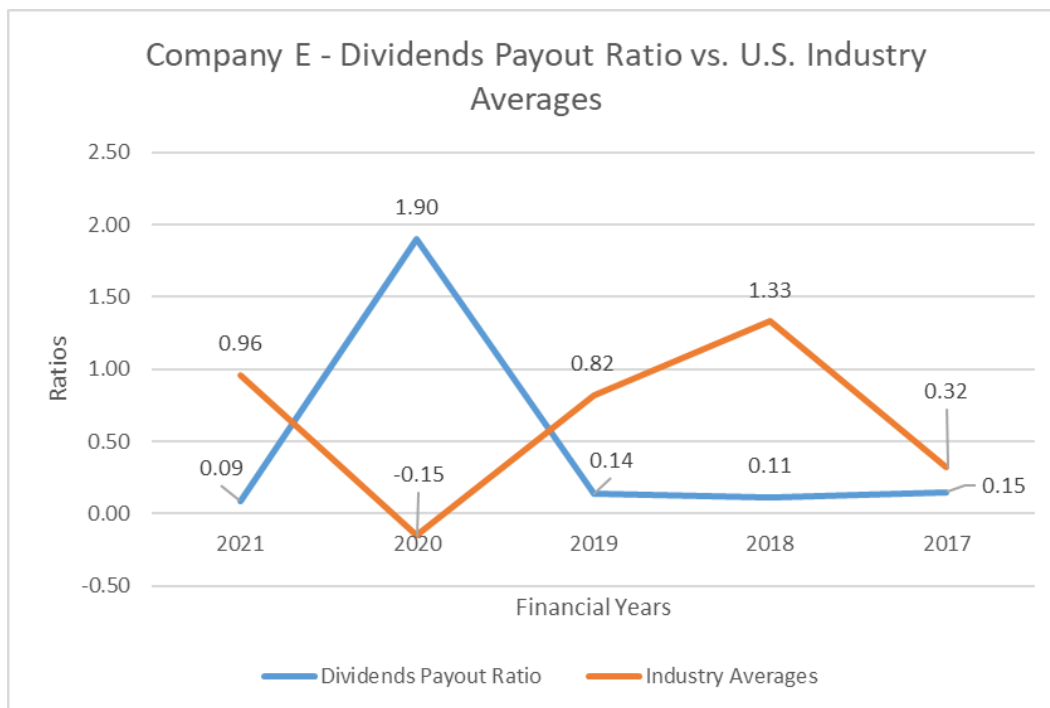


Figure 92. Comparison of Company E's Dividend Payout Ratio against U.S. Industry Averages.

#### 4. Fraud Analysis



Using information from the company's financial statements, the eight fraud ratio variables are needed to calculate the M-Score. If a company's M-Score is below -2.22, it is not considered a manipulator, and if it is greater than -2.22, then the company may be a manipulator. When M-score was conducted on Company E, it indicates possible fraud for



the years 2018, 2019, and 2021. The financial data from 2018, 2019, and 2021 show high Days Sales in Receivables Index (DSRI), Sales, General and Administrative Expenses Index (SGAI), Sales Growth Index (SGI), and Leverage Index (LVGI) ratios when compared to the fraud ratios from other years. The analysis reveals that the unusual variations in these ratios could be a possibility of financial statement fraud in the company, which does not necessarily mean that the company is actually involved in fraudulent practices. However, Company E needs to thoroughly review and analyze its financial statements to ascertain the reasons for the significant rise in ratios over the periods that indicate possible fraud. Table 51 shows the results of the fraud analysis.

Table 51. Fraud Analysis of Company E

Company E's M-Score						
Derived Variables	2021	2020	2019	2018	2017	Manipulator / Non-Manipulator Means
DSRI	1.031	1.017	0.992	1.986	0.878	1.465/1.031
GMI	1.014	1.006	1.006	1.005	0.999	1.193/1.014
AQI	0.660	0.250	0.729	0.846	0.978	1.254/1.039
SGI	1.391	1.040	1.193	1.227	1.129	1.607/1.134
DEPI	1.143	0.975	1.075	0.983	1.084	1.077/1.001
SGAI	0.587	1.826	0.962	1.018	0.964	1.041/1.001
TATA	0.079	-0.069	0.105	0.066	0.042	0.031/0.018
LVGI	0.908	0.982	1.034	0.995	1.024	1.111/1.037
<b>M-score</b>	<b>-1.75</b>	<b>-3.19</b>	<b>-1.92</b>	<b>-1.12</b>	<b>-2.28</b>	

 M < -2.22, no possible fraud  
 M > -2.22, possible fraud

## 5. Bankruptcy Analysis

A company might be considered insolvent or possibly become bankrupt if its Z-score is below 1.81 and if it has a Z-score of more than 2.99, it is not regarded as insolvent nor does it have the possibility of going bankrupt. However, the status of the company's bankruptcy is considered to be unknown if its Z-score is between 1.81 and 2.99. The Z-score analysis was conducted on Company E's financial data from 2017 to 2021 to assess possible bankruptcy indicators. The bankruptcy score for Company E

indicates that the company had possible bankruptcy issues in 2017. One of the main contributors to the overall Z-score being low is when a company has too much debt in its capital structure. Company E recovered from possible bankruptcy issues by optimizing its operations and cutting operating costs and became profitable from 2018 to 2021. The analysis of financial reports revealed that Company E was financially stable and had no imminent risk of possible bankruptcy from 2018 to 2021. Table 52 displays Company E's Z-score results.

Table 52. Bankruptcy Analysis of Company E

Company E's Z-Score					
Variables	2021	2020	2019	2018	2017
X1= Working Capital / Total Assets	0.059	0.017	-0.066	-0.127	-0.133
X2= Retained Earnings/Total Assets	0.211	0.155	0.147	0.148	0.154
X3= EBIT/Total Assets	0.991	0.971	0.891	0.818	-0.071
X4= Market Value of Equity / BV of Total Debts	0.053	0.059	0.054	0.071	0.083
X5= Sales / Total Assets	1.244	1.092	0.988	1.049	1.003
Z Score = 1.2X1+1.4X2+3.3X3+0.6X4+1.0X5	4.913	4.571	4.085	3.847	0.876

	Z<1.81, Possibly Bankrupt
	1.81<Z<2.99, Unknown
	Z>2.99, Possibly Non-Bankrupt

The analysis conducted on Company E is for illustration purposes only. The analysis illustrates how to use the Integrated Financial Analysis Framework on the company's financial statements to analyze the financial health of Pakistani defense prospective contractors. The subsequent section includes a discussion of Company F's financial statements.

## G. FINANCIAL ANALYSIS OF COMPANY F

Company F was established in Pakistan as a public limited company according to the Companies Act of 1913. It is registered in the Pakistan Stock Exchange Limited (<https://dps.psx.com.pk>) in the textile composite sector. Company F produces and sells yarn, cotton fabrics, and home textile items, as well as engages in the finishing, stitching, and printing of fabrics. Weaving, spinning, printing, and power generation are the few segments in which Company F operates. Company F is one of Pakistan's leading textile producers and exporters.





In the subsequent section, the Integrated Financial Analysis Framework is used to analyze Company F’s financial data from 2017 to 2021. The integrated Financial Analysis Framework encompasses five financial analyses which are horizontal, vertical, ratio, bankruptcy, and fraud. The financial analysis of Company F is to be conducted on the income statements, balance sheets, and cash flow statements. All these financial statements are highly integrated with one another. Therefore, for a thorough comprehension of the company’s financial condition, the Pakistani defense contracting officers should review all of the prospective contractor’s financial statements.

### 1. Horizontal Analysis

Three financial statements; balance sheets, income statements, and cash flow statements of Company F, are horizontally analyzed from 2017 to 2022. The financial data of 2017 serves as the base year to analyze the data for the rest of the years. Table 53 shows the horizontal analysis of Company F and includes only the main line items of each financial statement. The detailed horizontal analysis of Company F’s financial statements is available in Appendices Q, R, and S.

Table 53. Company F’s Financial Statements Horizontal Analysis

<b>Balance Sheet</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Un-appropriated profit	131%	110%	126%	100%	-
Total Equity	124%	97%	96%	94%	100%
Total Non-Current Liabilities	107%	109%	93%	97%	100%
Total Current Liabilities	138%	111%	123%	111%	100%
Total Liabilities	121%	110%	107%	103%	100%
Tot Liabilities and Equity	122%	105%	103%	100%	100%
Total Non-Current Assets	102%	95%	95%	95%	100%
Total Current Assets	162%	126%	118%	110%	100%
Total Assets	122%	105%	103%	100%	100%
<b>Profit and Loss Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Sales – <i>net</i>	150%	133%	134%	113%	100%
Cost of sales	140%	127%	126%	111%	100%
Profit before taxation	126%	44%	99%	65%	100%
Provision for taxation	196%	51%	152%	139%	100%
Profit after taxation	120%	43%	94%	59%	100%
<b>Cash Flow Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Net cash generated from operating activities	9%	8%	763%	505%	100%
Net cash used in investing activities	-23%	-9%	-27%	-14%	-100%
Net cash from financing activities	24%	8%	6%	-1%	100%

The first financial statement to analyze for Company F is the balance sheet, as Figure 93 illustrates. The analysis of Company F shows an increasing trend in all line items from 2017, the base year, until 2021. Like Companies D and E, Company F also stated unappropriated profit in its financial statements for retained earnings because some publicly traded companies in Pakistan report unappropriated profit rather than retained earnings in their financial statements. Therefore, in the analysis of Company F, unappropriated profit and retained earnings correspond to each other.

The analysis of Company F reveals that total equity increased to 124% in 2021 indicating a progressively increasing trend over the last five years. In contrast to the baseline year, 2017, Company F possesses sound equity of 21,019 million in 2021. Due to high profitability and an increase in sales volume, unappropriated profit also increased to 131% in 2021.

Total non-current liabilities have increased in 2020 and 2021 as compared to the rest of the years. By taking a closer look at Company F's financial statements, it is revealed that the non-current liabilities increased due to long-term loans acquired by the company in 2020 and 2021 under LTFF and TERF schemes offered by the State Bank of Pakistan. The company acquired long-term loans of 3,180 million during the years 2020 and 2021 for investments in the latest machinery and plant. Company F also paid back long-term loans of Rs. 987 million during the year 2021 after opting for the State Bank of Pakistan deferment scheme. The company's total liabilities increased by 138% in 2021 as a result of an increased share of long-term financing (589% in 2021), trade debts (126% in 2021), short-term loans, and the amount of accrued interest.

The assets side is generally showing an increasing trend to 122% in 2021. The company's investment in long-term deposits and PP&E also increased. Due to the COVID-19 pandemic, stocks and trade debts increased which increased the current assets to 162% as compared to the base year, 2017.



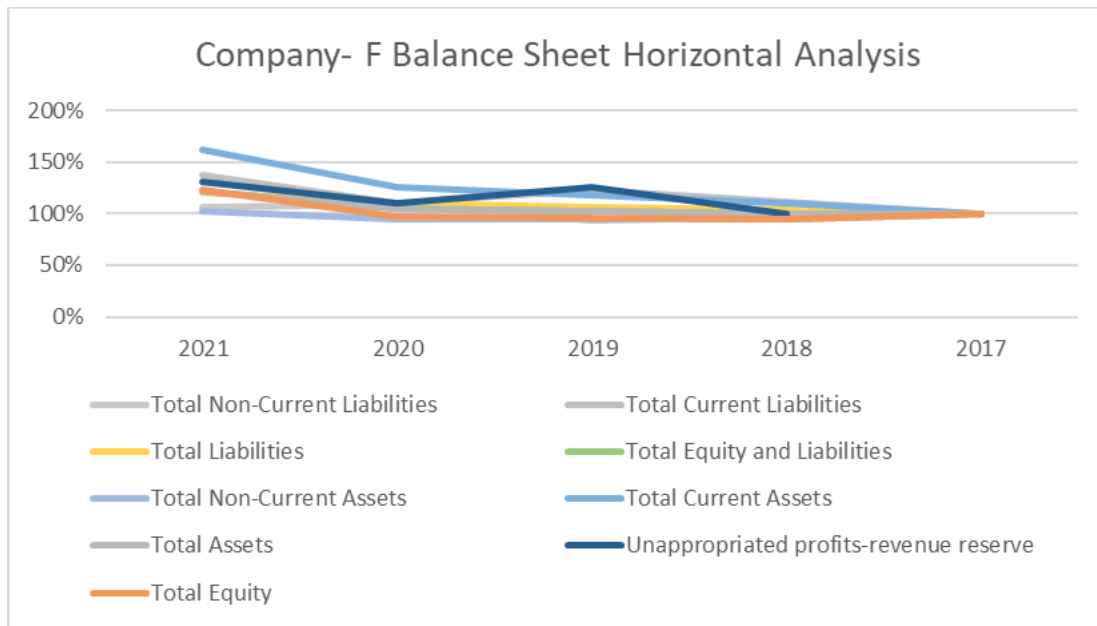


Figure 93. Horizontal Analysis of Company F’s Balance Sheets.

The second financial statement to analyze for Company F is the income statement, as Figure 94 illustrates. The analysis of Company F shows that sales (150% in 2021) are depicting a steadily increasing trend from 2017 to 2021 except 2020. During 2020, sales decreased slightly (0.65%) as compared to 2019 due to the COVID-19 pandemic. The cost of sales during 2021 also increased as a result of rising raw materials costs. However, a reduction in finance cost (163% in 2021 as compared to 264% in 2020) due to a lower mark-up rate and an increase in gross profit (237% in 2021 as compared to 181%) resulted in a significant increase in net income in 2021 (120% in 2021 as compared to 43% in 2020).

Pakistan’s textile sector showed a substantial growth and high profitability in the financial year 2021 due to a hike in domestic and global prices of textile products, specifically after the COVID-19 pandemic.

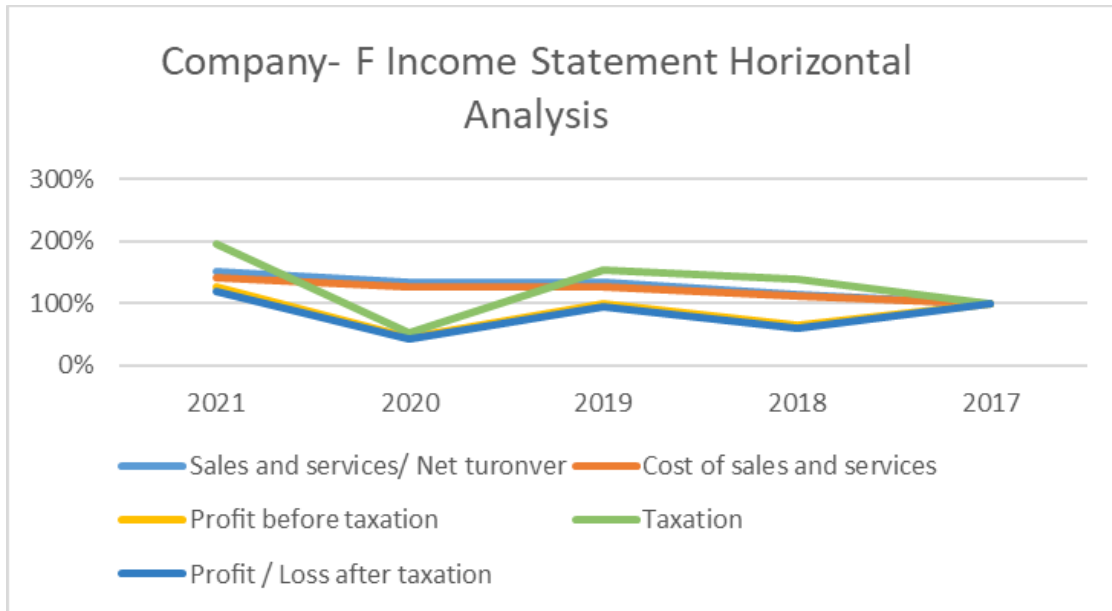


Figure 94. Horizontal Analysis of Company F’s Income Statements.

The third financial statement to analyze for Company F is the cash flow statement, as Figure 95 illustrates. The analysis of Company F over the period of 2017 to 2019 reveals that cash inflows generated from operating activities exhibit a rising trend, but from 2020 to 2021, they significantly decline. The company paid a considerable amount in taxes and long-term debts from 2020 to 2021, which decreased the cash inflows from operating activities. Due to Company F’s significant investments in PP&E, cash flow for investing activities remained negative over the course of the five years, from 2017 to 2021. However, financing activities’ cash flow is positive from 2017 to 2021, with the exception of 2018. The assistance extended by the State Bank of Pakistan causes a significant increase in financing activities’ cash flow during 2021. Overall, financing activities’ cash flow decreased from 100% to 24% in 2021.

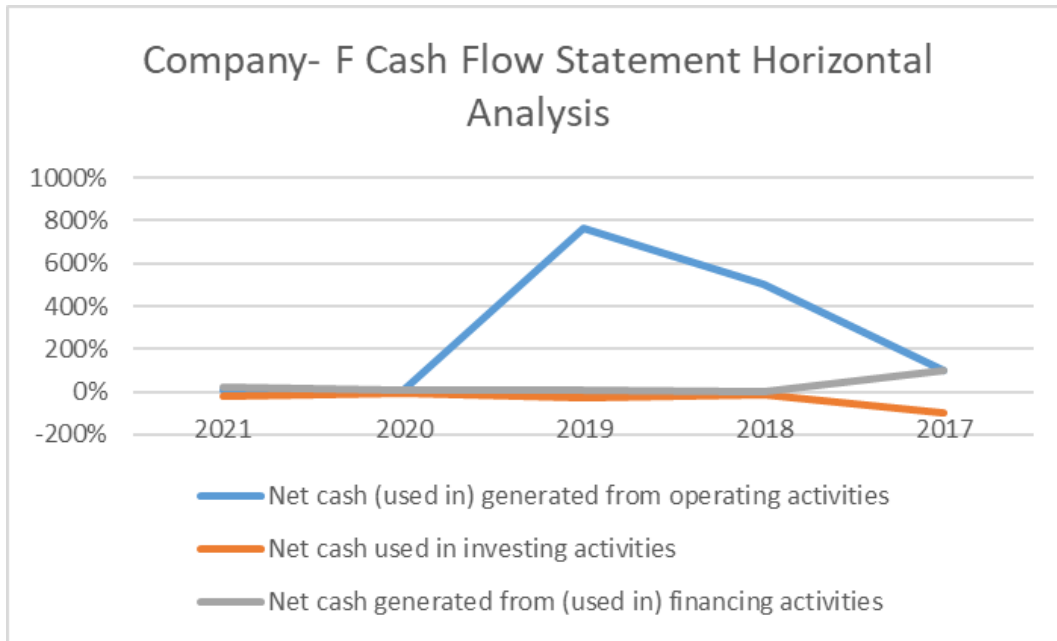


Figure 95. Horizontal Analysis of Company F's Cash Flow Statements.

## 2. Vertical Analysis

Company F's financial statements are also vertically analyzed for a period of five years, from 2017 to 2022. These include balance sheets and income statements. The financial data of 2017 is the base year to analyze the data for the rest of the years. Table 54 depicts the vertical analysis of Company F and includes only the main line items of the financial statements. The detailed vertical analysis of Company F's financial statements is shown in Appendices Q, R, and S.

Table 54. Company F's Financial Statements Vertical Analysis

<b>Balance Sheet</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Unappropriated profit	38%	37%	43%	35%	0%
Total Equity	41%	37%	38%	38%	40%
Total Non-Current Liabilities	28%	34%	29%	32%	32%
Total Current Liabilities	31%	29%	33%	31%	28%
Total Liabilities	59%	63%	62%	62%	60%
Total Liabilities and Equity	100%	100%	100%	100%	100%
Total Non-current Assets	56%	61%	62%	64%	67%
Total Current Assets	44%	39%	38%	36%	33%
Total Assets	100%	100%	100%	100%	100%
<b>Income Statement</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Sales	100%	100%	100%	100%	100%
Cost of sales	-83%	-86%	-84%	-88%	-90%
Profit before tax	10%	4%	9%	7%	12%
Provision for tax	-1%	0%	-1%	-1%	-1%
Profit after tax	8%	3%	7%	6%	11%

The first financial statement to analyze for Company F is the balance sheet, as Figure 96 illustrates. The analysis of Company F shows that the liabilities, equity, and assets sides of the balance sheet show a fluctuation of 4–6% between 2017 and 2021. By 2020, the total equity decreased from 40% (2017) to 37% (2020) whereas the percentage of the total liabilities increased from 60% (2017) to 63% (2020). Company F's total current assets have increased from 33% (2017) to 44% (2021) whereas its non-current assets show a decreasing trend over the last five years, from 2017 to 2021.



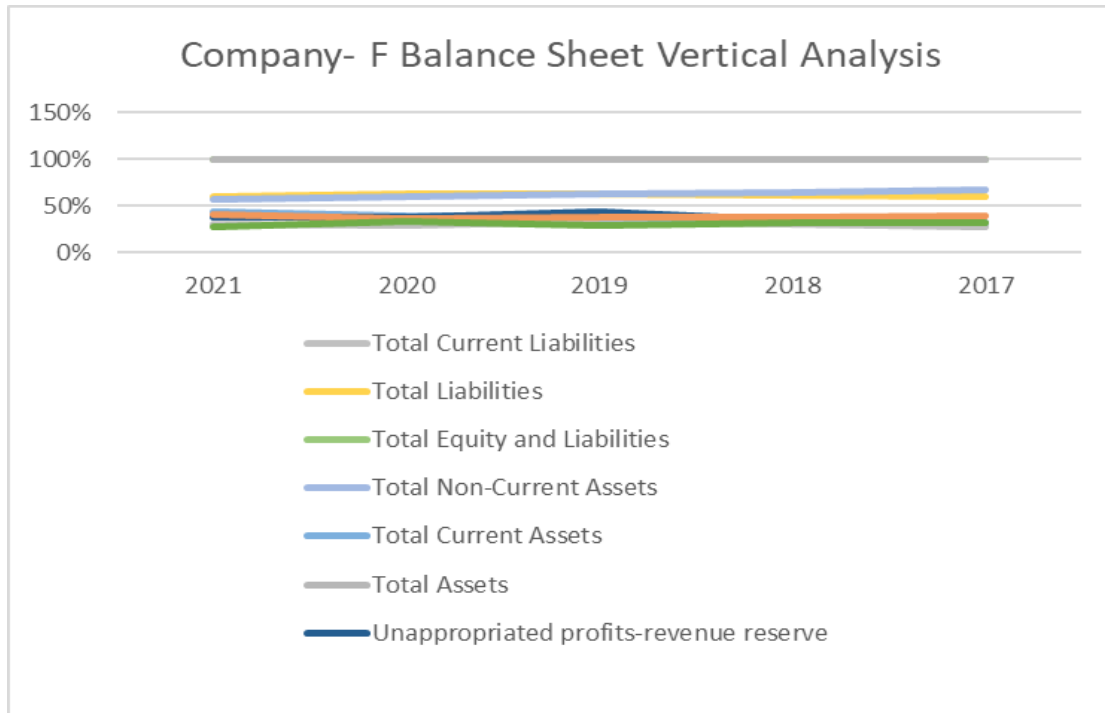


Figure 96. Vertical Analysis of Company F's Balance Sheets.

The second financial statement to analyze for Company F is the income statement. A graphical illustration is shown in Figure 97. The analysis of Company F reveals that the cost of sales decreased from 90% to 83% in 2021. From 2017 to 2020, profit before and after taxes also decreased; however, in 2021, it again increased. In 2021, the finance cost decreased as a result of a decrease in interest rates on borrowing, which resulted in a marginal increase in net income.

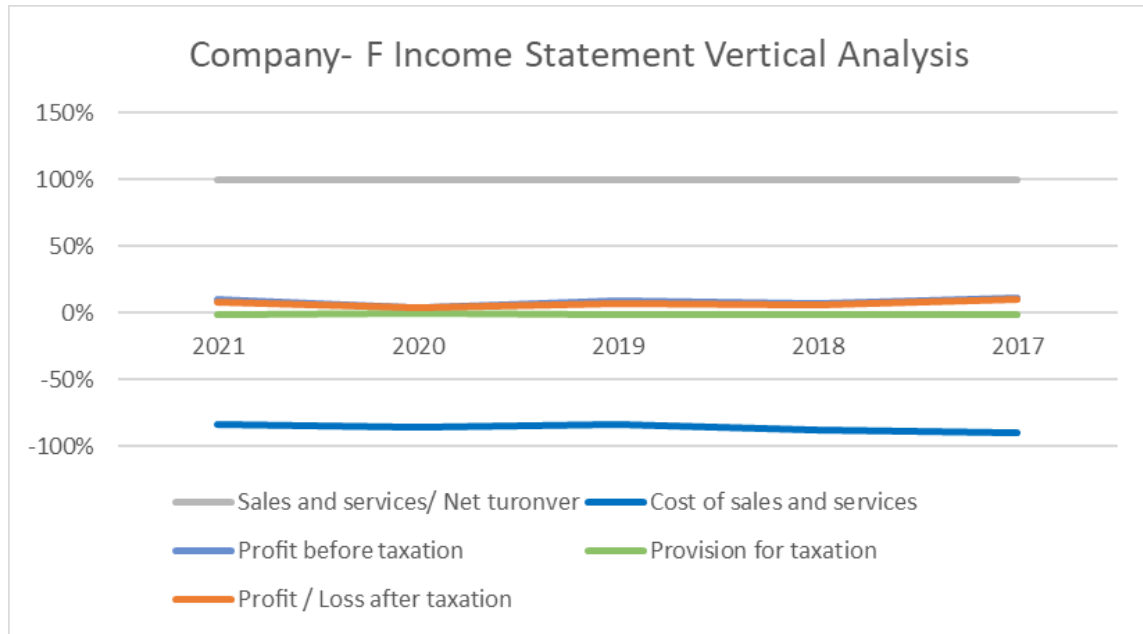


Figure 97. Vertical Analysis of Company F’s Income Statements.

### 3. Ratio Analysis

This section provides the ratio analysis conducted on Company F’s financial statements. The researchers utilized five main financial ratios which are Debt Management, Liquidity, Profitability, Market Value, and Efficiency. Further, the two most common ratios from each category are chosen as per the developed Integrated Financial Analysis Framework. The selected ratios used in this analysis are specific to the textile industry; however, after some modifications, they can also be applied to any industry. The analysis of Company F reveals that these ratios are further compared with the U.S. textile industry averages for assessment of the company’s financial condition. The industry averages for the Pakistani textile composite sector are not listed on any official or authorized website or document of the Pakistani government; therefore, the U.S. textile industry averages are used as the benchmark. The researchers provide an illustration of the developed framework for analyzing the company’s financial statements from the Pakistani textile industry composite sector. The analysis of Company F is calculated over a five-year period, from 2017 to 2021.



**a. Liquidity Ratios**

The first category of ratios to analyze for Company F is the liquidity ratios. The liquidity ratios evaluate a company’s liquidity and stability. All assets that are easily and quickly transformable into cash are said to be liquid. Liquidity ratios reveal that a company can utilize its liquid assets to pay off the company’s current debts and other liabilities. The liquidity ratio is conducted on the Company’s F financial statements from 2017 to 2021. Two types of liquidity ratios, cash ratio and current ratio, are used for this research analysis. Table 55 presents the liquidity ratio analysis of Company F’s financial statements and its comparison to U.S. textile industry averages.

Table 55. Company F’s Liquidity Ratios Analysis

<b>Liquidity Ratios</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Cash Ratio	0.00	0.00	0.12	0.09	0.02
<b>Industry Averages</b>	<b>0.22</b>	<b>0.57</b>	<b>0.18</b>	<b>0.04</b>	<b>0.14</b>
Current Ratio	1.40	1.35	1.14	1.18	1.19
<b>Industry Averages</b>	<b>2.59</b>	<b>2.56</b>	<b>2.84</b>	<b>3.13</b>	<b>2.86</b>

The first liquidity ratio of Company F to analyze is the cash ratio. The analysis of the cash ratio reveals that Company F depicts an upward trend from 2017 to 2019; however, this trend dropped in 2020 and remained unchanged in 2021. With the exception of 2018, when the ratio is higher than the U.S. industry averages, cash ratios are consistently lower for the rest of the years, from 2017 to 2021. The Company’s low cash ratio suggests that it invests the money generated by financing and operating activities to acquire inventory. Trade debts reached 238% over the five years, and short-term payables reached 153%, both of which decreased cash ratios. The cash ratio analysis indicates that Company F does not have sufficient cash to pay off liabilities. Company F needs to increase its cash through business profits so that it can have adequate cash in hand to fulfill its short-term debts. Company F’s cash ratio in comparison to the U.S. textile industry averages is depicted in Figure 98.



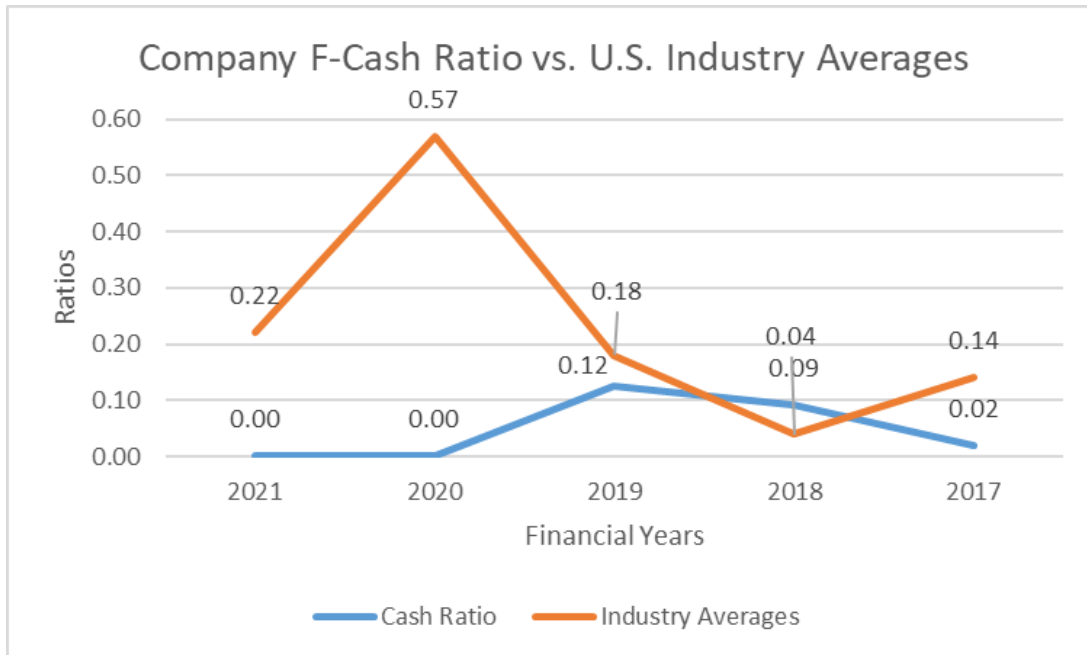


Figure 98. Comparison of Company F’s Cash Ratio against U.S. Industry Averages.

The second liquidity ratio of Company F to analyze is the current ratio. The analysis of Company F’s current ratio reveals that it decreased from 2017 to 2019, then it increased in 2020 and 2021, when the company’s current assets improved with the support extended by the State Bank of Pakistan for minimizing the COVID-19 effects. However, the company’s current ratio is lower than the U.S. textile industry averages. A closer look at the company’s balance sheet revealed that trade debts, stock in trade, short-term pre-payments, and trade deposits account for major current asset value; therefore, the ratio is lesser. Company F needs to increase its current ratio since a good current ratio will make the company more appealing to lenders and investors, both of which play an important role in its growth. A comparison between Company F’s current ratio and the U.S. textile industry averages is represented graphically in Figure 99.

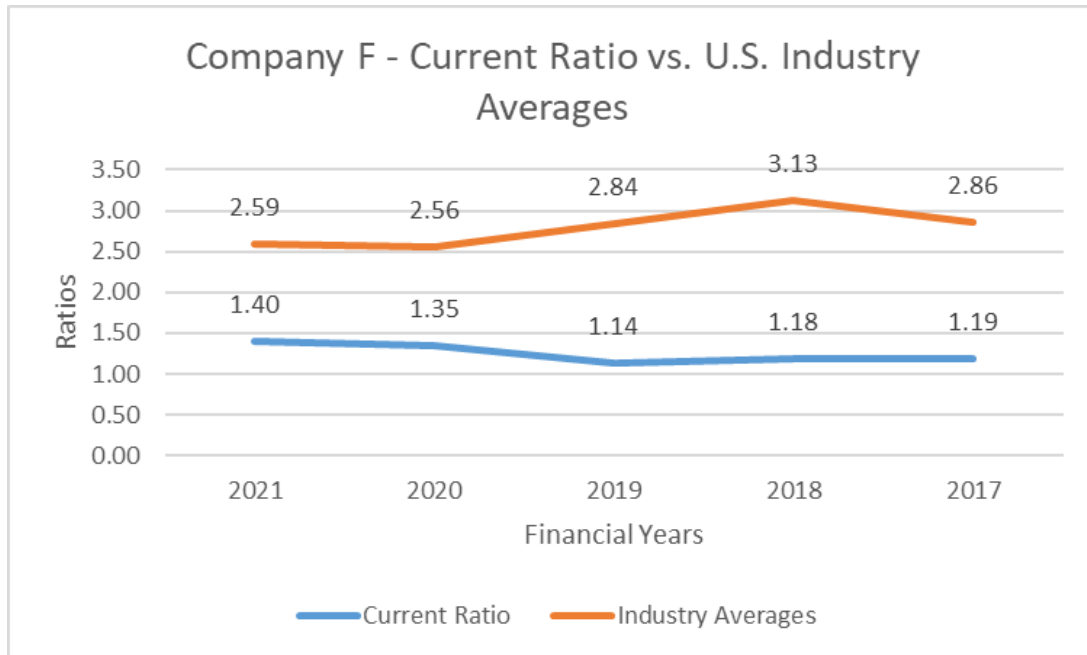


Figure 99. Comparison of Company F’s Current Ratio against U.S. Industry Averages.

**b. Debt Management Ratios**

The second category of ratios to be analyzed on Company F’s financial statements is the debt management ratios. The debt management ratios are commonly termed as solvency ratios. A company’s capacity to control its debt load can be evaluated by using the debt management ratios. As a part of the developed Integrated Financial Analysis Framework, two debt management ratios, the debt-to-equity ratio and debt ratio, are used for Company F’s financial analysis throughout a course of five years, 2017–2021. When discussing the capacity to repay a debt, these ratios have significance for analyzing a company’s capital structure (Grant, et. al., 2016). Company F uses its capital structure to finance its capital expenditures, acquisitions, and business operations. Table 56 presents Company F’s debt and debt-to-equity ratio from 2017 to 2021, along with the U.S. textile industry averages.

Table 56. Company F’s Debt Management Ratios Analysis

Debt Management Ratios	2021	2020	2019	2018	2017
Debt Ratio	0.59	0.63	0.62	0.62	0.60
<b>Industry Averages</b>	<b>0.41</b>	<b>0.40</b>	<b>0.46</b>	<b>0.43</b>	<b>0.41</b>
Debt-to-Equity Ratio	1.46	1.70	1.66	1.64	1.50
<b>Industry Averages</b>	<b>0.69</b>	<b>0.68</b>	<b>0.87</b>	<b>0.76</b>	<b>0.54</b>



The first debt management ratio of Company F to analyze is the debt ratio. The analysis of this ratio reveals that Company F’s total debt remained almost steady between 2017 and 2021, indicating that it possesses sufficient resources to cover the cost of debts once owed. In order to grow the business, Company F uses its debts to make investments in subsidiaries companies and modernization of plants and machinery. However, the debt ratio of Company F is greater than the U.S. textile industry averages from 2017 to 2021. A higher debt ratio shows a higher financial risk while a lower debt ratio is considered beneficial for the business since it poses less risk. Company F, therefore, needs to improve its ratio because many lenders and investors may prefer to engage with companies that have lower levels of liabilities. The comparison between Company F’s debt ratio and the U.S. textile industry averages is illustrated in Figure 100.

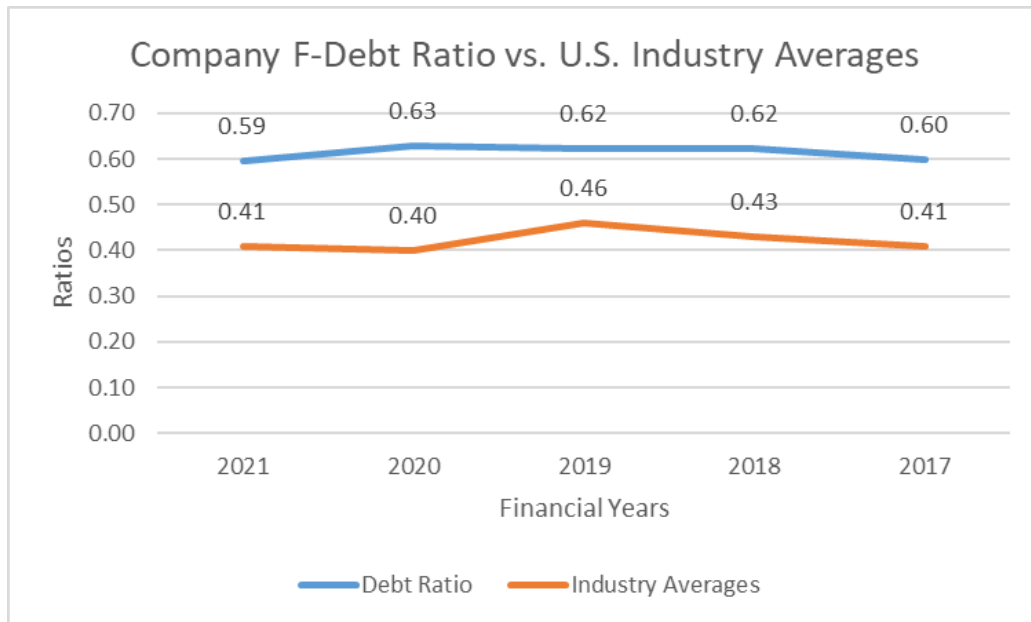


Figure 100. Comparison of Company F’s Debt Ratio against U.S. Industry Averages.

The second debt management ratio of Company F to analyze is the debt-to-equity ratio. The analysis of this ratio of Company F reveals that during 2020 and 2021, long-term financing extended by the State Bank of Pakistan increased total equity to 124% (2021) as compared to 96% (2019). The company utilized these borrowings and made investments in the modernization and replacement of loom and ring machines as well as the extension of its fabric-dyeing equipment. Figure 101 depicts the trend analysis of

Company F and shows that, from 2017 to 2021, its debt-to-equity ratio is higher than the U.S. textile industry averages. A higher debt could enable Company F to expand and make more money, but it may be viewed as risky when it comes to the payment of debt.

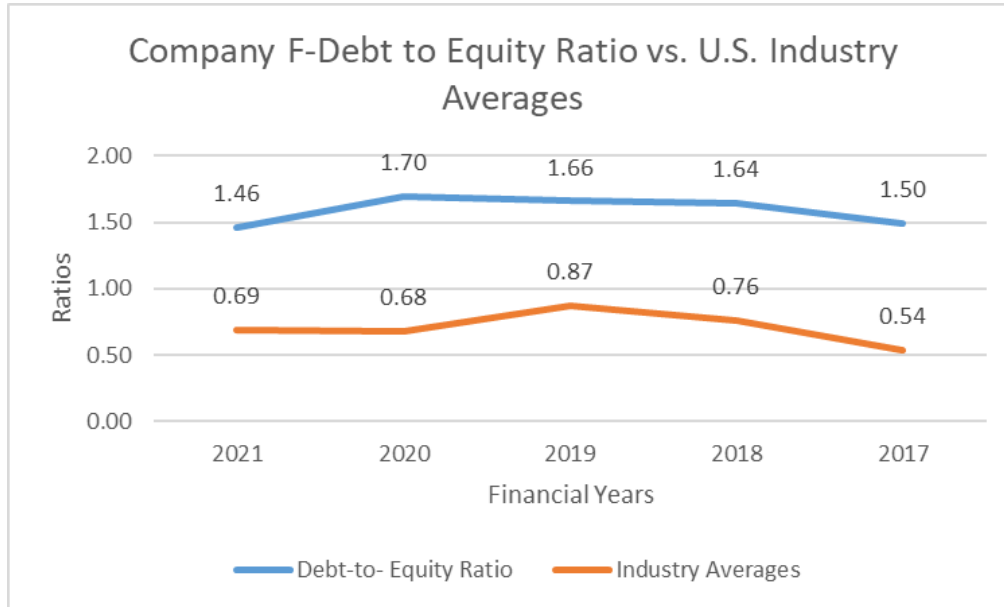


Figure 101. Comparison of Company F’s Debt-to-Equity Ratio against U.S. Industry Averages.

**c. Efficiency Ratios**

The efficiency ratios are the third category of ratios analyzed on the financial statements of Company F. These ratios demonstrate the effective use of a company’s resources to generate sales and make a profit. The higher ratio shows that the company is financially healthy. As a part of the developed Integrated Financial Analysis Framework, two efficiency ratios, the total asset turnover and the inventory turnover have been calculated from Company F’s financial statement for 2017 to 2021. Table 57 shows Company F’s efficiency ratios in comparison to the U.S. textile industry averages over a period of five years, from 2017 to 2021.

Table 57. Company F’s Efficiency Ratio Analysis

Efficiency Ratios	2021	2020	2019	2018	2017
Total Assets Turnover	0.74	0.77	0.79	0.68	0.60
<b>Industry Averages Ratio</b>	<b>1.36</b>	<b>1.01</b>	<b>1.23</b>	<b>1.37</b>	<b>1.22</b>
Inventory Turnover	2.49	3.28	3.86	4.63	4.22
<b>Industry Averages Ratio</b>	<b>3.69</b>	<b>3.38</b>	<b>3.54</b>	<b>3.44</b>	<b>3.92</b>



The first efficiency ratio of Company F to analyze is the total asset turnover ratio. The analysis of this ratio reveals that Company F exhibited an increasing trend from 2017 to 2019 and a decreasing trend from 2020 to 2021. Post-COVID-19 pandemic effects decreased the trend during 2020 and 2021. Figure 85 shows Company F’s graphical illustration from 2017 to 2021, in which it performed worse than its U.S. peers. Since the company operates in weaving, spinning, home textile units and processing as part of its composite textile setup; therefore, it invested heavily in the expansion of plant and machinery. Company F is not efficiently producing sales from its assets and instead places more emphasis on turning assets into inventory than on turning inventory into revenues. To maximize sales or revenue, Company F needs to utilize its resources more effectively. Company F’s total assets turnover ratio in comparison to the U.S. textile industry averages is depicted in Figure 102.

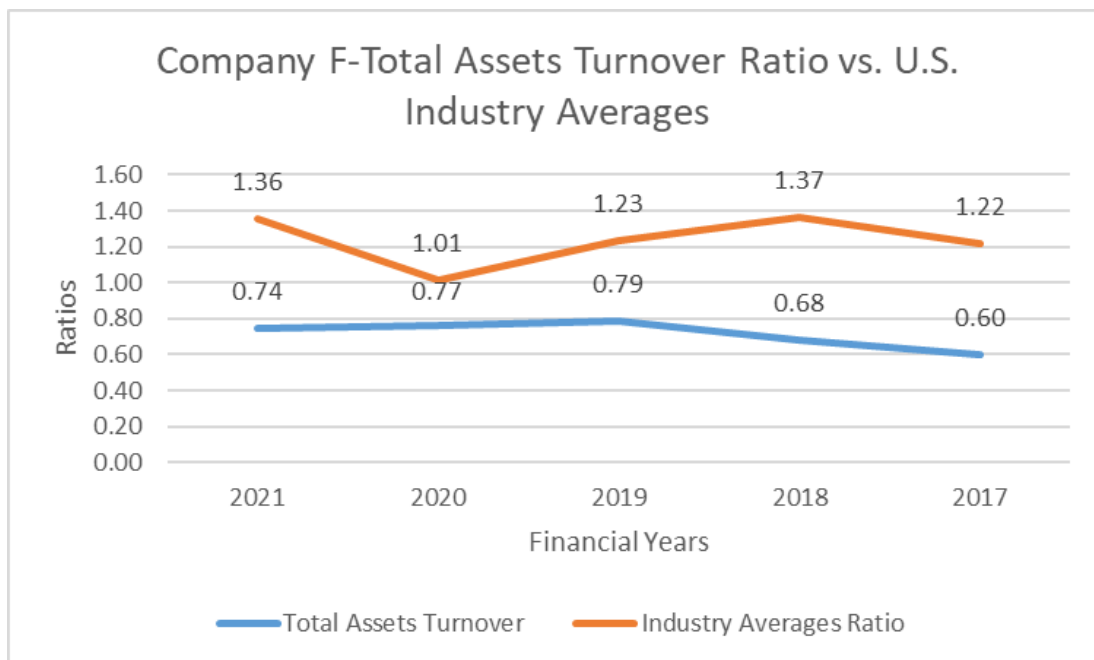


Figure 102. Comparison of Company F’s Total Asset Turnover Ratio against U.S. Industry Averages.

The second efficiency ratio of Company F to analyze is the inventory turnover ratio. The analysis of this ratio of Company F reveals that there was an upward trend in 2017 and 2018 and a downward trend in 2019 to 2021. The COVID-19 pandemic global effects are evident on the company’s performance from 2019 onwards. In comparison to

the U.S. industry, the company's ratio was significantly higher than that of U.S. textile industry averages from 2017 to 2019. It means that Company F is capable of managing, replenishing, and selling the inventory efficiently, which demonstrates the company's healthy financial position. Company F's efficiency ratio as well as its comparisons to the U.S. textile industry averages shows that Company F performed very well during the five-year period. Figure 103 shows a trend analysis of Company F's inventory turnover ratios in comparison to the U.S. textile industry averages over a period of five years from 2017 to 2021.

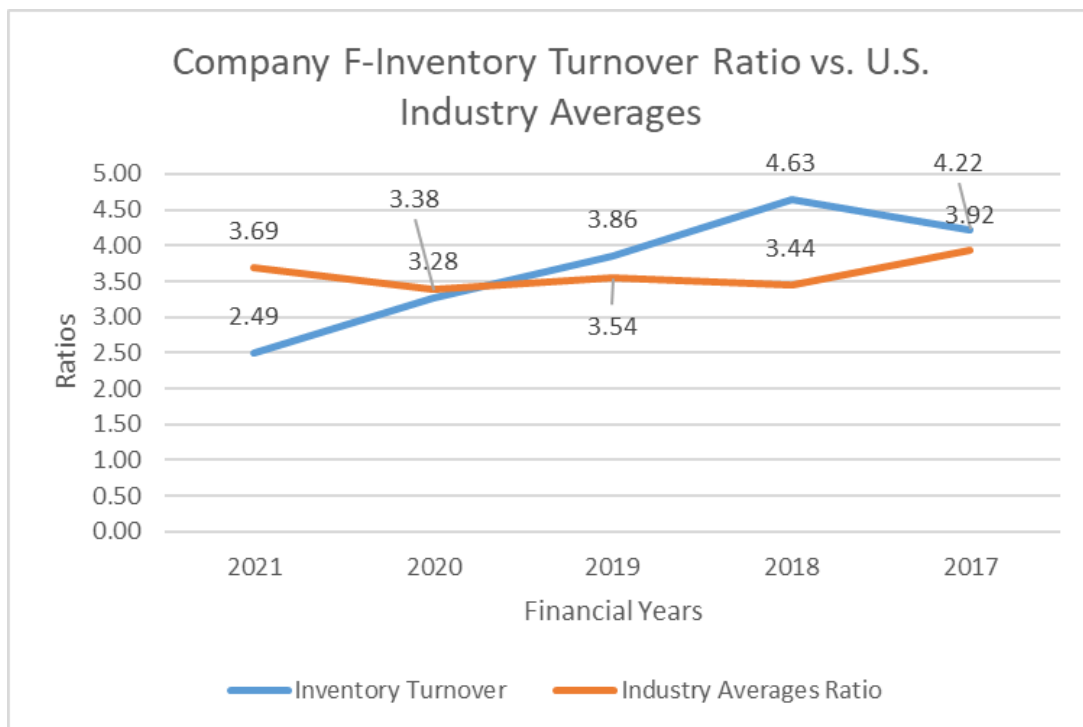


Figure 103. Comparison of Company F's Inventory Turnover Ratio against U.S. Industry Averages.

**d. Profitability Ratios**

The profitability ratios are the fourth category of ratios to be analyzed on the financial statements of Company F. Malik (2017) states that the capability of a company to generate profit is evaluated by using profitability ratios. Owners, investors, and creditors use profitability ratios, before making any investments, to determine a company's capability to produce a healthy return on it. The return on assets and net profit margin ratios have been used as the two profitability ratios for this research. Table 58



shows Company F’s two profitability ratios as compared to the U.S. textile industry averages for each year from 2017 to 2021.

Table 58. Company F’s Profitability Ratio Analysis

<b>Profitability Ratios</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
Return on Assets %	6.3%	2.7%	5.9%	3.8%	6.4%
<b>Industry Averages</b>	<b>5.3%</b>	<b>-3.8%</b>	<b>5.7%</b>	<b>6.0%</b>	<b>5.8%</b>
Net Profit Margin %	8.5%	3.5%	7.5%	5.5%	10.6%
<b>Industry Averages</b>	<b>12.2%</b>	<b>-13.4%</b>	<b>12.5%</b>	<b>12.3%</b>	<b>8.8%</b>

The first profitability ratio of Company F to analyze is the return on assets ratio. The ROA ratio identifies how well a company utilizes its resources to increase profits. The analysis of this ratio shows that Company F performed very well over the five years except 2018. In 2020, Company F also suffered from the COVID-19 pandemic effects, but despite that, it outperformed the U.S. industry (-3.8%) that year by maintaining its profit of 2.7%. In the following year, the company improved significantly in 2021 (6.3%) due to increased sales and maximized its profit to 120% (as compared to 43% in 2020). Investments made by Company F in new machinery and the replacement of outdated assets have increased net profit. The analysis also reveals that Company F is able to effectively generate income from the resources at its disposal as evidenced by its high ROA and net profit. The graphical illustration of Company F and U.S. textile industry averages is depicted in Figure 104.





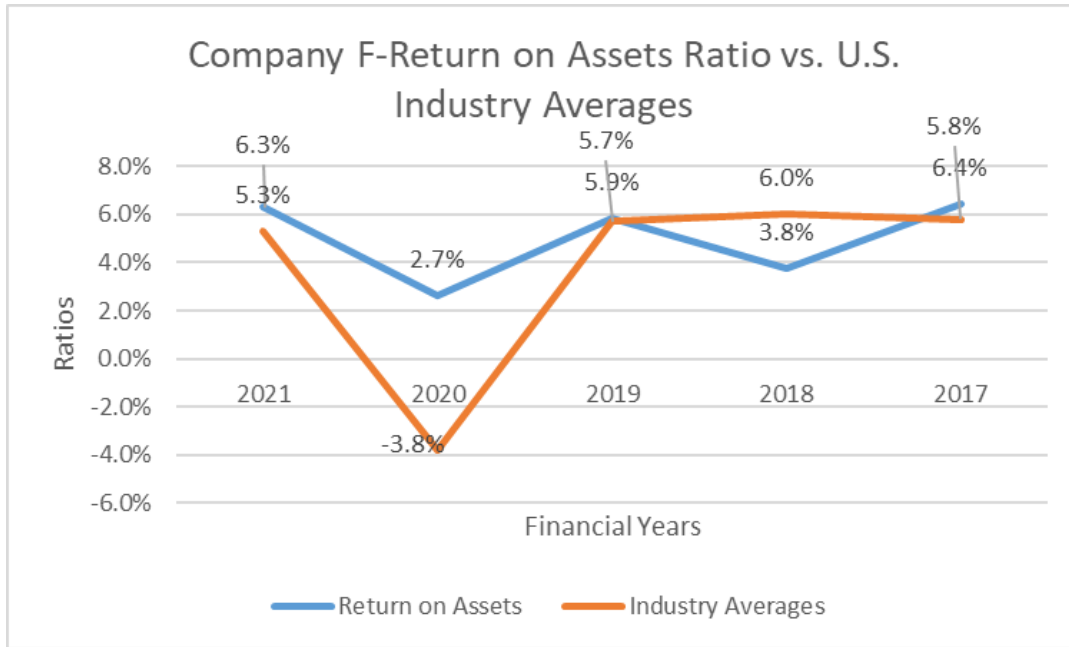


Figure 104. Comparison of Company F’s Return on Assets against U.S. Industry Averages.

The second profitability ratio of Company F to analyze is the net profit margin ratio. The analysis of this ratio indicates that Company F’s net profit margin exhibits a similar pattern as that of return on assets when compared over a period of five years from 2017 to 2021. In 2020, the U.S. textile industry stated a loss of 13.4 % while Company F stated a profit margin of 3.5% which was four times higher than the U.S. peers in the same industry. In comparison to the U.S. textile industry averages, the company outperformed in 2020 and generated net income by utilizing its finances in 2021. Company F needs to increase sales while cutting expenditure in order to gain a competitive advantage. Figure 105 shows a graphical illustration of Company F’s net profit margin ratio as compared to the U.S. textile industry averages.

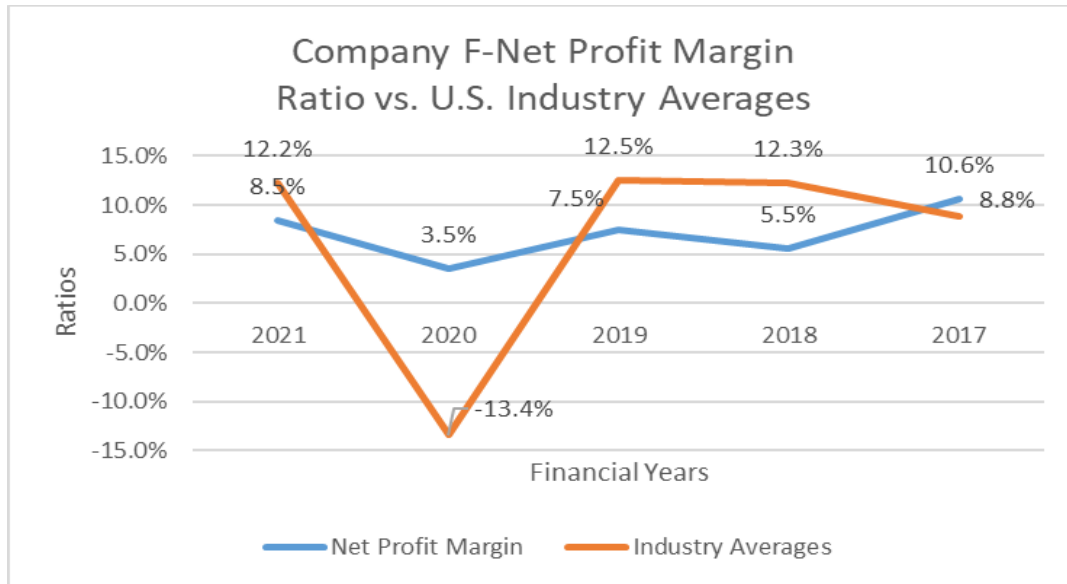


Figure 105. Comparison of Company F’s Profit Margin Ratio against U.S. Industry Averages.

**e. Market Value Ratios**

The market value ratios are the fifth category of ratios analyzed on the financial statements of Company F. The market value ratios used for this research are price earning (P/E) and dividend payout ratios. As a part of the developed Integrated Financial Analysis Framework, two market value ratios, the price-earnings ratio and dividend payout ratio, are used for the analysis of Company F throughout a course of five years. Companies with higher P/E ratio and dividend payout ratio usually reflect the higher return associated with higher market value ratios. However, it depends on the investor, who anticipates higher returns on the investment and is therefore willing to buy shares for a higher price. Table 59 shows Company F’s market value ratios in comparison to the U.S. textile industry averages for five years.

Table 59. Company F's Market Value Ratios Analysis

Market Value Ratios	2021	2020	2019	2018	2017
Price Earnings Ratio	150.44	55.03	121.31	79.42	135.52
<b>Industry Averages</b>	<b>21.48 (TTM-Trailing 12 Months)</b>				
Dividends Payout Ratio	0.00	0.44	0.13	0.00	0.21
<b>Industry Averages</b>	<b>0.96</b>	<b>-0.15</b>	<b>0.82</b>	<b>1.33</b>	<b>0.32</b>

The first market value ratio of Company F to analyze is the price earnings ratio. The analysis of this ratio indicates that Company F's ratio is higher than the U.S. textile industry trailing 12 months averages over a period of five years. Company F's higher P/E ratio than U.S. industry TTM averages means that Company F's shares are over-valued. Blue chip shares are perceived to be a less risky investment than other equities, thus Company F made an investment in them. Despite the fact that the shares are overvalued, investors are willing to pay the price today because they anticipate a strong growth rate in the future due to the company's outstanding performance and its stable financial position. Figure 106 shows a graphical illustration of Company F's price-earnings ratio as compared to the U.S. textile industry averages.

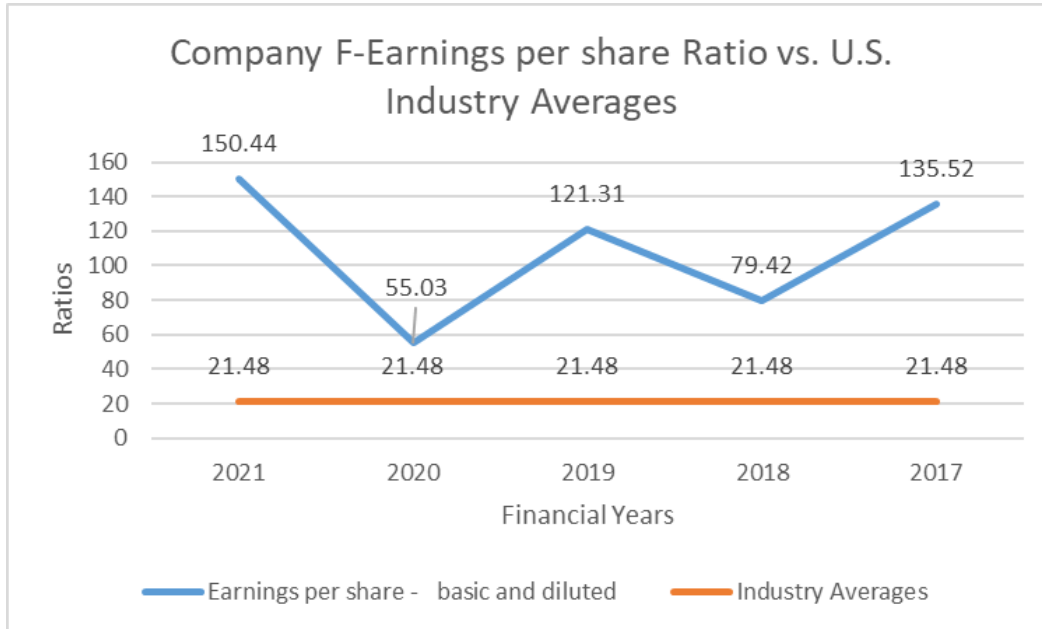


Figure 106. Comparison of Company F's Price Earnings Ratio against U.S. Industry Averages.

The second market value ratio of Company F to analyze is the dividend payout ratio. The analysis of this ratio reveals that every year, Company F paid dividends to its



shareholders; however, its dividend payout ratio is lower than the industry averages from 2017 to 2019 and 2021. In 2020, when the U.S. textile industry attempted to recover from the COVID-19 pandemic's effects, then Company F performed very well as evidenced by its dividend payment ratio, which is higher than the U.S. textile industry averages for that year. Company F's lower ratio for the rest of the years signifies that the company is expanding its operations by reinvesting the bulk of its earnings. The analysis also shows that the company invested more in non-current assets while using its cash flow to pay down long-term debt. By continually reinvesting funds back into the business, many well-established companies defend their reduced or zero payout ratios by making sure that the shareholders' funds are used effectively and produce a higher return for them. Therefore, Company F needs to have a sound dividend policy because of its irregular dividend payout ratio. A dividend policy may assist a company to decide how much of its income should be reinvested in the business and how many dividends should be paid to shareholders. The comparison between Company F's dividend payout ratio and the U.S. textile industry averages is depicted in Figure 107.

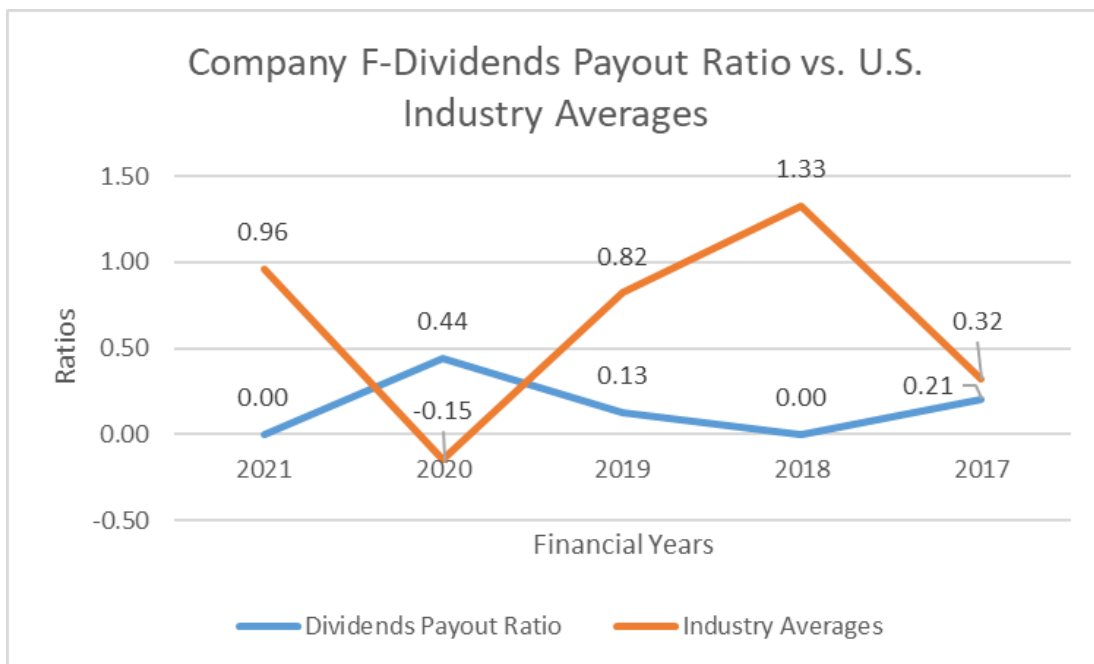




Figure 107. Comparison of Company F's Dividend Payout Ratio against U.S. Industry Averages.

#### 4. Fraud Analysis

If Company F's M-Score is below -2.22, it is not considered a manipulator and if it is greater than -2.22 then the company may be considered a possible manipulator. The analysis reveals that Company F's M-score indicates the possibility of fraud in 2017 while the rest of the years do not indicate that financial statements have been manipulated. Table 60 shows the results of the fraud analysis. When compared to the fraud ratios from other years, 2017 data reveals a higher Asset Quality Index (AQI), Sales, General and Administrative Expenses Index (SGAI), Days Sales in Receivables Index (DSRI), Sales Growth Index (SGI), and Leverage Index (LVGI) ratios. The analysis shows that unusual variations in these ratios are indicative of potential fraud in the company. However, the company may not necessarily be engaged in fraudulent practices. To ascertain the reasons for the fraud ratio indicators of possible manipulation, the company needs to thoroughly examine and analyze its financial statements, then investigate the possibility of fraud and take remedial measures accordingly.

Table 60. Fraud Analysis of Company F

Company F's M-Score						
Derived Variables	2021	2020	2019	2018	2017	Manipulator / Non-Manipulator Means
DSRI	0.883	1.162	0.741	1.363	1.007	1.465/1.031
GMI	0.861	1.111	0.775	0.855	1.059	1.193/1.014
AQI	0.898	0.935	0.906	0.870	1.257	1.254/1.039
SGI	1.130	0.994	1.185	1.129	1.107	1.607/1.134
DEPI	1.087	0.962	1.041	1.011	0.952	1.077/1.001
SGAI	1.102	0.915	1.016	0.828	1.120	1.041/1.001
TATA	0.063	0.026	0.018	0.010	0.059	0.031/0.018
LVGI	0.944	1.009	1.004	1.037	1.128	1.111/1.037
<b>M-score</b>	<b>-2.28</b>	<b>-2.17</b>	<b>-2.63</b>	<b>-2.10</b>	<b>-2.04</b>	

 M < -2.22, no possible fraud  
 M > -2.22, possible fraud

## 5. Bankruptcy Analysis

Company F's financial statements between 2017 and 2021 were subjected to the Z-score analysis in order to evaluate possible bankruptcy. A company might be considered insolvent or have a possibility of becoming bankrupt if its Z-score is below 1.81 and if it has a Z-score of more than 2.99, it is not considered as insolvent nor is it at risk of possible bankruptcy. However, the bankruptcy status of a company is unknown if its Z-scores lies between 1.81 and 2.99.

According to Company F's bankruptcy score, the year 2017 indicates the possibility of bankruptcy, but the company cannot be declared bankrupt for that year. Because Company F did not report unappropriated profit or retained earnings for 2017, the base year, on its balance sheet, therefore, it is impossible to comment on its bankruptcy. The company's Z-score for that year is, therefore, less than 1.80 because X2 (Retained Earnings/ Total Assets) could not be evaluated in the Z-score for the base year. Table 61 displays company F's Z-score results. The primary factors that affect the total Z-score are variables X3 = Earnings before Income Tax / Total Assets and X5 = Sales / Total Assets. The results revealed that the company was financially stable and had no imminent risk of bankruptcy from 2018 to 2021.

Table 61. Bankruptcy Analysis of Company F

Company F's Z-Score					
Variables	2021	2020	2019	2018	2017
X1= Working Capital / Total Assets	0.125	0.102	0.047	0.056	0.052
X2= Retained Earnings/Total Assets	0.379	0.372	0.434	0.354	0
X3= EBIT/Total Assets	1.105	1.112	1.113	1.040	0.061
X4= Market Value of Equity / BV of Total Debts	0.011	0.013	0.013	0.013	0.014
X5= Sales / Total Assets	0.743	0.766	0.786	0.683	0.603
Z-Score = $1.2X1+1.4X2+3.3X3+0.6X4+1.0X5$	5.076	5.086	5.131	4.686	0.875

	Z<1.81, Possibly Bankrupt
	1.81<Z<2.99, Unknown
	Z>2.99, Possibly Non-Bankrupt

The analysis of each company is for illustration purposes only to show Pakistani defense contracting officers how to apply the Integrated Financial Analysis Framework before awarding a contract to ensure that the contractor has the financial

capability. The next section provides a discussion on the limitations and implications of the Integrated Financial Analysis Framework.

## **H. LIMITATIONS AND IMPLICATIONS OF THE INTEGRATED FINANCIAL ANALYSIS FRAMEWORK**

This section discusses some limitations researchers faced during the development of Integrated Financial Analysis Framework and its application on selected publicly traded companies in Pakistan textile industry-textile composite sector. This section also discusses the potential implications of these limitations to Pakistani defense contracting officers. The accessibility of financial statements, their standardization, and the availability of industry averages are some limitations discussed next.

### **1. Limitations on the Availability of Financial Statements**

The financial statements are being utilized in order to conduct financial analysis of selected companies. The websites of individual companies and the Pakistan Stock Exchange both publish the financial statements of publicly traded companies, which Pakistani defense contracting officers can easily access. Other business entities, such as partnerships, sole proprietorships, and private firms, may also prepare financial statements, though not always in conformity with GAAP. These businesses are not legally required to maintain financial statements and have them audited annually to the same standard as publicly traded companies.

As a result, Pakistan defense purchase contracting officers may be unable to obtain the necessary financial statements through channels that are open to the public. Since not all potential Pakistani defense contractors are publicly traded businesses, this could pose a challenge for those in charge of acquiring contracts for the country's defense.

Without financial statements, Pakistani defense contracting officers will be unable to ascertain the financial performance of a company. It may make the government organization vulnerable to potential fraud and waste of government procurement funds and could have a negative impact on the warfighter's capabilities and the organization's mission readiness.



To overcome these restrictions, Pakistani defense contracting officers can nevertheless examine the financial data of private companies by requesting that audited financial statements be included in the bid proposal package that a potential Pakistani defense contractor submits. This request can be justified by allowing them to be able to determine the financial capacity of a prospective contractor, which is in the procurement rules and regulations.

## **2. Limitations of Financial Statement Analysis**

Balance sheets, income statements, and cash flow statements are included in a company's annual report. The terms "statement of financial position," "statement of profit or loss," and "statement of cash flows" are also used to refer to these statements, respectively. For their yearly financial reporting to shareholders and other stakeholders, publicly listed companies prepare these financial statements. To ensure uniformity and accuracy of the financial information, publicly traded companies must prepare financial statements in compliance with the internationally recognized standard known as GAAP.

### **(a) Currency Denominations Limitations**

There are, however, a few limitations on the accurate use of financial statements and their interpretation. During the research it was found that the selected publicly traded companies (Company A, B, C, D, E and F) prepared the same financial statements; balance sheets, income statements, and cash flow statements during 2017 to 2021. However, these companies followed different currency denominations, descriptions of accounts, and patterns to compose parts of the financial statements. An example of the difference in currency denomination is that Company A prepared financial statements in Rupees while Company B and C prepared their financial reports in Thousand Rupees. On the other hand, Company D, E, and F prepared their financial reports in Rupees.

### **(b) Using Different Accounts Descriptions Limitations**

An example for using different descriptions for accounts is that all these companies use different wordings for *Revenue from Sales* in the income statement (statement of profit or loss). Company A listed it as Revenue from contracts with customers – *net*, Company B stated it as Revenue, Company C listed it as Sales-*net*.





Company D stated it as Revenue from contracts with customers-net, Company E stated it as Sales-net, and Company F stated it as Net turnover. Moreover, Companies D, E, and F all stated unappropriated profit instead of retained earnings in their balance sheets. One example of the difference in the financial statements' composition is that in the equity part of the balance sheet (statement of financial position), Company A mentioned only three equity accounts; Issued Share Capital, General Reserves and Retained Earnings. Company B mentioned nine equity accounts, and Company C included only two equity accounts; Share Capital and Reserves in the balance sheet. Similarly, Company D stated only three equity accounts; Issued subscribed paid-up Capital, Capital Reserves (Others capital reserves and Revaluation surplus on PP&E), and Un-appropriated profits – *revenue reserve*. Company E included five equity accounts while Company F included only two equity accounts; Issued subscribed and paid-up capital and reserves. Detailed calculations of these equity accounts are mentioned in the notes section of the financial statements. In addition, Company D's cash flow statement shows significant investment in the fixed capital expenditure account under the investing activities section. However, there are no details about that particular spending in the other related financial statements. Likewise, Company F reported earnings per share in the income statement and referred to the financial statements notes for more information; however, those notes do not contain the information.

The implication of this limitation includes the difficulty for shareholders and users in interpreting data from financial statements easily and quickly. It requires time and effort to convert financial statement information into a common format for meaningful interpretation.

Lack of standardization in accounts in financial reporting makes it difficult for Pakistani defense contracting officers to interpret various accounts when analyzing a company's financial statements. This may affect the company's creditability or may make the company less valuable than it actually is, which could result in biased decisions when contracts are awarded.

Pakistan defense purchase contracting officers should be familiar with financial statements and accounting terminology. They should also refer to the notes section of financial statements to better understand and interpret the financial data.



**(c) Horizontal Analysis Limitations**

Horizontal analysis is an effective comparative financial analysis metric to identify financial trends of a company over various periods. In this technique, a base period is selected, and the trend of any line item is analyzed as a percentage of the base year. The number of years under review is critical for horizontal analysis. Data for five or more years is considered appropriate to identify trend relationships of the financial statements. Using the horizontal analysis technique, Pakistani defense contracting officers may be able to identify a line item's positive or negative trends using the raw financial data available in financial statements.

However, the financial statements' users face limitations in the application of horizontal analysis technique. One limitation is the selection of base year. Publicly traded companies prepare horizontal analysis, which is available in the companies' annual reports. Companies generally prepare horizontal analysis based on historic data; therefore, if a company changes the base year of an account, then comparison of the account across years may vary. The implication of this limitation is that the user may not be able to properly analyze the actual trend of the accounts. In the financial health assessment of a prospective contractor, Pakistani defense contracting officers need to prepare horizontal analysis with the base year preferably the earliest year in the five-year analysis. For interpretation in more detail of the trends, it is important to consult raw data and notes to the financial statements when a significant change is observed. Such an analysis would provide a better opportunity to Pakistani defense contracting officers to identify changes in the five-year period and can compare it with the long-term analysis presented by the company in its annual reports.

A second limitation is the method of calculation of horizontal analysis. It is computed when dividing the financial data of a year by the base year. When data of all the years is positive, the percentage calculation is also positive (Company A, Balance Sheet Appendix-B). The percentage calculations also show the correct sign (positive or negative) when the base year data is positive (Company A Cash Flow Statement Appendix-D). However, when the base year data value is negative, the resulting percentage is calculated as positive, which is not correct (Company B & C, Statement of



Cash Flow Appendices-G & J). In this particular case, the analysis may provide incorrect outcomes depicting an increase in the percentage while the financial data for the line-item displayed is a decrease. Company C has negative cash generated from investing activities in 2017 (base year). Company C also reported negative cash generated from investing activities in subsequent years (i.e., 2018 to 2021). Similarly, Company D & E generated negative cash from operating activities during the base year. As a result, even though the subsequent years showed positive cash, generated from operating activities, the result was still a negative percentage for those years due to the laws of mathematics (Company D & E, Statements of Cash Flow Appendices-M & P). One could infer from looking at the horizontal analysis that Company D's cash generated by operating activities significantly decreased during 2018 to 2021. In contrast, if one looks at the raw financial data, cash generated from operating activities increased considerably. Also, Companies D, E, and F have negative cash from investing activities during base year 2017. As a result, when the subsequent years revealed additional negative data, due to mathematical laws, the result was a positive percentage, indicating that cash generation from investing activities increased from 2018 to 2021. In contrast, a thorough review of the raw financial data reveals a significant decrease (Company D, E & F Statements of Cash Flow Appendices-M, P & S).

Using the base year negative data when horizontal analysis is calculated, resultant percentages would be positive, which are incorrect. To correctly interpret data, signs (plus or minus) are to be changed with respect to actual amount so that the trend is correctly identified. During this research the sign (plus or minus) of the horizontal percentages are used as per the actual amount. If the correction of sign (plus or minus) is not done, from looking at the horizontal analysis, one can misinterpret the trends. Pakistani defense contracting officers need careful interpretation of the result by referring to the raw financial data and notes to the financial statements.

#### **(d) Vertical Analysis Limitations**

The other comparative financial analysis method is vertical analysis. It describes the proportion of a line item as a percentage of the total amount on the financial statement sections. For balance sheets, the percentage of all line items can be calculated either by



taking total assets as the base amount or by taking total equity and liabilities as the base amount. For the income statement, the percentage of all line items is calculated in relation to total sales.

Like horizontal analysis, vertical analysis has limitations as well. For instance, the financial data of a line item may not increase in the subsequent period; however, vertical analysis may show an increase in the percentage. If interpretation of companies' financial health is solely based on vertical analysis percentage, it would result in possible mistaken forecasts. For better interpretation of financial statements, Pakistani defense contracting officers should conduct other financial analysis like horizontal and ratios analysis as well.

#### **(d) Financial Ratio Analysis Limitations**

Ratio analysis compares financial data as reported on the balance sheets and income statements to gain insight into a company's or industry's operations. There are five main categories of ratios: liquidity, debt management, efficiency, profitability, and market value. These five major categories have hundreds of different ratios. For the information to stakeholders, publicly traded companies calculate financial ratios from company's financial data and present them in their annual reports. This research studied the annual reports of six publicly traded companies from Pakistan textile sector for a five-year period; 2017 to 2021. Except Company A, all of the other companies reported financial ratios on their annual reports. However, the financial ratios reported by five companies have limitations. Company B reported 33 while Company C reported 13 different ratios under five categories. Similarly, Company D, E, and F reported 34, 23, and 33 ratios, respectively, for each of the five categories.

When reconciling the ratios calculated by all six companies with the academic ratio formulas, the researchers' calculations were different. This is because formulas for ratios can vary slightly. However, the ratio variation in formulas does not change the meaning of the ratio. For example, one version of the quick ratio formula may exclude inventory while another version of the formula may exclude inventory and prepaid assets from the asset amount in the formula. However, both of these formula variations for this ratio measure the same thing, liquidity. Interpretation of financial health with reference to the ratios reported in the companies' annual reports may be incorrect and may lead to



inaccurate decisions. To have a better insight of prospective contractors' financial health, Pakistani defense contracting officers should use the academic ratio formulas to calculate the financial ratios.

**(e) Fraud Analysis**

Publicly traded companies are to prepare financial statements such that these provide true and accurate financial reporting to the shareholders and users. Dr. Beneish's M-score fraud analysis model is a technique for identifying manipulation of financial data and financial statement fraud. The M-score model utilizes eight ratios to calculate M-score that predict potential manipulation of financial data. The implementation of the M-score tool has limitations which need consideration in financial health assessment of companies. The financial statements from which the fraud ratios are derived occasionally do not have all the necessary details. However, Pakistani defense contracting officers can interpret these fraud ratios independently as each of them provides a useful insight. For instance, from the financial data of 2017, it can be interpreted that Company B is involved in possible fraudulent behavior (Table 24 – Company B Fraud Analysis). Analysis of the individual eight fraud ratios show, which make up the M-score, that Company B maintains an unusually high Gross Margin Index (GMI) ratio in 2017. Due to that higher GMI, the M-score for Company B falls within the range that indicates possible manipulation of financial data. A larger cost of goods sold (91%) in 2017 than other years (86% to 90% in 2018 to 2021) caused the GMI ratio higher. Similarly, 2017's financial data of Company F may indicate possible fraud (Table – 60 Company F Fraud Analysis). The Asset Quality Index (AQI) ratio of Company F increased significantly during 2017. The higher M-score suggests potential fraud in that year. The AQI ratio increased because of the larger investment in subsidiaries and associates in 2017 (100%) compared with the preceding years (85% to 82% from 2018 to 2021). These possible fraudulent indications may be used by Pakistani defense contracting officers to detect potential flaws in the financial reports of Pakistani defense contractors.



### **(f) Bankruptcy Analysis**

Dr. Altman's Z-score technique is applied to identify companies' inability to pay for their financial commitments when these are due. Pakistani defense contracting officers may use this model to identify variations in the Z-scores for a prospective defense contractor over several years. However, there are limitations in the prediction of bankruptcy state of a company using the Z-score model in isolation. Company B and Company C are good examples of observing such a limitation of the Z-score across years (Table 25 and Table 34 of Company B & C's Bankruptcy Analysis). The Z-score for both companies is below 1.80 during 2017 to 2021. The low Z-scores predicts both companies' possible bankruptcy five years earlier; however, these companies are still doing business in the Pakistan textile industry without any news of insolvency. Similarly, Company D's, E's, and F's Z-scores are below 1.80 during 2017 only (Table -43, Table-52 & Table -61 of Companies D, E & F's Bankruptcy Analysis), which indicates bankruptcy. Both companies (D & E) should have filed for bankruptcy five years ago based on their Z-scores, but they are still operating in Pakistan's textile industry. In addition, Company F did not report unappropriated profit or retained earnings for 2017 on its balance sheet, so it is not possible to comment on its bankruptcy. The company's Z-score for that year is, therefore, less than 1.80 because sufficient financial data was not available to input into the Z-score model or online calculator. Nonetheless, the Z-score draws attention of Pakistani defense contracting officers to a potential area of defense contractors that may need more research.

### **3. Industry Averages**

Industry averages provide useful benchmarks for comparing a company's performance with its industry peers or competitors. However, the implementation of the industry averages has limitations. This research conducted financial ratio analysis of six publicly traded companies in the Pakistan textile industry. Industry averages of the Pakistan textile industry are not publicly available in any official or authorized document or website. Therefore, industry averages of the U.S. textile industry from the websites of Ready Ratios (<https://www.readyratios.com>) and Investing.com (<https://www.investing.com>) were used for comparison of financial data. In the absence



of Pakistan industry averages, the defense contracting officers may not be able to compare the financial performance of a prospective defense contractor as to whether it meets, exceeds, or is below the desired baseline. Nevertheless, Pakistani defense contracting officers can utilize the U.S. industry average financial data from these websites, for free, to perform a comparison of a potential company with its industry peers.

A company's overall health is determined by whether it meets or surpasses the industry averages. A company's financial health may be in doubt if it performs below industry averages, necessitating further research. For example, Company C shows itself financially healthy in its financial statements; however, all the ratios for the five-year period are below the U.S. textile industry averages. Therefore, it is important for the Pakistani defense contracting officers to conduct a thorough financial analysis of companies before awarding contracts to ensure they have the financial capability. Based on the limitations and implications of research, the next section provides a few recommendations.

## **K. RECOMMENDATIONS ESTABLISHED ON ANALYSIS AND FINDINGS**

The analysis and findings suggest that before granting a defense contract, Pakistani defense contracting officers may perform a financial health assessment of a prospective contractor. It is advised that the Pakistani defense contracting officers not rely just on one type of financial statement analysis because it may only give them a company's partial financial picture. All financial analyses techniques have their own limitations; thus, it is preferable to combine several different kinds of analyses rather than using just one. To determine the financial health, of a prospective contractor Pakistani defense contracting officers need to obtain the financial statements of prospective defense contractor and use the Integrated Financial Analysis Framework for financial analysis. The Integrated Financial Analysis Framework is illustrated in Figure 108, developed in this research. This framework is applied for the financial analysis of six publicly traded from Pakistan textile industry to provide an illustration to explain how to use the Framework. The Integrated Financial Assessment Framework will provide Pakistani defense contracting officers with the skills necessary to conduct detailed assessment of



financial health regarding of prospective defense contractors. This research has relevance to DON/DoD in that the Integrated Financial Analysis Framework can be applied by any DoD/DON acquisition organization to any potential defense contractor to analyze the financial health of the company before awarding a contract. Ensuring defense contractors have the financial capability to perform DoD’s mission-critical contracts is important for the DoD to accomplish its warfighting mission as well as to ensure appropriate expenditure of public funds.

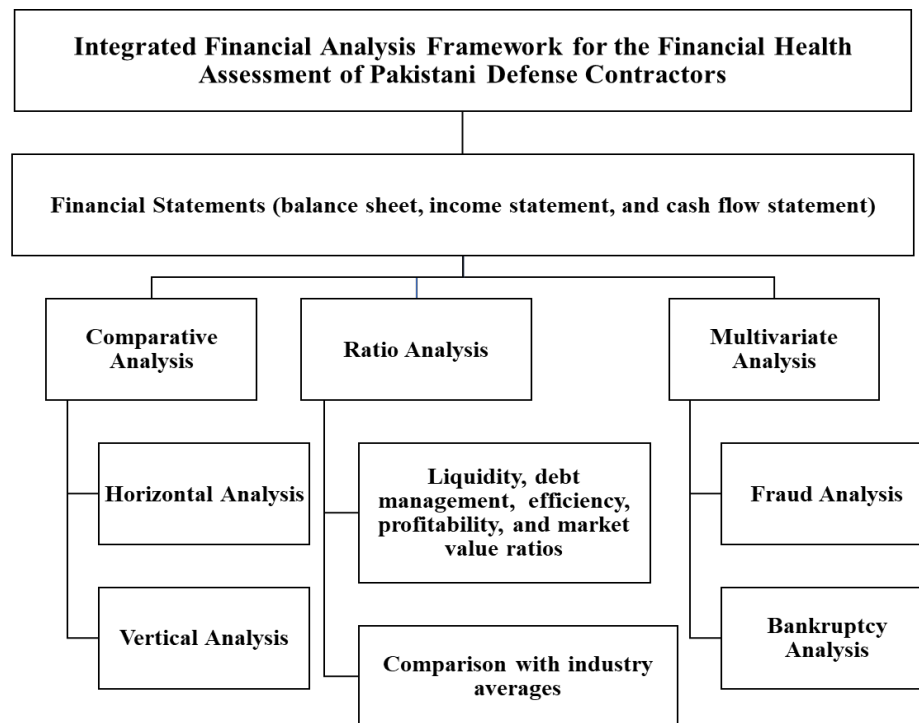


Figure 108. Integrated Financial Analysis Framework for the Financial Health Assessment of Pakistani defense contractors.

### 1. Maintain Financial Data Repository

The first recommendation is that the Pakistani defense contracting officers is to maintain a five-year financial statement data repository of all the perspective defense contractors registered with DGDP. Financial statements of publicly traded companies are publicly available on the individual company and the Pakistan Stock Exchange Limited websites. Financial statements of private companies are not publicly available; therefore, Pakistani defense contracting officers need to obtain financial statements from these private contractors for the most current three to five years. Pakistani defense contracting



officers need to maintain a financial data repository of registered contractors. This data repository should be regularly updated with the latest financial statements information and is used in the financial health assessment of defense contractors before issuing a contract to ensure the prospective contractor has the financial capability.

## **2. Perform Comparative Analysis**

The second recommendation to the Pakistani defense contracting officers is to perform comparative analyses on financial statements of prospective contractors using horizontal and vertical analysis techniques. Horizontal analysis compares the figures across periods while vertical analysis compares each item from the financial statements as a percentage of the total vertically for a particular year. As a part of Integrated Financial Analysis Framework, comparative analyses capture trend data and significant variations over multiple years. Pakistani defense contracting officers should investigate further if a company's financial behavior shows considerable variations. Raw financial data and notes to the financial statements may provide significant insight to Pakistani defense contracting officers regarding unusual variations.

## **3. Perform Ratio Analysis and Compare with Industry Averages**

The third recommendation to the Pakistani defense contracting officers is to perform ratio analysis in financial health assessment of publicly traded companies. Ratio analysis encompasses liquidity, debt management, efficiency, profitability, and market value ratios. Each type of ratio provides insight into different financial areas of the companies. Several ratios may be used to assess the financial health of companies. However, this research includes two ratios from each category, commonly used in textile industry, as a part of Integrated Financial Analysis Framework. These ratios can also be applied to any industry. This research study found that the selected six Pakistan textile companies did not follow a standard pattern for ratio calculation; therefore, financial ratios of the six selected companies were calculated based on academic formulas. For financial ratio calculations, Pakistani defense contracting officers are recommended to use academic formulae. Table 62 summarizes the ten financial ratios selected for the Integrated Financial Analysis Framework.



Table 62. Selected Ratios for Integrated Financial Analysis Framework.

Categories	Ratios	Formulas	Use
<b>Liquidity Ratios</b>	Cash Ratio	$\frac{\text{Cash and cash equivalents}}{\text{Current Liabilities}}$	Calculates a company's capacity pay short-term liabilities.
	Current Ratio	$\frac{\text{Current Assets}}{\text{Current Liabilities}}$	
<b>Debt Management Ratios</b>	Debt Ratios	$\frac{\text{Total Liabilities}}{\text{Total Assets}}$	Calculates leverages of a company.
	Debt-to-Equity Ratio	$\frac{\text{Total Liabilities}}{\text{Interest Equity}}$	Determines the debt a company is willing to use rather than equity to fund its operations.
<b>Efficiency Ratios</b>	Total Asset Turnover	$\frac{\text{Sales}}{\text{Total Assets}}$	Calculates the sales a company earned from investment in assets
	Inventory Turnover	$\frac{\text{Cost of Goods Sold}}{\text{Inventory}}$	Calculates the frequency at which a company's sells and replaces its inventory
<b>Profitability Ratios</b>	Return on Assets (ROA)	$\frac{\text{Net Income}}{\text{Total Assets}}$	Assesses a company's efficiency to generate profits from its assets.
	Net Profit Margin Ratio	$\frac{\text{Net Profit}}{\text{Sales Revenue}}$	Calculates profit earned from sales.
<b>Market Value Ratios</b>	Price Earning (P/E) Ratios	$\frac{\text{Market Price of Common Stock}}{\text{EPS}}$	Calculates price at which investors are willing to pay for shares of a company's stock.
	Dividend Payout Ratios	$\frac{\text{Dividends Payment}}{\text{Net Income}}$	Determines the percentage of profits distributed to shareholders.

The financial health of a company cannot be better assessed by looking only at its own financial ratios. Complete financial analysis requires comparison of a company's financial ratios with the industry averages. Pakistani defense contracting officers may find the industry averages that are relevant to compare with the prospective contractor's calculated ratios. The Pakistan defense contracting officer should conduct more research if there is any deviation from the industry standard.

#### **4. Identify Financial Health Indicators**

The fourth recommendation for the Pakistani defense contracting officers is to consider financial health indicators from the prospective contractors' financial statements. From the balance sheets, the Pakistani defense contracting officers may analyze inventory, accounts receivable, current assets, current liabilities, and fixed assets. From income statements, sales, cost of goods sold, operating expenses, and net income can be analyzed. Prospective defense contractors need to demonstrate that they have the financial capability to perform a contract. Therefore, a financial health analysis of their financial statements is very important.

#### **5. Perform Z-Score Bankruptcy Analysis**

The fifth recommendation suggests that Pakistani defense contracting officers to perform a Z-score bankruptcy analysis utilizing Dr. Altman's model to predict a contractor's potential bankruptcy. Calculation of the Z-scores across multiple periods provides useful trend information. A Z-score should not be treated in isolation. Pakistani defense contracting officers may consider other financial analysis tools that are included in the Integrated Financial Analysis Framework as well to better interpret the Z-score for a thorough financial health review of prospective defense contractors.

#### **6. Perform M-Score Fraud Analysis**

Finally, the Pakistani defense contracting officers are recommended to conduct an M-score fraud analysis for the financial health assessment of prospective defense contractors. Besides determining financial health. The M-score fraud analysis ensures that the companies have reported reliable information in their financial statements. The M-score analysis helps identify possible manipulation of the financial data on the financial statement. As a part of an Integrated Financial Analysis Framework, the M-score fraud analysis may assist Pakistani defense contracting officers to identify a contractors' possible fraudulent behavior from their financial statements. M-scores can be computed over several financial reports to analyze trends. Defense contracting officers in Pakistan may need to investigate any unusual changes for the fraud ratios that are above the manipulator mean.



## **L. SUMMARY**

This chapter presented illustrations of the application of the Integrated Financial Analysis Framework that Pakistani defense contracting officers may refer to in the financial health assessment of prospective defense contractors. The Integrated Financial Analysis Framework was applied to the financial statements of six publicly traded companies from Pakistan textile industry-textile composite sector to assess their overall financial health. All companies were analyzed using five financial analytical tools. These tools include horizontal, vertical, ratio bankruptcy, and fraud analyses. The limitations, implications of the Integrated Financial Analysis Framework, and recommendations were also discussed in this chapter. The next chapter provides a summary of this research study, conclusion, and areas for further research.



## **VI. SUMMARY, CONCLUSION, AND AREAS FOR FURTHER RESEARCH**

Every year in Pakistan, the Directorate General Defense Procurement awards defense contracts of billions of Pakistani rupees for the acquisition and procurement of defense stores. The purpose of acquisitions is to improve the warfighter capabilities in peace and operations. Unfortunately, some defense contracts are delayed or terminated because of contractors' failure to perform or meet specifications. Terminated or delayed defense contracts cost to Pakistani governments and deprive warfighter from desired capabilities in a time of need. To reduce the probability of awarding defense contracts to a company that may not perform or that may go bankrupt during the execution of the contract due to not having the financial capability, it is imperative that Pakistani defense contracting officers be able to have the tools to evaluate the financial health of prospective defense contractors.

Based on Dr. Juanita M. Rendon's, (2010, 2022) basic concepts for the development and compilation of a financial analysis framework to assess the financial health of companies in any industry, this research compiled a set of financial analysis tools as an Integrated Financial Analysis Framework to supplement existing Pakistan defense procurement policies and procedures. Previous researchers have also adapted J. M. Rendon's basic concepts for developing a financial analysis framework in different industries (Grant et al., 2016; Malik, 2017). The Integrated Financial Analysis Framework, developed during this research is specific to the Pakistan textile industry, and has been applied to six selected publicly traded companies in the Pakistan textile industry-textile composite sector to illustrate its application. The developed Integrated Financial Analysis Framework as well as its illustrations may assist Pakistani defense contracting officers in financial health assessment of future contractors before awarding contracts to ensure contractors have the financial capability.

The research paper consists of six chapters. Chapter I, introduction, discussed the background, and the purpose of the research paper. This chapter also discussed the research questions, methodology, and the significance of this research. Chapter II provided a review of scholarly articles related to contract management process,



accounting standards, and financial analysis methods along with fraud and bankruptcy literature. Procurement reforms, procurement policies, fraud remedies, accounting standards related to Pakistan were also discussed. The chapter identified the need to compile a set of most commonly used financial analysis tools that may assist Pakistani defense contracting officers for financial health assessment of defense contractors.

Chapter III described the methodology adopted in this research for the development of the Integrated Financial Analysis Framework. This chapter also discussed the selection criteria used in the selection of the six publicly traded companies from the Pakistan textile industry textile composite sector along with limitations for this research study. The financial data of these selected companies was used to illustrate the Integrated Financial Analysis Framework. The process used to analyze financial data and the development of the Integrated Financial Analysis Framework was also discussed in this chapter.

Chapter IV provided the findings for the financial analysis framework. The researchers identified the various financial analysis tools that are helpful in the financial health assessment of publicly traded companies from different financial perspectives. The analytical tools include horizontal analysis, vertical analysis, ratio analysis, as well as multivariate analysis which encompasses fraud analysis and bankruptcy analysis. Five categories of ratios: liquidity, debt management, efficiency, profitability, and market value were identified for financial analysis. Using all of the available ratios in the different categories for the financial health assessment of prospective defense contractors would take too much time and is impractical. Therefore, two widely used ratios from each group, specific to the textile industry, were selected to be used in the ratio analysis. These ratios can also be applied to any industry. Finally, a set of five financial analysis: horizontal analysis, vertical analysis, ratio analysis (two ratios from five categories of ratios), as well as multivariate analysis including bankruptcy analysis and fraud analysis, were developed as an Integrated Financial Analysis Framework. The purpose of the Integrated Financial Analysis Framework is to supplement existing policy and procedures that Pakistani defense contracting officers can use in the financial health assessment of prospective defense contractors before awarding contracts to ensure the contractor has the financial capability.



Chapter V provided the illustration of the financial analysis. The Integrated Financial Analysis Framework was applied for the financial health analysis of six publicly traded companies selected from the Pakistan textile industry textile composite sector. Financial statements reviewed during this research were for a five-year period from 2017 to 2021. Finally, Chapter V discussed the limitations, implications, and recommendations on the basis of the analysis and findings.

## A. CONCLUSION

The purpose of this research was to develop an Integrated Financial Analysis Framework that may aid Pakistani defense contracting officers in the financial health assessment of contractors before awarding contracts. This research study compiled widely used financial analysis methods into the development of the Integrated Financial Analysis Framework. The Integrated Financial Analysis Framework is recommended to supplement existing Pakistani defense procurement policies and procedures utilized in the financial health assessment of prospective contractors (Figure 109).

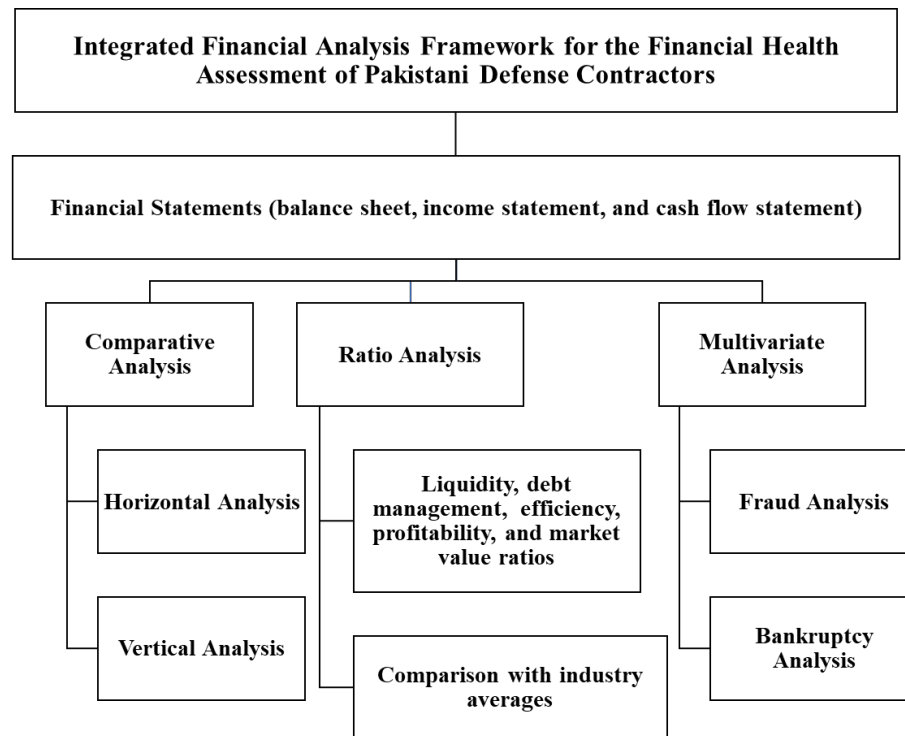


Figure 109. Integrated Financial Analysis Framework for the Financial Health Assessment of Pakistani defense contractors.

## B. RESEARCH QUESTIONS

This research study was based on the following four research questions. The summarized answers for each research question are discussed next.

1. What financial ratios can be utilized to analyze the financial health of a prospective Pakistani defense contractor in the textile industry?

There are numerous financial statement ratios to ascertain the financial health of prospective Pakistani defense contractors. These ratios are further grouped into five main categories of ratios: liquidity, debt management, efficiency, profitability, and market value. Using all of the available ratios in these categories in financial health assessment of defense contractors is time consuming and not practical for the Pakistani defense contracting officer. Therefore, this research study identified two widely used ratios from each category particular to the textile industry. Table 63 summarizes the textile industry specific ten financial ratios. This research included these ratios in the Integrated Financial Analysis Framework to assess the financial health of prospective defense contractors. For liquidity analysis, Cash Ratio and Quick Ratio were selected. For debt management analysis Debt Ratio and Total Debt to Equity Ratio were selected. For efficiency analysis, Total Asset Turnover and Inventory Turnover were selected. For profitability analysis, Return on Assets and Net Profit Margin were selected. Finally, for market value analysis, Price Earnings Ratio and Divided Payout Ratios were selected. These ratios can also be applied to any industry.

Table 63. Summary of Ratios for Integrated Financial Analysis Framework.

Categories of Ratios	Selected Financial Ratios
Liquidity Ratios	Cash Ratio and Current Ratio
Debt Management Ratios	Debt Ratios and Debt-to-Equity Ratio
Efficiency Ratios	Total Asset Turnover and Inventory Turnover
Profitability Ratios	Return on Assets (ROA) and Net Profit Margin Ratio
Market Value Ratios	Price Earning (P/E) Ratios and Dividend Payout Ratios

2. What appropriate financial health indicators can be identified from analyzing key financial statements, such as the balance sheet, income statement, and statement of cash flows of a prospective Pakistani defense contractor in the textile industry?





The financial health indicators of a prospective Pakistani defense contractor were drawn from five financial health categories of a publicly traded company's financial statements. Each financial health category refers to a specific financial health area. Liquidity, debt management, efficiency, profitability, and market value make up the five categories of financial health. Companies' liquidity indicates capacity to pay short-term debts or commitments with maturities of less than a year. Debt management measures how much a company depends on debt to carry out its operations. Efficiency compares output to input, with the intention of minimizing losses. Profitability measures companies' success in turning a profit or raising revenues. Market value ratios link companies' operations and their activity with shareholders' equity.

The line items in the balance sheets, income statements, cash flow statements and stockholders' equity statements that publicly traded companies report serve as the source of data for each category. All of these four financial statements are highly integrated and closely tied, providing a more comprehensive picture of the companies' financial health. The relationship between these four financial statements is shown in Table 64.

Table 64. Correlation Between Financial Statements

Activities	Financial Statement	Financial Statement Areas	Financial Statements
Cash Flow Analysis	Statement of Cash Flow →	Net Change in Cash →	Balance Sheet
Income Statement Trend Analysis	Income Statement →	Net Income →	Stockholders' Equity
Stockholders' Equity Analysis	Stockholders' Equity →	Net Change in Owners' Equity →	Balance Sheet
Balance Sheet Trend analysis	Balance Sheet →	Beginning year-Cash →	Statement of Cash Flow
		Owners' equity →	Stockholders' Equity

The financial health categories are shown in Table 65, along with some of this research study's associated financial health indicators.

Table 65. Indicators of Financial Health.

<b>Financial Health Categories</b>	<b>Indicators of Financial Health</b>
Liquidity	Cash and cash equivalent, trade debts, inventory, short term borrowings, current liabilities
Debt Management	Total liabilities including current liabilities and non-current liabilities, total assets including current assets and non-current assets, and shareholder's equity.
Efficiency	Sales generated, cost of goods sold, inventory, and total assets.
Profitability	Net income, sales, and total assets
Market Value	Net income, average shares outstanding, market price of shares, and dividends paid

3. What financial factors indicate that a prospective Pakistani defense contractor in the textile industry might be participating in inappropriate financial statement behavior?

Pressure, opportunity, and rationalization are the three elements of the fraud triangle. The presence of these factors generally results in fraudulent acts. To look financially healthy in front of shareholders, investors, and users of financial statements, publicly traded companies may have all three factors to commit financial statement fraud. The prospective defense contractor may be under pressure to appear financially healthy to earn a defense contract. In addition, Pakistani defense contracting officers may be unaware of relevant tools to identify fraudulent activities from the financial statements of a prospective defense contractor. All of these factors may provide an opportunity for prospective contractors to engage in inappropriate financial statement behavior to appear financially healthy. Pakistani defense contracting officers may observe the inappropriate behavior of a prospective contractor through indicators of possible manipulation of financial data and significant fluctuations in the financial trends of data presented in the financial statements. Pakistan defense contracting officers need to be cautious for the prospective defense contractors who report earnings abnormally higher than the industry averages or who possess assets larger than the industry peers because these may be indicators of possible manipulation of financial data.

A prospective Pakistani defense contractor might engage in inappropriate financial statement behavior in order to appear financially healthy before being awarded a



contract. A few potential indicators include the M-score model and very unusually high assets or earnings in comparison to the industry averages. The M-score model, created by Dr. Beneish, identifies possible fraudulent reporting in financial statements. This model may help Pakistani defense contracting officers to identify the prospective defense contractors' possible manipulation of financial data. The M-score above -2.22 may be an indicator of inappropriate financial statement behavior by prospective contractors to present themselves as financially stable.

Some possible indicators of inappropriate financial statement behavior of a company that may suggest potential financial statement fraud are listed in Table 67.

Table 67. Indicators of Possible Financial Statement Fraud

<b>Indicators of Inappropriate Financial Statement Behavior</b>	
<ul style="list-style-type: none"> <li>• Indicators of inappropriate financial statement behavior</li> </ul>	<ul style="list-style-type: none"> <li>• Fictitious revenue/accounts receivable</li> </ul>
<ul style="list-style-type: none"> <li>• Inconsistent financial statements</li> </ul>	<ul style="list-style-type: none"> <li>• Understated liabilities / expenses</li> </ul>
<ul style="list-style-type: none"> <li>• Misrepresenting assets</li> </ul>	<ul style="list-style-type: none"> <li>• Consistent M-score &gt;-2.22</li> </ul>

4. What are some key financial indicators that can be identified as possible red flags about the potential bankruptcy of a prospective Pakistani defense contractor in the textile industry?

Significant changes and negative trends in financial statements raise red flags regarding financial health of a prospective Pakistani defense contractor. Negative trends and significant changes (increase or decrease) can be identified by comparing financial health indicators of publicly traded companies over a period of years. The horizontal, vertical, and ratio analysis of prospective defense contractors' financial statements for at least five years can assist Pakistani defense contracting officers to ascertain their financial health. For further investigation of variations, raw financial data and notes to the financial statements need to be reviewed in more detail.

Industry averages indicate the average level of the complete industry for a particular financial ratio and serve as benchmark. A considerable variation of financial



ratios from industry peers is a red flag which Pakistani defense contracting officers need to consider while assessing financial health of prospective defense contractors.

The Z-score model, developed by Dr. Altman, can forecast the potential bankruptcy of prospective Pakistani defense contractors. If the Z-score of a prospective defense contractor is within the limit for bankruptcy, then Pakistani defense contracting officers need to consider it a red flag for the financial health assessment.

A few red flag indicators regarding potential bankruptcy of a prospective Pakistani defense contractor may include a high debt ratio, significant variations in cash flows, extreme deviations from debt management ratios in industry averages and substantial loans. Some potentially significant red flag indicators that could suggest a possible bankruptcy are listed in Table 66. Pakistani defense contracting officers need to consider all of these indicators while assessing the financial health of prospective defense contractors.

Table 66. Indicators of Possible Bankruptcy.

<b>Red Flag Indicators about Possible Bankruptcy</b>	
<ul style="list-style-type: none"> <li>• High debt ratio</li> </ul>	<ul style="list-style-type: none"> <li>• Significant cash flows fluctuation</li> </ul>
<ul style="list-style-type: none"> <li>• Extreme variation from debt management ratios in industry averages</li> </ul>	<ul style="list-style-type: none"> <li>• Steadily declining revenues</li> </ul>
<ul style="list-style-type: none"> <li>• Substantial debts</li> </ul>	<ul style="list-style-type: none"> <li>• Consistent Z-score below 1.80</li> </ul>

The following section discusses areas for further research.

### C. AREAS FOR FURTHER RESEARCH

Some recommendations for further research areas are covered in this section. Further research is recommended in the following three areas: development of a framework of non-financial factors to assess the health of Pakistani defense contractors, analysis of the pre-qualification procedures and standards of Pakistani defense contractors, and the identification and maintenance of a data base of Pakistani financial ratio industry averages.



## **1. Develop a Framework of Non-Financial Corporate Health Factors**

Determining non-financial factors to assess the health of a Pakistani defense contractor is one area for further research. Although this research compiled a set of frequently used financial analysis methods that are specifically designed for the textile industry, but with some modifications, Pakistani defense contracting officers can also apply them in any industry to analyze the financial capability of prospective defense contractors. In addition to financial factors, there are several non-financial factors that are also important in assessing the health of Pakistani defense contractors. Examples of non-financial factors include corporate governance and the social responsibility of prospective defense contractors. Identification and compilation of those non-financial factors; therefore, is equally important as non-financial factors are less tangible yet are expected to identify competitive advantages and risks that financial factors cannot capture. Therefore, further research regarding non-financial factors may be conducted and another framework may be developed to assist Pakistani defense contracting officers to better evaluate the financial capability of prospective contractors.

## **2. Analyze Pre-Qualification Procedures and Standards of Pakistani Defense Contractors**

Further research may be carried out to analyze the methods, procedures, and standards into which Pakistani defense contractors may engage before submitting the solicitation documents or proposals. The Contract management standard provide guiding principles, processes, roles, and domains both for buyers and sellers. This research was limited to buyer-specific concepts, guiding principles, processes, roles, and domains. The seller's part, which is equally important to the success of the contract management process, has not been covered.

Federal Acquisition Regulation (FAR) 9.104-1(a) defines a responsible contractor as one who has "adequate financial resources to perform the contract, or the ability to obtain them" (p. 175). To ascertain if prospective contractors are responsible, FAR specifies guidelines, requirements, and processes. A contractor should have enough financial resources, experience, production, technological facilities, eligibility, and qualifications, to name a few broad standards. The Pakistan Public Regulatory Authority



similarly adds that a procurement agency should evaluate a contractor's relevant experience and technical, financial, manufacturing, and suitable managerial capabilities while engaging in the pre-qualification process.

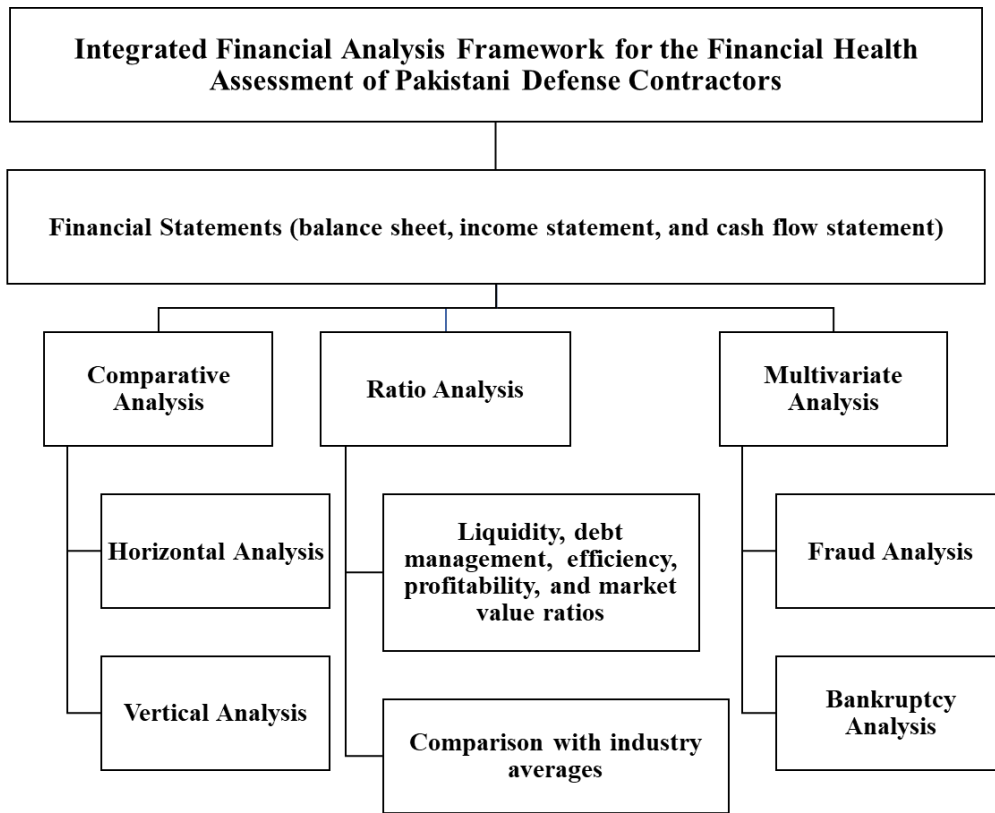
To assess the health of prospective Pakistani defense contractors, Pakistani defense contracting officers need to have a clear understanding of how each contractor is financially performing. Therefore, it is important to conduct further research to evaluate what management practices, standards, and procedures are being used by prospective Pakistani defense contractors before submitting solicitation documents or proposals. This study will help Pakistani defense contracting officers to make a better decision about each prospective defense contractor agreement or proposal before awarding any contract.

### **3. Identify and Maintain a Database for Pakistan Financial Ratio Industry Averages**

The identification of Pakistani financial ratio industry averages and their sources is one area that needs further research. This research conducted financial ratio analysis of six publicly traded companies from the Pakistan's textile industry. The industry averages of the Pakistan textile industry were not publicly available on any official or authorized document or website. Therefore, industry averages of the U.S. textile industry were utilized as a benchmark. Since every country has its unique economic and industrial circumstances, a comparison of Pakistani textile companies with the U.S. textile industry may not present the proper financial picture. If the ratios analyzed in this research study were compared against the Pakistani textile industry averages, for the same sector, the selected publicly traded companies would have been better assessed as to whether they met, fell short of, or exceeded the desired baseline or benchmark. Therefore, further research is needed to determine whether Pakistani industry averages are being recorded or maintained anywhere, possibly in an official document or website. In addition to that, various industries, like automobile and chemical industries adopt different metrics for evaluating a company's overall financial performance. Therefore, industry-specific ratios should also be maintained. Research in this area will be very beneficial for Pakistani defense contracting officers to better evaluate the performance of prospective contractors against that of their peers in the industry before awarding contracts.



# APPENDIX A



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## APPENDIX B

Company 'A' Balance Sheet Analysis															
Balance Sheet	Pak Rs in Million					Horizontal Analysis					Vertical Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
<b>EQUITY AND LIABILITIES</b>															
<b>SHARE CAPITAL AND RESERVES</b>															
Authorized share capital															
6,500,000 ordinary shares of Rs. 10 each	65	65	65	65	65	100%	100%	100%	100%	100%	1%	1%	1%	1%	1%
Issued share capital	64	64	64	64	64	100%	100%	100%	100%	100%	1%	1%	1%	1%	1%
General reserve	5,500	3,800	3,500	3,000	2,800	196%	136%	125%	107%	100%	55%	35%	38%	32%	40%
Retained earnings	460	25	191	187	109	423%	23%	175%	172%	100%	5%	0%	2%	2%	2%
<b>Total Equity</b>	<b>6,025</b>	<b>3,890</b>	<b>3,755</b>	<b>3,252</b>	<b>2,973</b>	<b>203%</b>	<b>131%</b>	<b>126%</b>	<b>109%</b>	<b>100%</b>	<b>60%</b>	<b>36%</b>	<b>41%</b>	<b>35%</b>	<b>42%</b>
<b>LIABILITIES</b>															
<b>NON-CURRENT LIABILITIES</b>															
Long term finances	1,893	1,959	1,600	1,543	1,818	104%	108%	88%	85%	100%	19%	18%	18%	17%	26%
Long term payables	299	277	226	187	-	160%	148%	121%	100%	0%	3%	3%	2%	2%	0%
Employees retirement benefits	171	150	118	126	-	136%	119%	94%	100%	0%	2%	1%	1%	1%	0%
Deferred taxation	221	212	243	217	445	50%	87%	112%	49%	100%	2%	2%	3%	2%	6%
Deferred grant	85	3	-	-	-	3236%	-	-	-	-	1%	-	-	-	-
<b>Total Non-Current Liabilities</b>	<b>2,669</b>	<b>2,601</b>	<b>2,188</b>	<b>2,073</b>	<b>2,262</b>	<b>118%</b>	<b>115%</b>	<b>97%</b>	<b>92%</b>	<b>100%</b>	<b>27%</b>	<b>24%</b>	<b>24%</b>	<b>22%</b>	<b>32%</b>
<b>CURRENT LIABILITIES</b>															
Trade and other payables	842	642	544	488	348	242%	185%	157%	140%	100%	8%	6%	6%	5%	5%
Unclaimed dividend	6	7	5	4	3	199%	204%	155%	119%	100%	0%	0%	0%	0%	0%
Accrued interest	17	83	76	39	31	56%	268%	245%	126%	100%	0%	1%	1%	0%	0%
Short term borrowings	-	3,480	2,191	3,146	1,243	-	280%	176%	253%	100%	-	32%	24%	34%	18%
Current portion of non-current liabilities	461	60	370	303	222	208%	27%	167%	137%	100%	5%	1%	4%	3%	3%
<b>Total Current Liabilities</b>	<b>1,327</b>	<b>4,271</b>	<b>3,185</b>	<b>3,981</b>	<b>1,846</b>	<b>72%</b>	<b>231%</b>	<b>173%</b>	<b>216%</b>	<b>100%</b>	<b>13%</b>	<b>40%</b>	<b>35%</b>	<b>43%</b>	<b>26%</b>
<b>Total Liabilities</b>	<b>3,996</b>	<b>6,872</b>	<b>5,373</b>	<b>6,054</b>	<b>4,108</b>	<b>97%</b>	<b>167%</b>	<b>131%</b>	<b>147%</b>	<b>100%</b>	<b>40%</b>	<b>64%</b>	<b>59%</b>	<b>65%</b>	<b>58%</b>
<b>Total Equity and Liabilities</b>	<b>10,021</b>	<b>10,762</b>	<b>9,129</b>	<b>9,305</b>	<b>7,082</b>	<b>142%</b>	<b>152%</b>	<b>129%</b>	<b>131%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>NON-CURRENT ASSETS</b>															
Property, plant and equipment	3,878	3,811	3,781	3,596	3,898	99%	98%	97%	92%	100%	39%	35%	41%	39%	55%
Long term deposits	25	14	14	14	14	176%	102%	102%	100%	100%	0%	0%	0%	0%	0%
<b>Total Non-Current Assets</b>	<b>3,903</b>	<b>3,826</b>	<b>3,795</b>	<b>3,610</b>	<b>3,912</b>	<b>100%</b>	<b>98%</b>	<b>97%</b>	<b>92%</b>	<b>100%</b>	<b>39%</b>	<b>36%</b>	<b>42%</b>	<b>39%</b>	<b>55%</b>
<b>CURRENT ASSETS</b>															
Stores and spares	107	88	94	72	72	147%	121%	129%	99%	100%	1%	1%	1%	1%	1%
Stock in trade	4,005	5,022	3,245	3,893	1,822	220%	276%	178%	214%	100%	40%	47%	36%	42%	26%
Trade receivables	1,135	817	971	926	523	217%	156%	186%	177%	100%	11%	8%	11%	10%	7%
Short term deposits	184	128	-	-	-	144%	100%	-	-	-	2%	1%	0%	0%	0%
Advances and other receivables	36	135	150	150	91	39%	148%	164%	164%	100%	0%	1%	2%	2%	1%
Sales tax refundable / adjustable	46	172	215	180	265	17%	65%	81%	68%	100%	0%	2%	2%	2%	4%
Advance income tax/income tax refundable	111	372	356	335	361	31%	103%	99%	93%	100%	1%	3%	4%	4%	5%
Bank balances	493	203	302	140	35	1391%	572%	853%	395%	100%	5%	2%	3%	2%	1%
<b>Total Current Assets</b>	<b>6,117</b>	<b>6,936</b>	<b>5,333</b>	<b>5,696</b>	<b>3,170</b>	<b>337%</b>	<b>130%</b>	<b>94%</b>	<b>180%</b>	<b>100%</b>	<b>61%</b>	<b>64%</b>	<b>58%</b>	<b>61%</b>	<b>45%</b>
<b>Total Assets</b>	<b>10,021</b>	<b>10,762</b>	<b>9,129</b>	<b>9,305</b>	<b>7,082</b>	<b>142%</b>	<b>152%</b>	<b>129%</b>	<b>131%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>



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## APPENDIX C

Company 'A' Income Statement's Analysis															
Income Statement	Pak Rs in Million					Horizontal Analysis					Vertical Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
Sales - <i>net</i>	15,431	12,360	12,346	10,257	8,064	191%	153%	153%	127%	100%	100%	100%	100%	100%	100%
Cost of sales	-12,121	-11,112	-10,733	-9,186	-7,269	-167%	-153%	-148%	-126%	-100%	-79%	-90%	-87%	-90%	-90%
<b>Gross profit</b>	<b>3,310</b>	<b>1,248</b>	<b>1,613</b>	<b>1,072</b>	<b>795</b>	<b>416%</b>	<b>157%</b>	<b>203%</b>	<b>135%</b>	<b>100%</b>	<b>21%</b>	<b>10%</b>	<b>13%</b>	<b>10%</b>	<b>10%</b>
Distribution cost	-316	-233	-223	-227	-151	-210%	-155%	-148%	-151%	-100%	-2%	-2%	-2%	-2%	-2%
Administrative expenses	-166	-155	-132	-122	-113	-148%	-138%	-117%	-108%	-100%	-1%	-1%	-1%	-1%	-1%
Other expenses	-194	-36	-104	-36	-	-546%	-102%	-294%	-100%	-	-1%	0%	-1%	0%	-
<b>SGA Expenses</b>	<b>-677</b>	<b>-424</b>	<b>-460</b>	<b>-385</b>	<b>-263</b>	<b>-257%</b>	<b>-161%</b>	<b>-175%</b>	<b>-146%</b>	<b>-100%</b>	<b>-4%</b>	<b>-3%</b>	<b>-4%</b>	<b>-4%</b>	<b>-3%</b>
Other income	33	33	7	4	36	93%	91%	19%	11%	100%	0%	0%	0%	0%	0%
<b>Operating profit</b>	<b>2,666</b>	<b>856</b>	<b>1,160</b>	<b>691</b>	<b>568</b>	<b>470%</b>	<b>151%</b>	<b>204%</b>	<b>122%</b>	<b>100%</b>	<b>17%</b>	<b>7%</b>	<b>9%</b>	<b>7%</b>	<b>7%</b>
Finance cost	-225	-307	-372	-187	-166	-135%	-185%	-224%	-112%	-100%	-1%	-2%	-3%	-2%	-2%
Other charges	-	-	-	-	-24	-	-	-	-	-100%	-	-	-	-	0%
<b>Profit before taxation</b>	<b>2,442</b>	<b>549</b>	<b>788</b>	<b>504</b>	<b>377</b>	<b>647%</b>	<b>146%</b>	<b>209%</b>	<b>133%</b>	<b>100%</b>	<b>16%</b>	<b>4%</b>	<b>6%</b>	<b>5%</b>	<b>5%</b>
Provision for taxation	-296	-124	-153	-135	-132	-225%	-94%	-116%	-103%	-100%	-2%	-1%	-1%	-1%	-2%
<b>Profit after taxation</b>	<b>2,145</b>	<b>425</b>	<b>635</b>	<b>368</b>	<b>246</b>	<b>873%</b>	<b>173%</b>	<b>259%</b>	<b>150%</b>	<b>100%</b>	<b>14%</b>	<b>3%</b>	<b>5%</b>	<b>4%</b>	<b>3%</b>



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## APPENDIX D

<b>Company 'A' Cash Flow Statement's Analysis</b>										
<b>Cash Flow Statement</b>	<b>Pak Rs in Million</b>					<b>Horizontal Analysis</b>				
	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
<b>CASH FLOW FROM OPERATING ACTIVITIES</b>										
Cash generated from operations	4,118	-279	2,188	-1,134	491	839%	-57%	446%	-231%	100%
Payments for:										
Employees retirement benefits	-41	-27	-27	-27	-32	-127%	-85%	-86%	-84%	-100%
Interest/markup	-247	-267	-308	-157	-146	-170%	-183%	-211%	-108%	-100%
Income tax	-25	-169	-151	-107	-97	-26%	-175%	-156%	-111%	-100%
<b>Net cash (used in) generated from operating activities</b>	<b>3,806</b>	<b>-742</b>	<b>1,701</b>	<b>-1,425</b>	<b>216</b>	<b>1759%</b>	<b>-343%</b>	<b>786%</b>	<b>-659%</b>	<b>100%</b>
<b>CASH FLOW FROM INVESTING ACTIVITIES</b>										
Purchase of property, plant and equipment	-465	-423	-579	-91	-805	-58%	-53%	-72%	-11%	-100%
Proceeds from disposal of property, plant and equipment	22	1	19	7	92	24%	1%	21%	8%	100%
Long term deposit made Long term deposit refunded	-11	-	-	-	-	-11%	-	-	-	-
<b>Net cash used in investing activities</b>	<b>-453</b>	<b>-423</b>	<b>-560</b>	<b>-84</b>	<b>-713</b>	<b>-64%</b>	<b>59%</b>	<b>79%</b>	<b>-12%</b>	<b>-100%</b>
<b>CASH FLOW FROM FINANCING ACTIVITIES</b>										
Long term finances obtained	525	406	427	29	663	79%	61%	64%	4%	100%
Repayment of long term finances	-107	-354	-303	-222	-254	-42%	-139%	-119%	-87%	-100%
Net increase (decrease) in short term borrowings	-3,480	1,289	-956	1,904	89	-3906%	-1447%	-1073%	2137%	100%
Dividend paid	-	-276	-147	-98	-32	-	-873%	-464%	-309%	-100%
<b>Net cash generated from (used in) financing activities</b>	<b>-3,062</b>	<b>1,065</b>	<b>-979</b>	<b>1,613</b>	<b>466</b>	<b>-656%</b>	<b>228%</b>	<b>-210%</b>	<b>346%</b>	<b>100%</b>
<b>NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS</b>	<b>291</b>	<b>-100</b>	<b>162</b>	<b>104</b>	<b>-30</b>	<b>976%</b>	<b>-335%</b>	<b>544%</b>	<b>350%</b>	<b>-100%</b>
Effect of exchange rate on cash and cash equivalents	203	302	140	-	-	145%	216%	100%	-	-
Cash and cash equivalents at the beginning of the year	-1	1	0	35	65	-1%	1%	0%	54%	100%
<b>CASH AND CASH EQUIVALENTS AT THE END OF THE YEAR</b>	<b>493</b>	<b>203</b>	<b>302</b>	<b>140</b>	<b>35</b>	<b>1391%</b>	<b>572%</b>	<b>853%</b>	<b>395%</b>	<b>100%</b>



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## APPENDIX E

Company 'B' Balance Sheet Analysis															
Balance Sheet	Pak Rs in Million					Horizontal Analysis					Vertical Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
<b>EQUITY AND LIABILITIES</b>															
<b>SHARE CAPITAL AND RESERVES</b>															
Authorized share capital															
100,000,000 ordinary shares of Rupees 10 each	1,000	1,000	1,000	1,000	1,000	100%	100%	100%	100%	100%	5%	5%	5%	5%	5%
Issued, subscribed and paid up share capital	800	800	800	800	800	100%	100%	100%	100%	100%	4%	4%	5%	5%	4%
Share Deposit Money	312	-	-	-	-						2%				
Premium on issue of right shares	200	200	200	200	200	100%	100%	100%	100%	100%	1%	1%	1%	1%	1%
Fair value reserve	1,080	673	524	1,226	2,719	40%	25%	19%	45%	100%	5%	4%	3%	7%	15%
Surplus on revaluation of operating fixed assets	4,161	4,161	3,567	3,568	3,575	116%	116%	100%	100%	100%	21%	22%	21%	20%	20%
Revenue reserves	3,322	2,805	2,815	2,577	2,561	130%	110%	110%	101%	100%	16%	15%	16%	15%	14%
<b>Total Equity</b>	<b>9,875</b>	<b>8,639</b>	<b>7,906</b>	<b>8,371</b>	<b>9,855</b>	<b>100%</b>	<b>88%</b>	<b>80%</b>	<b>85%</b>	<b>100%</b>	<b>49%</b>	<b>46%</b>	<b>46%</b>	<b>48%</b>	<b>54%</b>
<b>LIABILITIES</b>															
<b>NON-CURRENT LIABILITIES</b>															
Long term financing	964	1,120	1,120	845	1,063	91%	105%	105%	79%	100%	5%	6%	6%	5%	6%
<b>Total Non-Current Liabilities</b>	<b>1010</b>	<b>1120</b>	<b>1120</b>	<b>845</b>	<b>1063</b>	<b>95%</b>	<b>105%</b>	<b>105%</b>	<b>79%</b>	<b>100%</b>	<b>5%</b>	<b>6%</b>	<b>6%</b>	<b>5%</b>	<b>6%</b>
<b>CURRENT LIABILITIES</b>															
Trade and other payables	2,060	2,027	1,866	1,488	1,109	186%	183%	168%	134%	100%	10%	11%	11%	8%	6%
Unclaimed Dividend	11	11	9	10	10	110%	110%	90%	100%	100%	0%	0%	0%	0%	0%
Accrued mark-up	80	101	120	86	65	123%	155%	185%	132%	100%	0%	1%	1%	0%	0%
Short term borrowings	6,128	6,240	5,936	6,417	5,790	106%	108%	103%	111%	100%	30%	33%	34%	36%	32%
Current portion of long term financing	479	35	275	258	190	252%	18%	145%	136%	100%	2%	0%	2%	1%	1%
Current portion of deferred liabilities	407	456	-	-	-	89%					2%	2%			
Provision for taxation	215	166	138	141	31	694%	535%	445%	455%	100%	1%	1%	1%	1%	0%
<b>Total Current Liabilities</b>	<b>9,380</b>	<b>9,036</b>	<b>8,344</b>	<b>8,400</b>	<b>7,195</b>	<b>130%</b>	<b>126%</b>	<b>116%</b>	<b>117%</b>	<b>100%</b>	<b>46%</b>	<b>48%</b>	<b>48%</b>	<b>48%</b>	<b>40%</b>
<b>Total Liabilities</b>	<b>10,390</b>	<b>10,156</b>	<b>9,464</b>	<b>9,245</b>	<b>8,258</b>	<b>126%</b>	<b>123%</b>	<b>115%</b>	<b>112%</b>	<b>100%</b>	<b>51%</b>	<b>54%</b>	<b>54%</b>	<b>52%</b>	<b>46%</b>
<b>Total Equity and Liabilities</b>	<b>20,265</b>	<b>18,795</b>	<b>17,370</b>	<b>17,616</b>	<b>18,113</b>	<b>112%</b>	<b>104%</b>	<b>96%</b>	<b>97%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>ASSETS</b>															
<b>NON-CURRENT ASSETS</b>															
Property, plant and equipment	7,376	7,402	6,727	6,328	6,478	114%	114%	104%	98%	100%	36%	39%	39%	36%	36%
Intangible assets	13	20	6	12	18	72%	111%	33%	67%	100%	0%	0%	0%	0%	0%
Long term investments	3,807	3,693	3,792	3,736	5,167	74%	71%	73%	72%	100%	19%	20%	21%	29%	29%
Long term loans and advances	0	0	1	1	2	0%	0%	50%	50%	100%	0%	0%	0%	0%	0%
Long term deposits and prepayments	15	29	30	10	5	300%	580%	600%	200%	100%	0%	0%	0%	0%	0%
Deferred income tax asset	1	110	103	128	0	1%	86%	80%	100%	100%	0%	1%	1%	1%	
<b>Total Non-Current Assets</b>	<b>11,212</b>	<b>11,254</b>	<b>10,659</b>	<b>10,215</b>	<b>11,670</b>	<b>96%</b>	<b>96%</b>	<b>91%</b>	<b>88%</b>	<b>100%</b>	<b>55%</b>	<b>60%</b>	<b>61%</b>	<b>58%</b>	<b>64%</b>
<b>CURRENT ASSETS</b>															
Stores, spare parts and loose tools	225	234	265	198	192	117%	122%	138%	103%	100%	1%	1%	2%	1%	1%
Stock in trade	3,711	3,187	2,285	2,589	2,029	183%	157%	113%	128%	100%	18%	17%	13%	15%	11%
Trade debts	2,695	2,419	2,648	2,346	2,236	121%	108%	118%	105%	100%	13%	13%	15%	13%	12%
Loans and advances	42	22	17	9	17	247%	129%	100%	53%	100%	0%	0%	0%	0%	0%
Short term deposits and prepayments	131	84	71	61	62	211%	135%	115%	98%	100%	1%	0%	0%	0%	0%
Accrued interest	15	6	5	3	4	375%	150%	125%	75%	100%	0%	0%	0%	0%	0%
Income tax	737	778	736	678	560	132%	139%	131%	121%	100%	4%	4%	4%	4%	3%
Other receivables	366	296	291	1,416	1,253	29%	24%	23%	113%	100%	2%	2%	2%	8%	7%
Short term investments	792	477	390	94	88	900%	542%	443%	107%	100%	4%	3%	2%	1%	0%
Cash and bank balances	338	39	4	3	4	8450%	975%	100%	75%	100%	2%	0%	0%	0%	0%
<b>Total Current Assets</b>	<b>9052</b>	<b>7542</b>	<b>6712</b>	<b>7397</b>	<b>6445</b>	<b>140%</b>	<b>117%</b>	<b>104%</b>	<b>115%</b>	<b>100%</b>	<b>45%</b>	<b>40%</b>	<b>39%</b>	<b>42%</b>	<b>36%</b>
<b>Total Assets</b>	<b>20,264</b>	<b>18,796</b>	<b>17,371</b>	<b>17,612</b>	<b>18,115</b>	<b>112%</b>	<b>104%</b>	<b>96%</b>	<b>97%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>



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## APPENDIX F

Company 'B' Income Statement's Analysis															
Income Statement	Pak Rs in 'Mil'					Horizontal Analysis					Vertical Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
Sales - net	17,817	13,264	13,946	11,314	10,873	164%	122%	128%	104%	100%	100%	100%	100%	100%	100%
Cost of sales	-15,364	-11,715	-12,309	-10,214	-9,901	-155%	-118%	-124%	-103%	-100%	-86%	-88%	-88%	-90%	-91%
<b>Gross profit</b>	<b>2,453</b>	<b>1,549</b>	<b>1,637</b>	<b>1,100</b>	<b>972</b>	<b>252%</b>	<b>159%</b>	<b>168%</b>	<b>113%</b>	<b>100%</b>	<b>14%</b>	<b>12%</b>	<b>12%</b>	<b>10%</b>	<b>9%</b>
Distribution cost	-769	-574	-679	-468	-644	-119%	-89%	-105%	-73%	-100%	-4%	-4%	-5%	-4%	-6%
Administrative expenses	-447	-392	-345	-295	-300	-149%	-131%	-115%	-98%	-100%	-3%	-3%	-2%	-3%	-3%
Other expenses	-106	-43	-42	-14	-10	-1060%	-430%	-420%	-140%	-100%	-1%	0%	0%	0%	0%
Other income	131	117	330	325	350	37%	33%	94%	93%	100%	1%	1%	2%	3%	3%
<b>Profit from operations</b>	<b>1,262</b>	<b>657</b>	<b>901</b>	<b>648</b>	<b>368</b>	<b>343%</b>	<b>179%</b>	<b>245%</b>	<b>176%</b>	<b>100%</b>	<b>7%</b>	<b>5%</b>	<b>6%</b>	<b>6%</b>	<b>3%</b>
Finance cost	-452	-481	-507	-638	-287	-157%	-168%	-177%	-222%	-100%	-3%	-4%	-4%	-6%	-3%
<b>Profit before taxation</b>	<b>810</b>	<b>176</b>	<b>394</b>	<b>10</b>	<b>81</b>	<b>1000%</b>	<b>217%</b>	<b>486%</b>	<b>12%</b>	<b>100%</b>	<b>5%</b>	<b>1%</b>	<b>3%</b>	<b>0%</b>	<b>1%</b>
Taxation	-295	-143	-157	-2	32	-922%	-447%	-491%	-6%	100%	-2%	-1%	-1%	0%	0%
<b>Profit after taxation</b>	<b>515</b>	<b>33</b>	<b>237</b>	<b>8</b>	<b>113</b>	<b>456%</b>	<b>29%</b>	<b>210%</b>	<b>7%</b>	<b>100%</b>	<b>3%</b>	<b>0%</b>	<b>2%</b>	<b>0%</b>	<b>1%</b>



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## APPENDIX G

Company 'B' Cash Flow Statement's Analysis										
Cash Flow Statement	Pak Rs in 'Mil'					Horizontal Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>										
Cash generated from operations	676	988	1,546	450	303	223%	326%	510%	148%	100%
Finance cost paid	-473	-499	-472	-617	-281	-169%	-178%	-168%	-220%	-100%
Income tax paid - net	-119	-173	-190	-139	-178	-67%	-98%	-107%	-78%	-100%
Dividend paid	0	-46	0	0	-100	0%	-46%	0%	0%	-100%
Workers' profit participation fund paid	0	-14	0	-1	-14	0%	-95%	1%	-7%	-100%
Net decrease in long term loans and advances	0	0	1	1	1	0%	20%	62%	89%	100%
Net decrease in long term deposits and prepayments	14	1	-20	-5	0	9664%	875%	-14061%	-3663%	-100%
<b>Net cash generated from operating activities</b>	<b>98</b>	<b>257</b>	<b>864</b>	<b>-312</b>	<b>-268</b>	<b>37%</b>	<b>96%</b>	<b>322%</b>	<b>-116%</b>	<b>-100%</b>
<b>CASH FLOWS FROM INVESTING ACTIVITIES</b>										
Capital expenditure on property, plant, equipment and intangible asset	-310	-307	-731	-168	-939	-33%	-33%	-78%	-18%	-100%
Proceeds from sale of property, plant and equipment	0	13	47	22	44	1%	29%	105%	50%	100%
Proceeds from sale of investment	1	8	-	-70	-	-2%	11%	-	100%	-
Profit on saving accounts received	3	-	-	-	66	4%	-	-	-	100%
Dividends received	8	1	11	52	43	19%	2%	25%	120%	100%
<b>Net cash used in investing activities</b>	<b>-297</b>	<b>-286</b>	<b>-674</b>	<b>-164</b>	<b>-785</b>	<b>-38%</b>	<b>-36%</b>	<b>-86%</b>	<b>-21%</b>	<b>-100%</b>
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>										
Proceeds from long term financing	415	-	550	40	808	51%	-	68%	5%	100%
Share deposit money received	312	-	-	-	-11	2835%	-	-	-	-100%
Repayment of long term financing	-116	-240	-258	-190	-55	-212%	-439%	-471%	-348%	-100%
Short term borrowings - net	-112	304	-481	626	306	-37%	99%	-157%	-205%	-100%
<b>Net cash from financing activities</b>	<b>499</b>	<b>64</b>	<b>-189</b>	<b>476</b>	<b>1,048</b>	<b>48%</b>	<b>6%</b>	<b>-18%</b>	<b>45%</b>	<b>100%</b>
<b>Net increase in cash and cash equivalents</b>	<b>299</b>	<b>35</b>	<b>1</b>	<b>0</b>	<b>-5</b>	<b>-5534%</b>	<b>-639%</b>	<b>-20%</b>	<b>9%</b>	<b>100%</b>
<b>Cash and cash equivalents at the beginning of the year</b>	<b>39</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>9</b>	<b>419%</b>	<b>48%</b>	<b>37%</b>	<b>42%</b>	<b>100%</b>
<b>Cash and cash equivalents at the end of the year</b>	<b>338</b>	<b>39</b>	<b>4</b>	<b>3</b>	<b>4</b>	<b>8676%</b>	<b>1001%</b>	<b>115%</b>	<b>88%</b>	<b>100%</b>



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## APPENDIX H

Company 'C' Balance Sheet Analysis															
Balance Sheet	Pak Rs in Million					Horizontal Analysis					Vertical Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
<b>EQUITY AND LIABILITIES</b>															
<b>SHARE CAPITAL AND RESERVES</b>															
Share capital	4,278	4,278	3,565	3,565	3,565	120%	120%	100%	100%	100%	5%	6%	7%	8%	10%
Reserves	14,408	9,685	11,768	9,056	7,349	196%	132%	160%	123%	100%	16%	14%	22%	21%	20%
<b>Total Equity</b>	<b>18,686</b>	<b>13,963</b>	<b>15,333</b>	<b>12,621</b>	<b>10,914</b>	<b>171%</b>	<b>128%</b>	<b>140%</b>	<b>116%</b>	<b>100%</b>	<b>21%</b>	<b>20%</b>	<b>28%</b>	<b>29%</b>	<b>30%</b>
<b>NON-CURRENT LIABILITIES</b>															
Long term financing	18,571	13,446	8,857	6,912	7,146	260%	188%	124%	97%	100%	21%	20%	16%	16%	19%
Lease liability against right-of-use assets	3,275	2,192	-	-	-	149%	100%	-	-	-	4%	3%	-	-	-
Provision for Gas Infrastructure Development Cess	1,325	-	-	-	-	100%	-	-	-	-	1%	-	-	-	-
Deferred taxation	-	35	71	24	298	-	12%	24%	8%	100%	-	0%	0%	0%	1%
Deferred government grant	142	35	-	-	-	403%	100%	-	-	-	0%	0%	-	-	-
Defined benefit plan- Staff Gratuity	155	137	87	63	24	652%	573%	363%	265%	100%	0%	0%	0%	0%	0%
<b>Total non-current liabilities</b>	<b>23,469</b>	<b>15,844</b>	<b>9,015</b>	<b>6,999</b>	<b>7,469</b>	<b>314%</b>	<b>212%</b>	<b>121%</b>	<b>94%</b>	<b>100%</b>	<b>26%</b>	<b>23%</b>	<b>17%</b>	<b>16%</b>	<b>20%</b>
<b>CURRENT LIABILITIES</b>															
Trade and other payables	14,220	12,112	9,638	7,009	5,569	255%	217%	173%	126%	100%	16%	18%	18%	16%	15%
Accrued mark-up/profit	341	406	300	176	139	246%	292%	216%	126%	100%	0%	1%	1%	0%	0%
Short term borrowings	29,108	25,487	18,962	15,076	11,935	244%	214%	159%	126%	100%	33%	37%	35%	35%	33%
Current maturity of long term financing	2,501	420	1,180	1,366	679	369%	62%	174%	201%	100%	3%	1%	2%	3%	2%
Current maturity of lease liability against right-of-use asset	566	409	-	-	-	138%	100%	-	-	-	1%	1%	-	-	-
Current maturity of deferred government grant	108	49	-	-	-	222%	12%	-	-	-	0%	0%	-	-	-
Unclaimed dividend	298	10	8	6	5	5759%	188%	160%	124%	100%	0%	0%	0%	0%	0%
Unpaid dividend	24	21	16	11	9	260%	233%	178%	122%	100%	0%	0%	0%	0%	0%
Provision for taxation - net of payments	231	-	-	-	-	-	-	-	-	-	0%	-	-	-	-
<b>Total current liabilities</b>	<b>47,397</b>	<b>38,914</b>	<b>30,104</b>	<b>23,644</b>	<b>18,336</b>	<b>258%</b>	<b>212%</b>	<b>164%</b>	<b>129%</b>	<b>100%</b>	<b>53%</b>	<b>57%</b>	<b>55%</b>	<b>55%</b>	<b>50%</b>
<b>Total liabilities</b>	<b>70,866</b>	<b>54,758</b>	<b>39,119</b>	<b>30,643</b>	<b>25,805</b>	<b>275%</b>	<b>212%</b>	<b>152%</b>	<b>119%</b>	<b>100%</b>	<b>79%</b>	<b>80%</b>	<b>72%</b>	<b>71%</b>	<b>70%</b>
<b>Total Equity and Liabilities</b>	<b>89,552</b>	<b>68,721</b>	<b>54,452</b>	<b>43,263</b>	<b>36,719</b>	<b>244%</b>	<b>187%</b>	<b>148%</b>	<b>118%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>ASSETS</b>															
<b>NON-CURRENT ASSETS</b>															
Property, plant and equipment	31,019	23,936	18,994	16,104	15,969	194%	150%	119%	101%	100%	35%	35%	35%	37%	43%
Right-of-use assets	3,295	2,314	-	-	-	142%	100%	-	-	-	4%	3%	-	-	-
Intangible assets	81	90	45	24	34	240%	265%	132%	71%	100%	0%	0%	0%	0%	0%
Deferred tax asset	76	-	-	-	-	100%	-	-	-	-	0%	-	-	-	-
Long term investment	2,423	2,423	58	58	58	4146%	4146%	100%	100%	100%	3%	4%	0%	0%	0%
Long term loans	83	59	63	37	40	207%	146%	158%	93%	100%	0%	0%	0%	0%	0%
Long term deposits	291	379	370	203	193	151%	197%	192%	105%	100%	0%	1%	1%	0%	1%
<b>Total non-current assets</b>	<b>37,269</b>	<b>29,201</b>	<b>19,530</b>	<b>16,427</b>	<b>16,294</b>	<b>229%</b>	<b>179%</b>	<b>120%</b>	<b>101%</b>	<b>100%</b>	<b>42%</b>	<b>42%</b>	<b>36%</b>	<b>38%</b>	<b>44%</b>
<b>CURRENT ASSETS</b>															
Stores and spares	995	828	1,470	961	988	101%	84%	149%	97%	100%	1%	1%	3%	2%	3%
Stock-in-trade	30,921	27,049	21,370	16,144	12,470	248%	217%	171%	129%	100%	35%	39%	39%	37%	34%
Trade debts	11,750	5,702	7,071	5,399	3,345	351%	170%	211%	161%	100%	13%	8%	13%	12%	9%
Loans, advances and other receivables	3,706	1,274	1,750	1,197	841	440%	151%	208%	142%	100%	4%	2%	3%	3%	2%
Short term prepayments	150	242	304	240	197	76%	123%	154%	122%	100%	0%	0%	1%	1%	1%
Receivable from government	4,087	2,804	1,487	1,828	1,640	249%	171%	91%	111%	100%	5%	4%	3%	4%	4%
Taxation - net	-	1,133	978	598	674	-	168%	145%	89%	100%	-	2%	2%	1%	2%
Cash and bank balances	674	489	492	470	270	250%	181%	182%	174%	100%	1%	1%	1%	1%	1%
<b>Total current assets</b>	<b>52,284</b>	<b>39,520</b>	<b>34,922</b>	<b>26,836</b>	<b>20,425</b>	<b>256%</b>	<b>193%</b>	<b>171%</b>	<b>131%</b>	<b>100%</b>	<b>58%</b>	<b>58%</b>	<b>64%</b>	<b>62%</b>	<b>56%</b>
<b>Total Assets</b>	<b>89,552</b>	<b>68,721</b>	<b>54,452</b>	<b>43,263</b>	<b>36,719</b>	<b>244%</b>	<b>187%</b>	<b>148%</b>	<b>118%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>



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## APPENDIX I

Company 'C' Income Statement's Analysis															
Income Statement	(Rupees in Million)					Horizontal Analysis					Vertical Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
Net sales	86,424	53,941	57,288	45,626	40,066	216%	135%	143%	114%	100%	100%	100%	100%	100%	100%
Cost of sales	-69,542	-44,872	-45,306	-36,050	-32,858	-212%	-137%	-138%	-110%	-100%	-80%	-83%	-79%	-79%	-82%
<b>Gross profit</b>	<b>16,883</b>	<b>9,069</b>	<b>11,982</b>	<b>9,576</b>	<b>7,207</b>	<b>234%</b>	<b>126%</b>	<b>166%</b>	<b>133%</b>	<b>100%</b>	<b>20%</b>	<b>17%</b>	<b>21%</b>	<b>21%</b>	<b>18%</b>
Distribution expenses	-5,879	-4,528	-4,648	-3,941	-3,484	-169%	-130%	-133%	-113%	-100%	-7%	-8%	-8%	-9%	-9%
Administrative expenses	-2,847	-2,713	-2,677	-2,310	-2,305	-124%	-118%	-116%	-100%	-100%	-3%	-5%	-5%	-5%	-6%
Other expenses	-582	-264	-312	-208	-58	-997%	-453%	-534%	-356%	-100%	-1%	0%	-1%	0%	0%
Other income	884	368	1,137	199	326	271%	113%	349%	61%	100%	1%	1%	2%	0%	1%
<b>Operating profit</b>	<b>8,458</b>	<b>1,932</b>	<b>5,482</b>	<b>3,315</b>	<b>1,686</b>	<b>502%</b>	<b>115%</b>	<b>325%</b>	<b>197%</b>	<b>100%</b>	<b>10%</b>	<b>4%</b>	<b>10%</b>	<b>7%</b>	<b>4%</b>
Financial expenses	-2,341	-2,008	-1,473	-987	-878	-267%	-229%	-168%	-112%	-100%	-3%	-4%	-3%	-2%	-2%
<b>Profit before taxation</b>	<b>6,117</b>	<b>-76</b>	<b>4,008</b>	<b>2,328</b>	<b>809</b>	<b>756%</b>	<b>-9%</b>	<b>496%</b>	<b>288%</b>	<b>100%</b>	<b>7%</b>	<b>0%</b>	<b>7%</b>	<b>5%</b>	<b>2%</b>
Income tax expense	-984	-403	-399	-253	10	-10191%	-4174%	-4133%	-2623%	100%	-1%	-1%	-1%	-1%	0%
<b>Profit after taxation</b>	<b>5,133</b>	<b>-479</b>	<b>3,609</b>	<b>2,075</b>	<b>818</b>	<b>627%</b>	<b>-59%</b>	<b>441%</b>	<b>254%</b>	<b>100%</b>	<b>6%</b>	<b>-1%</b>	<b>6%</b>	<b>5%</b>	<b>2%</b>



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## APPENDIX J (1)

Company 'C' Cash Flow Statement's Analysis										
Cash Flow Statement	Pak Rs in 'Mil'					Horizontal Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
<b>CASH FLOWS FROM OPERATING ACTIVITIES</b>										
Profit / (loss) before taxation	6,117	(76)	4,008	2,328	809	756%	-9%	496%	288%	100%
Adjustments for:										
Depreciation	2,709	2,147	1,946	1,861	1,574	172%	136%	124%	118%	100%
Depreciation on Right-of-use of the asset	696	649	-	-	-	107%	100%	-	-	-
Amortisation	27	24	14	10	7	408%	367%	213%	148%	100%
Provision for gratuity	91	132	47	64	31	293%	425%	151%	207%	100%
Finance cost	1,882	1,639	1,473	987	878	214%	187%	168%	112%	100%
Finance cost on Government Infrastructure Development Cess (GIDC)	109	-	-	-	-	100%	-	-	-	-
Finance cost on leased liability against right of use asset	350	368	-	-	-	95%	100%	-	-	-
Provision for slow moving/obsolete stores and spares	29	23	19	17	16	187%	146%	121%	110%	100%
Gain on remeasurement of provision for GIDC	(290)	-	-	-	-	-100%	-	-	-	-
Impairment Allowance	-	-	-	42	38	-	-	-	110%	100%
Capital work in progress charged to consumption	8	0	5	-	-	151%	8%	100%	-	-
Loss on disposal of property, plant and equipment - net	86	183	24	(39)	(244)	-35%	-75%	-10%	16%	100%
Derecognition of right of use assets	24	-	-	-	-	100%	-	-	-	-
Expected credit loss against doubtful trade debts	71	-	-	-	-	100%	-	-	-	-
	<b>5,792</b>	<b>5,166</b>	<b>3,528</b>	<b>2,942</b>	<b>2,299</b>	<b>252%</b>	<b>225%</b>	<b>153%</b>	<b>128%</b>	<b>100%</b>
<b>Cash flows from operating activities before adjustments of working capital changes</b>	<b>11,909</b>	<b>5,090</b>	<b>7,536</b>	<b>5,270</b>	<b>3,108</b>	<b>383%</b>	<b>164%</b>	<b>242%</b>	<b>170%</b>	<b>100%</b>
Changes in working capital:										
(Increase)/Decrease in current assets										
Stores and spares	(196)	(600)	(527)	10	(100)	-195%	-598%	-525%	10%	-100%
Stock-in-trade	(3,872)	(4,460)	(5,226)	(3,674)	1,384	-280%	-322%	-377%	-265%	100%
Trade debts	(6,120)	1,370	(1,673)	(2,096)	(1,019)	-601%	134%	-164%	-206%	-100%
Loans, advances and other receivables	(2,432)	477	(553)	(356)	(640)	-380%	74%	-86%	-56%	-100%
Short term prepayments	92	62	(64)	(43)	22	413%	279%	-289%	-193%	100%
Receivable from government	(150)	(1,317)	341	(188)	380	-40%	-346%	90%	-49%	100%
	(12,679)	(4,470)	(7,702)	(6,347)	27	-47262%	-16661%	-28711%	-23658%	100%
Increase in current liabilities										
Trade and other payables	3,614	1,574	2,629	1,440	574	630%	274%	458%	251%	100%
Net increase in working capital	(9,065)	(2,896)	(5,074)	(4,907)	601	-1509%	-482%	-845%	-817%	100%
<b>Cash generated from operations before following:</b>	<b>2,845</b>	<b>2,194</b>	<b>2,462</b>	<b>363</b>	<b>3,708</b>	<b>77%</b>	<b>59%</b>	<b>66%</b>	<b>10%</b>	<b>100%</b>
Gratuity paid	(52)	(81)	(29)	(38)	(55)	-96%	-149%	-54%	-70%	-100%
Finance cost paid	(1,947)	(1,533)	(1,349)	(950)	(853)	-228%	-180%	-158%	-111%	-100%
Income tax paid	(867)	(594)	(731)	(451)	(674)	-129%	-88%	-109%	-67%	-100%
Net change in long term loans and advances	(24)	5	(26)	3	(18)	-133%	25%	-142%	15%	-100%
Net change in long term deposits	88	(10)	(167)	10	(37)	-238%	-26%	-449%	28%	-100%
	(2,802)	(2,214)	(2,302)	(1,447)	(1,637)	-171%	-135%	-141%	-88%	-100%
<b>Net cash generated / (used in) from operating activities</b>	<b>43</b>	<b>(20)</b>	<b>160</b>	<b>(1,084)</b>	<b>2,072</b>	<b>2%</b>	<b>-1%</b>	<b>8%</b>	<b>-52%</b>	<b>100%</b>



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## APPENDIX J (2)

Company 'C' Cash Flow Statement's Analysis										
Cash Flow Statement	Pak Rs in 'Mil'					Horizontal Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
Additions to property, plant and equipment	(10,112)	(7,572)	(5,011)	(2,217)	(5,580)	-181%	-136%	-90%	-40%	-100%
Addition to intangible assets	(18)	(69)	(35)	-	(27)	-68%	-257%	-129%	-	-100%
Proceeds from sale of property, plant and equipment	226	300	147	261	331	68%	91%	44%	79%	100%
Payments made against long term investments	-	(1,465)	-	-	-		100%			
<b>Net cash used in investing activities</b>	<b>(9,904)</b>	<b>(8,806)</b>	<b>(4,899)</b>	<b>(1,956)</b>	<b>(5,276)</b>	<b>-188%</b>	<b>-167%</b>	<b>-93%</b>	<b>-37%</b>	<b>-100%</b>
<b>CASH FLOWS FROM FINANCING ACTIVITIES</b>										
Long term financing obtained	7,673	4,912	3,121	1,271	3,428	224%	143%	91%	37%	100%
Long term financing repaid	(300)	(999)	(1,362)	(818)	(721)	-42%	-139%	-189%	-113%	-100%
Dividend paid	(137)	(885)	(884)	(353)	(95)	-144%	-930%	-930%	-371%	-100%
Payments for lease liability against right of use asset	(811)	(730)	-	-	1,485	-55%	-49%	-	0%	100%
<b>Net cash generated from financing activities</b>	<b>6,424</b>	<b>2,298</b>	<b>875</b>	<b>100</b>	<b>4,097</b>	<b>157%</b>	<b>56%</b>	<b>21%</b>	<b>2%</b>	<b>100%</b>
Net decrease in cash and cash equivalents	(3,436)	(6,528)	(3,864)	(2,940)	893	-385%	-731%	-433%	-329%	100%
Cash and cash equivalents - at the beginning of the year	(24,998)	(18,470)	(14,606)	(11,665)	(12,559)	-199%	-147%	-116%	-93%	-100%
<b>Cash and cash equivalents - at the end of the year</b>	<b>(28,434)</b>	<b>(24,998)</b>	<b>(18,470)</b>	<b>(14,606)</b>	<b>(11,665)</b>	<b>-244%</b>	<b>-214%</b>	<b>-158%</b>	<b>-125%</b>	<b>-100%</b>



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## APPENDIX K

Balance Sheet	Company 'D' Balance Sheet Analysis														
	Pak Rs in Million					Horizontal Analysis					Vertical Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
<b>EQUITY AND LIABILITIES</b>															
<b>SHARE CAPITAL AND RESERVES</b>															
Authorized share capital															
70,000,000 ordinary shares of Rs. 10 each	700	700	700	700	700	100%	100%	100%	100%	100%	1%	1%	1%	2%	2%
Issued, subscribed & paid up capital	300	300	300	300	300	100%	100%	100%	100%	100%	0%	1%	1%	1%	1%
Others capital reserves	1,144	1,180	1,374	1,525	1,607	71%	73%	85%	95%	100%	2%	2%	3%	4%	4%
Revaluation surplus on property, plant & equipment	18,009	9,243	9,559	9,575	6,306	6003%	3081%	3186%	3192%	100%	27%	17%	18%	22%	17%
Unappropriated profits-revenue reserve	15,244	9,956	10,507	8,615	7,296	209%	136%	144%	118%	100%	23%	18%	19%	20%	20%
<b>Total Equity</b>	<b>34,697</b>	<b>20,680</b>	<b>21,739</b>	<b>20,015</b>	<b>15,509</b>	<b>224%</b>	<b>133%</b>	<b>140%</b>	<b>129%</b>	<b>100%</b>	<b>52%</b>	<b>37%</b>	<b>40%</b>	<b>46%</b>	<b>43%</b>
<b>LIABILITIES</b>															
<b>NON-CURRENT LIABILITIES</b>															
Long term financing - secured	10,825	11,633	8,755	7,042	6,069	178%	192%	144%	116%	100%	16%	21%	16%	16%	17%
Long term musharika - secured	1,864	2,628	1,690	1,061	879	212%	299%	192%	121%	100%	3%	5%	3%	2%	2%
Lease liability - unsecured	73	71	-	-	-	102%	100%	-	-	-	0%	0%	-	-	-
Long term payable -GIDC	304	-	-	-	-	100%	-	-	-	-	0%	-	-	-	-
Staff retirement benefit	289	292	274	253	204	141%	143%	134%	124%	100%	0%	1%	1%	1%	1%
Deferred taxation	4,357	3,126	3,039	2,268	2,176	200%	144%	140%	104%	100%	6%	6%	6%	5%	6%
Deferred grant	6	20	-	-	-	29%	100%	-	-	-	0%	0%	-	-	-
<b>Total Non-Current Liabilities</b>	<b>17,717</b>	<b>17,769</b>	<b>13,758</b>	<b>10,624</b>	<b>9,327</b>	<b>190%</b>	<b>190%</b>	<b>148%</b>	<b>114%</b>	<b>100%</b>	<b>26%</b>	<b>32%</b>	<b>25%</b>	<b>25%</b>	<b>26%</b>
<b>CURRENT LIABILITIES</b>															
Current portion of non-current liabilities	3,664	1,011	2,518	1,828	1,749	209%	58%	144%	104%	100%	5%	2%	5%	4%	5%
Trade and other payables	4,570	3,386	3,711	2,488	1,841	248%	184%	202%	135%	100%	7%	6%	7%	6%	5%
Contract liabilities	151	283	75	-	-	201%	377%	100%	-	-	0%	1%	0%	-	-
Unclaimed dividend	19	14	12	9	8	238%	172%	155%	113%	100%	0%	0%	0%	0%	0%
Short term borrowings - secured	6,007	11,537	12,300	7,953	7,516	80%	153%	164%	106%	100%	9%	21%	23%	18%	21%
Accrued mark-up	299	517	481	275	249	120%	207%	193%	110%	100%	0%	1%	1%	1%	1%
<b>Total Current Liabilities</b>	<b>14,710</b>	<b>16,747</b>	<b>19,098</b>	<b>12,553</b>	<b>11,364</b>	<b>129%</b>	<b>147%</b>	<b>168%</b>	<b>110%</b>	<b>100%</b>	<b>22%</b>	<b>30%</b>	<b>35%</b>	<b>29%</b>	<b>31%</b>
<b>Total Liabilities</b>	<b>32,427</b>	<b>34,516</b>	<b>32,856</b>	<b>23,177</b>	<b>20,691</b>	<b>157%</b>	<b>167%</b>	<b>159%</b>	<b>112%</b>	<b>100%</b>	<b>48%</b>	<b>63%</b>	<b>60%</b>	<b>54%</b>	<b>57%</b>
<b>Total Equity and Liabilities</b>	<b>67,124</b>	<b>55,196</b>	<b>54,595</b>	<b>43,192</b>	<b>36,201</b>	<b>185%</b>	<b>152%</b>	<b>151%</b>	<b>119%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>NON-CURRENT ASSETS</b>															
Property, plant and equipment	38,416	28,197	27,229	22,332	17,964	214%	157%	152%	124%	100%	57%	51%	50%	52%	50%
Long term investments	2,568	2,417	3,162	3,742	3,823	67%	63%	83%	98%	100%	4%	4%	6%	9%	11%
Long term loan and advances	3,361	2,734	1,905	1,637	873	385%	313%	218%	188%	100%	5%	5%	3%	4%	2%
Long term deposits	24	24	24	24	24	99%	99%	98%	98%	100%	0%	0%	0%	0%	0%
<b>Total Non-Current Assets</b>	<b>44,370</b>	<b>33,371</b>	<b>32,321</b>	<b>27,735</b>	<b>22,684</b>	<b>196%</b>	<b>147%</b>	<b>142%</b>	<b>122%</b>	<b>100%</b>	<b>66%</b>	<b>60%</b>	<b>59%</b>	<b>64%</b>	<b>63%</b>
<b>CURRENT ASSETS</b>															
Stores, spares and loose tools	850	699	762	500	585	145%	120%	130%	85%	100%	1%	1%	1%	1%	2%
Stock in trade	15,470	14,504	13,033	8,124	6,420	241%	226%	203%	127%	100%	23%	26%	24%	19%	18%
Trade debts	4,738	5,146	6,132	4,842	4,243	112%	121%	145%	114%	100%	7%	9%	11%	11%	12%
Loans and advances	226	205	93	142	750	30%	27%	12%	19%	100%	0%	0%	0%	0%	2%
Deposits, prepayments and other receivables	120	465	375	-	-	32%	124%	100%	0%	0%	0%	1%	1%	-	-
Mark-up accrued	-	-	-	538	257	0%	0%	0%	210%	100%	-	-	-	1%	1%
Short term investment	-	29	261	140	46	0%	63%	565%	302%	100%	-	0%	0%	0%	0%
Tax refunds due from the Government-net	176	164	183	198	220	80%	74%	83%	90%	100%	0%	0%	0%	0%	1%
Cash and bank balances	1,018	314	1,236	904	878	116%	36%	141%	103%	100%	2%	1%	2%	2%	2%
<b>Total Current Assets</b>	<b>156</b>	<b>299</b>	<b>199</b>	<b>68</b>	<b>116</b>	<b>134%</b>	<b>257%</b>	<b>171%</b>	<b>58%</b>	<b>100%</b>	<b>0%</b>	<b>1%</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>
<b>Total Assets</b>	<b>22,754</b>	<b>21,824</b>	<b>22,274</b>	<b>15,457</b>	<b>13,516</b>	<b>168%</b>	<b>161%</b>	<b>165%</b>	<b>114%</b>	<b>100%</b>	<b>34%</b>	<b>40%</b>	<b>41%</b>	<b>36%</b>	<b>37%</b>
<b>Total Assets</b>	<b>67,124</b>	<b>55,196</b>	<b>54,595</b>	<b>43,192</b>	<b>36,201</b>	<b>185%</b>	<b>152%</b>	<b>151%</b>	<b>119%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>



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## APPENDIX L

Company 'D' Income Statement's Analysis															
Profit and Loss Statement	Pak Rs in Million					Horizontal Analysis					Vertical Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
Sales/Revenue - <i>net</i>	52,132	39,714	36,341	31,288	26,361	198%	151%	138%	119%	100%	100%	100%	100%	100%	100%
Cost of sales	-44,127	-35,153	-32,010	-28,553	-24,606	-179%	-143%	-130%	-116%	-100%	-85%	-89%	-88%	-91%	-93%
<b>Gross profit</b>	<b>8,005</b>	<b>4,561</b>	<b>4,332</b>	<b>2,735</b>	<b>1,755</b>	<b>456%</b>	<b>260%</b>	<b>247%</b>	<b>156%</b>	<b>100%</b>	<b>15%</b>	<b>11%</b>	<b>12%</b>	<b>9%</b>	<b>7%</b>
Selling/ Marketing & Distribution expenses	-372	-382	-223	-282	-427	-87%	-90%	-52%	-66%	-100%	-1%	-1%	-1%	-1%	-2%
Administrative expenses	-404	-346	-307	-282	-265	-153%	-131%	-116%	-107%	-100%	-1%	-1%	-1%	-1%	-1%
Other expenses	-686	-631	-229	-128	-37	-1834%	-1686%	-612%	-343%	-100%	-1%	-2%	-1%	-0.4%	-0.1%
SGA expense	-1,462	-1,359	-759	-693	-729	-201%	-186%	-104%	-95%	-100%	-3%	-3%	-2%	-2%	-3%
Fair value gain -financial assets	217	-	-	-	-	100%	-	-	-	-	0.4%	-	-	-	-
Other income	644	685	686	542	443	145%	154%	155%	122%	100%	1%	2%	2%	2%	2%
<b>Operating profit</b>	<b>7,404</b>	<b>3,887</b>	<b>4,258</b>	<b>2,585</b>	<b>1,470</b>	<b>504%</b>	<b>264%</b>	<b>290%</b>	<b>176%</b>	<b>100%</b>	<b>14%</b>	<b>10%</b>	<b>12%</b>	<b>8%</b>	<b>6%</b>
Share of loss from associates -net	-47	-884	-	-	-	-5%	-100%	-	-	-	-0.1%	-2%	-	-	-
Finance cost	-1,795	-2,945	-1,894	-1,144	-879	-204%	-335%	-216%	-130%	-100%	-3%	-7%	-5%	-4%	-3%
<b>Profit before taxation</b>	<b>5,563</b>	<b>58</b>	<b>2,364</b>	<b>1,441</b>	<b>591</b>	<b>941%</b>	<b>10%</b>	<b>400%</b>	<b>244%</b>	<b>100%</b>	<b>11%</b>	<b>0%</b>	<b>7%</b>	<b>5%</b>	<b>2%</b>
Taxation	-131	-627	-849	-228	-203	-65%	-309%	-418%	-112%	-100%	0%	-2%	-2%	-1%	-1%
<b>Profit / Loss after taxation</b>	<b>5,432</b>	<b>-569</b>	<b>1,516</b>	<b>1,214</b>	<b>388</b>	<b>1399%</b>	<b>-147%</b>	<b>390%</b>	<b>313%</b>	<b>100%</b>	<b>10%</b>	<b>-1%</b>	<b>4%</b>	<b>4%</b>	<b>1%</b>



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## APPENDIX M

<b>Company 'D' Cash Flow Statement's Analysis</b>										
<b>Cash Flow Statement</b>	<b>Pak Rs in Million</b>					<b>Horizontal Analysis</b>				
	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>	<b>2021</b>	<b>2020</b>	<b>2019</b>	<b>2018</b>	<b>2017</b>
<b>CASH FLOW FROM OPERATING ACTIVITIES</b>										
Cash generated from operations	9,468	4,030	2,092	2,099	-1,323	715%	304%	158%	159%	-100%
Payments for:										
Gratuity paid to employees	-122	-101	-96	-75	-96	-127%	-105%	-100%	-78%	-100%
Taxes paid	-946	375	-439	-262	-472	-200%	-79%	-93%	-55%	-100%
Finance cost paid - net	-	-	-	-	-864	-	-	-	-	-100%
<b>Net cash (used in) generated from operating activities</b>	<b>8,400</b>	<b>4,303</b>	<b>1,557</b>	<b>1,762</b>	<b>-2,755</b>	<b>305%</b>	<b>156%</b>	<b>57%</b>	<b>64%</b>	<b>-100%</b>
<b>CASH FLOW FROM INVESTING ACTIVITIES</b>										
Fixed capital expenditure	-1,122	-2,152	-2,712	-1,563	-1,940	-58%	-111%	-140%	-81%	-100%
Proceeds from sale of property, plant and equipment	17	4	18	35	19	88%	19%	92%	179%	100%
Proceeds from sale of equity instruments of associate	-	291	-	-	-	-	100%	-	-	-
Long term investments	-	-	-	-	-0.1	-	-	-	-	-100%
Long term loan and advances	-680	-691	-798	-764	-328	-208%	-211%	-244%	-233%	-100%
Finance income received	-	-	83	-	-	-	-	100%	-	-
Proceeds from sale of short term investments	-	-	-	13	-	-	-	-	100%	-
Long term deposits	-	-0.1	-	0.4	-	-	-15%	-	100%	-
Dividend received from associated company	-	-	121	156	-	-	-	77%	100%	-
Dividend received	311	-	-	-	226	138%	-	-	-	100%
<b>Net cash used in investing activities</b>	<b>-1,474</b>	<b>-2,549</b>	<b>-3,288</b>	<b>-2,123</b>	<b>-2,022</b>	<b>-73%</b>	<b>-126%</b>	<b>-163%</b>	<b>-105%</b>	<b>-100%</b>
<b>CASH FLOW FROM FINANCING ACTIVITIES</b>										
Long term finances obtained	2,386	3,048	2,609	2,484	3,429	70%	89%	76%	72%	100%
Repayment of long term finances	-1,049	-1,450	-1,511	-1,407	-1,958	-54%	-74%	-77%	-72%	-100%
Long term musharika obtained	-	1,000	1,100	500	-	-	200%	220%	100%	-
Long term musharika repaid	-270	-271	-318	-343	-224	-121%	-121%	-142%	-153%	-100%
Net increase (decrease) in short term borrowings	-5,530	-763	1,958	437	3,631	-152%	-21%	54%	12%	100%
Lease rentals paid	-9	-8	-	-	-	-110%	-100%	-	-	-
Finance cost paid - net	-2,002	-2,899	-1,762	-1,202	-	-167%	-241%	-147%	-100%	-
Dividend paid	-595	-314	-252	-157	-70	-847%	-447%	-358%	-223%	-100%
<b>Net cash generated from (used in) financing activities</b>	<b>-7,069</b>	<b>-1,655</b>	<b>1,824</b>	<b>313</b>	<b>4,808</b>	<b>-147%</b>	<b>-34%</b>	<b>38%</b>	<b>7%</b>	<b>100%</b>
<b>NET INCREASE/ (DECREASE) IN CASH &amp; CASH EQUIVALENTS</b>	<b>-143</b>	<b>99</b>	<b>93</b>	<b>-48</b>	<b>31</b>	<b>-463%</b>	<b>322%</b>	<b>300%</b>	<b>-157%</b>	<b>100%</b>
Cash and cash equivalents at the beginning of the year	299	199	68	116	85	350%	233%	80%	136%	100%
<b>CASH AND CASH EQUIVALENTS AT THE END OF THE YEAR</b>	<b>156</b>	<b>299</b>	<b>161</b>	<b>68</b>	<b>116</b>	<b>134%</b>	<b>257%</b>	<b>138%</b>	<b>58%</b>	<b>100%</b>



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## APPENDIX N

Company 'E' Balance Sheet Analysis																
Balance Sheet	Pak Rs in Million					Horizontal Analysis					Vertical Analysis					
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	
<b>EQUITY AND LIABILITIES</b>																
<b>SHARE CAPITAL AND RESERVES</b>																
Authorized share capital																
70,000,000 ordinary shares of Rs. 10 each	700	700	700	700	700	100%	100%	100%	100%	100%	4%	4%	4%	5%	6%	
Issued, subscribed & paid up capital	308	308	308	308	308	100%	100%	100%	100%	100%	2%	2%	2%	2%	3%	
Reserves	115	115	166	176	179	64%	64%	92%	98%	100%	1%	1%	1%	1%	2%	
Fair value (loss) / gain on short term investment	(127)	46	-	-	-	-278%	100%	-	-	-	-1%	0.3%	-	-	-	
Revaluation surplus on freehold land	1,708	949	949	949	634	269%	150%	150%	150%	100%	9%	6%	6%	7%	6%	
Unappropriated profits-revenue reserve	4,066	2,458	2,467	1,968	1,738	234%	141%	142%	113%	100%	21%	16%	15%	15%	15%	
<b>Total Equity</b>	<b>6,070</b>	<b>3,877</b>	<b>3,891</b>	<b>3,402</b>	<b>2,859</b>	<b>212%</b>	<b>136%</b>	<b>136%</b>	<b>119%</b>	<b>100%</b>	<b>31%</b>	<b>25%</b>	<b>23%</b>	<b>26%</b>	<b>25%</b>	
<b>LIABILITIES</b>																
<b>NON-CURRENT LIABILITIES</b>																
Long term finance	2,766	2,664	1,827	1,199	1,762	157%	151%	104%	68%	100%	14%	17%	11%	9%	16%	
Liabilities against assets subject to finance lease	-	-	9	14	1	-	-	695%	1134%	100%	-	-	0%	0.1%	0%	
Lease liability	66	58	-	-	-	113%	100%	-	-	-	0.3%	0.4%	-	-	-	
Deferred liabilities	109	6	-	-	-	1933%	100%	-	-	-	1%	0%	-	-	-	
Staff retirement benefit- gratuity	282	258	241	268	185	152%	140%	130%	145%	100%	1%	1%	1%	1%	1%	
<b>Total Non-Current Liabilities</b>	<b>3,224</b>	<b>2,986</b>	<b>2,077</b>	<b>1,482</b>	<b>1,949</b>	<b>165%</b>	<b>153%</b>	<b>107%</b>	<b>76%</b>	<b>100%</b>	<b>17%</b>	<b>19%</b>	<b>12%</b>	<b>11%</b>	<b>17%</b>	
<b>CURRENT LIABILITIES</b>																
Current portion of non-current liabilities	914	143	529	669	833	110%	17%	64%	80%	100%	5%	1%	3%	5%	7%	
Trade and other payables	1,649	1,685	2,013	1,323	872	189%	193%	231%	152%	100%	9%	11%	12%	10%	8%	
Unclaimed dividend	11	9	17	16	5	209%	168%	343%	320%	100%	0.1%	0.1%	0.1%	0.1%	0%	
Short term borrowings	6,894	6,658	7,816	6,080	4,582	150%	145%	171%	133%	100%	36%	42%	46%	46%	41%	
Accrued mark-up	260	266	309	160	133	196%	201%	233%	120%	100%	1%	2%	2%	1%	1%	
Taxation	291	198	158	135	71	413%	280%	223%	192%	100%	2%	1%	1%	1%	1%	
<b>Total Current Liabilities</b>	<b>10,019</b>	<b>8,958</b>	<b>10,843</b>	<b>8,384</b>	<b>6,495</b>	<b>154%</b>	<b>138%</b>	<b>167%</b>	<b>129%</b>	<b>100%</b>	<b>52%</b>	<b>57%</b>	<b>65%</b>	<b>63%</b>	<b>57%</b>	
<b>Total Liabilities</b>	<b>13,243</b>	<b>11,944</b>	<b>12,920</b>	<b>9,865</b>	<b>8,444</b>	<b>157%</b>	<b>141%</b>	<b>153%</b>	<b>117%</b>	<b>100%</b>	<b>69%</b>	<b>75%</b>	<b>77%</b>	<b>74%</b>	<b>75%</b>	
<b>Total Equity and Liabilities</b>	<b>19,312</b>	<b>15,821</b>	<b>16,810</b>	<b>13,267</b>	<b>11,303</b>	<b>171%</b>	<b>140%</b>	<b>149%</b>	<b>117%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	
<b>NON-CURRENT ASSETS</b>																
Property, plant and equipment	7,995	6,393	6,227	5,633	5,371	149%	119%	116%	105%	100%	41%	40%	37%	42%	48%	
Intangible assets	1	2	3	4	5	18%	39%	59%	80%	100%	0%	0%	0%	0%	0%	
Long term investments	-	36	764	838	856	-	4%	89%	98%	100%	-	0.2%	5%	6%	8%	
Deferred tax asset	133	136	71	66	55	241%	246%	129%	120%	100%	1%	1%	0.4%	0.5%	0.5%	
Long term deposits	29	29	20	21	20	146%	146%	102%	107%	100%	0.1%	0.2%	0.1%	0.2%	0.2%	
<b>Total Non-Current Assets</b>	<b>8,158</b>	<b>6,595</b>	<b>7,085</b>	<b>6,562</b>	<b>6,306</b>	<b>129%</b>	<b>105%</b>	<b>112%</b>	<b>104%</b>	<b>100%</b>	<b>42%</b>	<b>42%</b>	<b>42%</b>	<b>49%</b>	<b>56%</b>	
<b>CURRENT ASSETS</b>																
Stores, spares and loose tools	391	268	205	221	182	215%	147%	112%	121%	100%	2%	2%	1%	2%	2%	
Stock in trade	5,051	4,669	5,945	3,222	3,009	168%	155%	198%	107%	100%	26%	30%	35%	24%	27%	
Trade debts	2,851	1,827	2,281	2,006	604	472%	303%	378%	332%	100%	15%	12%	14%	15%	5%	
Loans and advances	1,152	975	402	264	308	374%	316%	130%	86%	100%	6%	6%	2%	2%	3%	
Prepayments and other receivables	125	76	35	27	31	405%	245%	115%	88%	100%	1%	0.5%	0.2%	0.2%	0.3%	
Short term investment	697	782	137	107	110	634%	712%	125%	97%	100%	4%	5%	1%	1%	1%	
Tax refunds & export rebate due from the	792	585	607	780	656	121%	89%	92%	119%	100%	4%	4%	4%	6%	6%	
Cash and bank balances	96	43	113	79	97	99%	44%	117%	82%	100%	0.5%	0.3%	0.7%	1%	1%	
<b>Total Current Assets</b>	<b>11,155</b>	<b>9,226</b>	<b>9,725</b>	<b>6,705</b>	<b>4,997</b>	<b>223%</b>	<b>185%</b>	<b>195%</b>	<b>134%</b>	<b>100%</b>	<b>58%</b>	<b>58%</b>	<b>58%</b>	<b>51%</b>	<b>44%</b>	
<b>Total Assets</b>	<b>19,312</b>	<b>15,821</b>	<b>16,810</b>	<b>13,267</b>	<b>11,303</b>	<b>171%</b>	<b>140%</b>	<b>149%</b>	<b>117%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	



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## APPENDIX O

Income Statement	Company 'E' Income Statement's Analysis														
	Pak Rs in Million					Horizontal Analysis					Vertical Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
Sales/Revenue - <i>net</i>	24,030	17,275	16,605	13,914	11,342	212%	152%	146%	123%	100%	100%	100%	100%	100%	100%
Cost of sales	-20,520	-15,214	-14,823	-12,568	-10,358	-198%	-147%	-143%	-121%	-100%	-85%	-88%	-89%	-90%	-91%
<b>Gross profit</b>	<b>3,510</b>	<b>2,061</b>	<b>1,783</b>	<b>1,346</b>	<b>984</b>	<b>357%</b>	<b>209%</b>	<b>181%</b>	<b>137%</b>	<b>100%</b>	<b>15%</b>	<b>12%</b>	<b>11%</b>	<b>10%</b>	<b>9%</b>
Marketing & Distribution expenses	-298	-234	-156	-144	-117	-256%	-200%	-134%	-123%	-100%	-1%	-1%	-1%	-1%	-1%
Administrative expenses	-206	-196	-189	-166	-146	-141%	-134%	-129%	-114%	-100%	-1%	-1%	-1%	-1%	-1%
Other operating expenses	-135	-355	-68	-50	-26	-530%	-1388%	-266%	-196%	-100%	-1%	-2%	-0.4%	-0.4%	-0.2%
SGA expense	-640	-784	-413	-360	-288	222%	272%	143%	125%	100%	-3%	-5%	-2%	-3%	-3%
Other income	102	129	324	99	23	439%	554%	1388%	426%	100%	0.4%	1%	2%	1%	0.2%
<b>Operating profit</b>	<b>2,973</b>	<b>1,406</b>	<b>1,694</b>	<b>1,085</b>	<b>719</b>	<b>413%</b>	<b>195%</b>	<b>235%</b>	<b>151%</b>	<b>100%</b>	<b>12%</b>	<b>8%</b>	<b>10%</b>	<b>8%</b>	<b>6%</b>
Share of loss from associates -net	-36	-92	-71	-22	-12	-297%	-764%	-590%	-181%	-100%	-0.1%	-0.5%	-0.4%	-0.2%	0%
Finance cost	-918	-1,167	-991	-622	-540	-170%	-216%	-184%	-115%	-100%	-4%	-7%	-6%	-4%	-0.1%
<b>Profit before taxation</b>	<b>2,019</b>	<b>148</b>	<b>631</b>	<b>441</b>	<b>168</b>	<b>1203%</b>	<b>88%</b>	<b>376%</b>	<b>263%</b>	<b>100%</b>	<b>8%</b>	<b>1%</b>	<b>4%</b>	<b>3%</b>	<b>1%</b>
Taxation	-286	-86	-129	-131	-67	-430%	-130%	-193%	-197%	-100%	-1%	-0.5%	-1%	-1%	-1%
<b>Profit / Loss after taxation</b>	<b>1,733</b>	<b>61</b>	<b>503</b>	<b>311</b>	<b>101</b>	<b>1712%</b>	<b>61%</b>	<b>497%</b>	<b>307%</b>	<b>100%</b>	<b>7%</b>	<b>0.4%</b>	<b>3%</b>	<b>2%</b>	<b>1%</b>



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## APPENDIX P

Company 'E' Cash Flow Statement's Analysis										
Cash Flow Statement	Pak Rs in Million					Horizontal Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
<b>CASH FLOW FROM OPERATING ACTIVITIES</b>										
Cash generated from operations	1,416	2,563	-272	90	262	541%	979%	-104%	34%	100%
Payments for:										
Staff ret'd benefit/ Gratuity paid to employees	-33	-39	-27	-25	-24	-137%	-161%	-112%	-104%	-100%
Taxes paid	-240	-130	-105	-29	-78	-309%	-167%	-135%	-37%	-100%
Workers' (profit) participation fund paid	-	-1,205	-	-595	-20	-	-6146%	-	-3033%	-100%
in Government treasury	-12	-35	-24	-10	-	-123%	-358%	-241%	-100%	-
Finance cost paid - net	-923	-	-840	-	-519	-178%	-	-162%	-	-100%
<b>Net cash (used in) generated from operating activities</b>	<b>208</b>	<b>1,153</b>	<b>-1,268</b>	<b>-568</b>	<b>-379</b>	<b>55%</b>	<b>304%</b>	<b>-334%</b>	<b>-150%</b>	<b>-100%</b>
<b>CASH FLOW FROM INVESTING ACTIVITIES</b>										
Fixed capital expenditure	-1,167	-450	-858	-228	-445	-262%	-101%	-193%	-51%	-100%
Long term investments	-	-	-	-	-71	-	-	-	-	-100%
Investment made in share	-88	-	-	-	-	-100%	-	-	-	-
Long term deposits	-	-9	1	-1	-4	-	-206%	19%	-31%	-100%
Deferred liabilities	195	12	-	-	-	1622%	100%	-	-	-
Sale proceeds and insurance claims of operating fixed assets	31	5	9	30	6	488%	73%	151%	484%	100%
<b>Net cash used in investing activities</b>	<b>-1,029</b>	<b>-442</b>	<b>-848</b>	<b>-199</b>	<b>-515</b>	<b>-200%</b>	<b>-86%</b>	<b>-165%</b>	<b>-39%</b>	<b>-100%</b>
<b>CASH FLOW FROM FINANCING ACTIVITIES</b>										
Long term finances - net	777	445	484	-732	-77	1012%	580%	630%	-954%	-100%
Net increase (decrease) in short term borrowings	236	-1,158	1,736	1,499	1,022	23%	-113%	170%	147%	100%
Lease finances - net	13	48	-2	19	-17	77%	286%	-11%	110%	-100%
Dividend paid	-152	-117	-68	-35	-15	-994%	-763%	-446%	-229%	-100%
<b>Net cash generated from (used in) financing activities</b>	<b>874</b>	<b>-781</b>	<b>2,149</b>	<b>750</b>	<b>913</b>	<b>96%</b>	<b>-86%</b>	<b>235%</b>	<b>82%</b>	<b>100%</b>
<b>NET INCREASE (DECREASE) IN CASH AND CASH EQUIVALENTS</b>	<b>53</b>	<b>-70</b>	<b>34</b>	<b>-18</b>	<b>19</b>	<b>276%</b>	<b>-364%</b>	<b>177%</b>	<b>-91%</b>	<b>100%</b>
Cash and cash equivalents at the beginning of the year	43	113	79	97	77	56%	146%	102%	125%	100%
<b>CASH AND CASH EQUIVALENTS AT THE END OF THE YEAR</b>	<b>96</b>	<b>43</b>	<b>113</b>	<b>79</b>	<b>97</b>	<b>99%</b>	<b>44%</b>	<b>117%</b>	<b>82%</b>	<b>100%</b>



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## APPENDIX Q

Balance Sheet	Company 'F' Balance Sheet Analysis														
	Pak Rs in Million					Horizontal Analysis					Vertical Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
<b>EQUITY AND LIABILITIES</b>															
<b>SHARE CAPITAL AND RESERVES</b>															
Authorized share capital															
35,000,000 ordinary shares of Rs.10 each	350	350	350	350	350	100%	100%	100%	100%	100%	1%	1%	1%	1%	1%
Issued,subscribed & paid up capital	217	217	201	201	201	108%	108%	100%	100%	100%	0.4%	0.5%	0.5%	0.5%	0.5%
Unappropriated profits-revenue reserve	19,630	16,546	18,909	14,995	-	131%	110%	126%	100%	-	38%	37%	43%	35%	-
Reserves	1,171	(286)	(2,728)	827	16,794	7%	-2%	-16%	5%	100%	2%	-1%	-6%	2%	40%
<b>Total Equity</b>	<b>21,019</b>	<b>16,477</b>	<b>16,382</b>	<b>16,022</b>	<b>16,995</b>	<b>124%</b>	<b>97%</b>	<b>96%</b>	<b>94%</b>	<b>100%</b>	<b>41%</b>	<b>37%</b>	<b>38%</b>	<b>38%</b>	<b>40%</b>
<b>LIABILITIES</b>															
<b>NON-CURRENT LIABILITIES</b>															
Long term finance/ liabilities	14,321	14,737	12,257	12,858	13,326	107%	111%	92%	96%	100%	28%	33%	28%	30%	31%
Deferred liabilities	338	298	510	478	405	83%	73%	126%	118%	100%	1%	1%	1%	1%	1%
<b>Total Non-Current Liabilities</b>	<b>14,659</b>	<b>15,035</b>	<b>12,767</b>	<b>13,336</b>	<b>13,731</b>	<b>107%</b>	<b>109%</b>	<b>93%</b>	<b>97%</b>	<b>100%</b>	<b>28%</b>	<b>34%</b>	<b>29%</b>	<b>32%</b>	<b>32%</b>
<b>CURRENT LIABILITIES</b>															
Current portion of long term payable	-	-	-	-	6	-	-	-	-	100%	-	-	-	-	0%
Current portion of long term financing/ liabilities	3,284	737	2,001	1,139	557	589%	132%	359%	204%	100%	6%	2%	5%	3%	1%
Trade and other payables	3,910	2,934	3,443	3,867	3,107	126%	94%	111%	124%	100%	8%	7%	8%	9%	7%
Contract liabilities	1,012	830	851	-	-	119%	98%	100%	-	-	2%	2%	2%	-	-
Unclaimed dividend	2	2	2	1	1	120%	125%	132%	96%	100%	0%	0%	0%	0%	0%
Short term borrowings	7,679	8,071	7,798	7,302	7,464	103%	108%	104%	98%	100%	15%	18%	18%	17%	18%
Accrued interest/ mark-up	234	361	320	185	175	134%	206%	183%	105%	100%	0.5%	1%	1%	0.4%	0.4%
Provision for taxation	-	-	-	477	379	-	-	-	126%	100%	-	-	-	1%	1%
<b>Total Current Liabilities</b>	<b>16,121</b>	<b>12,935</b>	<b>14,414</b>	<b>12,972</b>	<b>11,690</b>	<b>138%</b>	<b>111%</b>	<b>123%</b>	<b>111%</b>	<b>100%</b>	<b>31%</b>	<b>29%</b>	<b>33%</b>	<b>31%</b>	<b>28%</b>
<b>Total Liabilities</b>	<b>30,780</b>	<b>27,970</b>	<b>27,181</b>	<b>26,308</b>	<b>25,421</b>	<b>121%</b>	<b>110%</b>	<b>107%</b>	<b>103%</b>	<b>100%</b>	<b>59%</b>	<b>63%</b>	<b>62%</b>	<b>62%</b>	<b>60%</b>
<b>Total Equity and Liabilities</b>	<b>51,798</b>	<b>44,446</b>	<b>43,563</b>	<b>42,330</b>	<b>42,416</b>	<b>122%</b>	<b>105%</b>	<b>103%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>NON-CURRENT ASSETS</b>															
Property, plant and equipment	14,714	13,119	12,595	11,415	10,575	139%	124%	119%	108%	100%	28%	30%	29%	27%	25%
Investment property	32	32	32	32	32	100%	100%	100%	100%	100%	0.1%	0.1%	0.1%	0.1%	0.1%
Intangible assets	0.1	0.2	1	2	3	4%	7%	21%	69%	100%	0%	0%	0%	0%	0%
Long term investments	14,273	13,613	14,257	14,927	17,513	82%	78%	81%	85%	100%	28%	31%	33%	35%	41%
Long term loan and advances	101	112	136	519	297	34%	38%	46%	175%	100%	0.2%	0.3%	0.3%	1%	1%
Long term deposits and prepayments	88	88	88	88	82	107%	107%	107%	108%	100%	0.2%	0.2%	0.2%	0.2%	0.2%
<b>Total Non-Current Assets</b>	<b>29,207</b>	<b>26,964</b>	<b>27,108</b>	<b>26,983</b>	<b>28,502</b>	<b>102%</b>	<b>95%</b>	<b>95%</b>	<b>95%</b>	<b>100%</b>	<b>56%</b>	<b>61%</b>	<b>62%</b>	<b>64%</b>	<b>67%</b>
<b>CURRENT ASSETS</b>															
Stores, spares and loose tools	438	471	394	390	330	133%	143%	120%	118%	100%	1%	1%	1%	1%	1%
Stock in trade	12,885	8,911	7,482	5,472	5,425	238%	164%	138%	101%	100%	25%	20%	17%	13%	13%
Trade debts	2,634	2,783	2,198	2,947	1,724	153%	161%	128%	171%	100%	5%	6%	5%	7%	4%
Loans and advances	59	57	72	120	369	16%	15%	20%	32%	100%	0.1%	0.1%	0.2%	0.3%	1%
Trade Deposits and short term prepayments	108	25	7	8	17	617%	143%	38%	45%	100%	0.2%	0.1%	0%	0%	0%
other receivables	985	846	922	566	267	370%	317%	346%	212%	100%	2%	2%	2%	1%	1%
Short term investment	3,487	2,956	4,031	4,103	-	85%	72%	98%	100%	-	7%	7%	9%	10%	0%
Other financial assets	-	-	-	-	4,049	-	-	-	-	100%	-	-	-	-	10%
Tax refunds due from the Government	1,919	1,366	1,253	1,686	1,662	115%	82%	75%	101%	100%	4%	3%	3%	4%	4%
Cash and bank balances	76	68	97	55	72	105%	94%	134%	77%	100%	0.1%	0.2%	0.2%	0.1%	0.2%
<b>Total Current Assets</b>	<b>22,591</b>	<b>17,483</b>	<b>16,455</b>	<b>15,347</b>	<b>13,914</b>	<b>162%</b>	<b>126%</b>	<b>118%</b>	<b>110%</b>	<b>100%</b>	<b>44%</b>	<b>39%</b>	<b>38%</b>	<b>36%</b>	<b>33%</b>
<b>Total Assets</b>	<b>51,798</b>	<b>44,446</b>	<b>43,563</b>	<b>42,330</b>	<b>42,416</b>	<b>122%</b>	<b>105%</b>	<b>103%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>



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## APPENDIX R

Income Statement	Company 'F' Income Statement's Analysis														
	Pak Rs in Million					Horizontal Analysis					Vertical Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
Sales and services/ Net turonver	38,471	34,030	34,253	28,896	25,584	150%	133%	134%	113%	100%	100%	100%	100%	100%	100%
Cost of sales and services	-32,121	-29,195	-28,847	-25,360	-22,906	-140%	-127%	-126%	-111%	-100%	-83%	-86%	-84%	-88%	-90%
<b>Gross profit</b>	<b>6,350</b>	<b>4,835</b>	<b>5,406</b>	<b>3,536</b>	<b>2,678</b>	<b>237%</b>	<b>181%</b>	<b>202%</b>	<b>132%</b>	<b>100%</b>	<b>17%</b>	<b>14%</b>	<b>16%</b>	<b>12%</b>	<b>10%</b>
Marketing & Distribution expenses	-1,232	-1,050	-1,084	-1,012	-926	-133%	-113%	-117%	-109%	-100%	-3%	-3%	-3%	-4%	-4%
Administrative expenses	-472	-447	-428	-414	-360	-131%	-124%	-119%	-115%	-100%	-1%	-1%	-1%	-1%	-1%
Other operating expenses	-401	-193	-347	-119	-365	-110%	-53%	-95%	-33%	-100%	-1%	-1%	-1%	0%	-1%
SGA expense	-2,106	-1,690	-1,859	-1,544	-1,651	-128%	-102%	-113%	-94%	-100%	-5%	-5%	-5%	-5%	-6%
Other income	1,098	721	1,485	1,348	2,917	38%	25%	51%	46%	100%	3%	2%	4%	5%	11%
<b>Operating profit</b>	<b>5,342</b>	<b>3,866</b>	<b>5,031</b>	<b>3,340</b>	<b>3,944</b>	<b>135%</b>	<b>98%</b>	<b>128%</b>	<b>85%</b>	<b>100%</b>	<b>14%</b>	<b>11%</b>	<b>15%</b>	<b>12%</b>	<b>15%</b>
Finance cost	-1,583	-2,557	-2,085	-1,391	-969	-163%	-264%	-215%	-144%	-100%	-4%	-8%	-6%	-5%	-4%
<b>Profit before taxation</b>	<b>3,759</b>	<b>1,309</b>	<b>2,946</b>	<b>1,949</b>	<b>2,975</b>	<b>126%</b>	<b>44%</b>	<b>99%</b>	<b>65%</b>	<b>100%</b>	<b>10%</b>	<b>4%</b>	<b>9%</b>	<b>7%</b>	<b>12%</b>
Taxation	-496	-130	-387	-354	-254	-196%	-51%	-152%	-139%	-100%	-1%	0%	-1%	-1%	-1%
<b>Profit / Loss after taxation</b>	<b>3,263</b>	<b>1,179</b>	<b>2,559</b>	<b>1,595</b>	<b>2,722</b>	<b>120%</b>	<b>43%</b>	<b>94%</b>	<b>59%</b>	<b>100%</b>	<b>8%</b>	<b>3%</b>	<b>7%</b>	<b>6%</b>	<b>11%</b>



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## APPENDIX S

Cash Flow Statement	Company 'F' Cash Flow Statement's Analysis									
	Pak Rs in Million					Horizontal Analysis				
	2021	2020	2019	2018	2017	2021	2020	2019	2018	2017
<b>CASH FLOW FROM OPERATING ACTIVITIES</b>										
Cash generated from operations	2,941	2,907	4,571	2,871	1,510	195%	192%	303%	190%	100%
Payments for:										
Staff ret'd benefit/ Gratuity paid to employees	-123	-72	-71	-76	-133	-93%	-55%	-54%	-58%	-100%
Long term loans, deposits and prepayments	11	24	-99	4	6	200%	442%	-1783%	69%	100%
Taxes paid	-1,097	-456	-660	-232	-233	-470%	-196%	-31%	-99%	-100%
Finance cost paid - net	-1,713	-2,383	-1,950	-1,381	-915	-187%	-260%	-213%	-151%	-100%
<b>Net cash (used in) generated from operating activities</b>	<b>20</b>	<b>19</b>	<b>1,791</b>	<b>1,186</b>	<b>235</b>	<b>9%</b>	<b>8%</b>	<b>763%</b>	<b>505%</b>	<b>100%</b>
<b>CASH FLOW FROM INVESTING ACTIVITIES</b>										
Proceeds from disposal of property, plant and equipment	311	173	217	97	39	794%	442%	555%	247%	100%
Short term investment in equity instruments	-125	-82	-	-	-	-152%	-100%	-	-	-
Investment others	-	-	-	-	-6,076	-	-	-	-	-100%
Investment in subsidiaries	-	-16	-1,000	-	-	-	-2%	-100%	-	-
Investment made	-	-	-50	-1	-	-	-	-10000%	-100%	-
Loans to subsidiaries recovered - net	-	-	482	30	-	-	-	1599%	100%	-
Investment in associates and subsidiaries	-	-	-	-513	-5,225	-	-	-	-10%	-100%
Loans to subsidiary	-	-	-	-	-250	-	-	-	-	-100%
Proceeds from sale of investment	245	498	-	505	4,824	5%	10%	-	10%	100%
Dividend received	826	615	716	705	758	109%	81%	94%	93%	100%
Interest received	2	10	24	61	11	19%	95%	219%	555%	100%
Purchase of intangible assets	-	-	-	-1	-	-	-	-	-100%	-
Rental income received	31	1	1	1	0.1	61380%	1020%	1575%	1425%	100%
Purchase of property, plant and equipment	-3,103	-1,900	-2,575	-2,040	-2,112	-147%	-90%	-122%	-97%	-100%
<b>Net cash used in investing activities</b>	<b>-1,814</b>	<b>-701</b>	<b>-2,185</b>	<b>-1,155</b>	<b>-8,031</b>	<b>-23%</b>	<b>-9%</b>	<b>-27%</b>	<b>-14%</b>	<b>-100%</b>
<b>CASH FLOW FROM FINANCING ACTIVITIES</b>										
Proceeds from long term finances	3,180	1,679	1,312	2,013	8,230	39%	20%	16%	24%	100%
Repayment of long term finances	-987	-1,428	-1,051	-1,899	-2,704	-37%	-53%	-39%	-70%	-100%
Net increase (decrease) in short term borrowings	-358	239	496	-161	2,804	-13%	9%	18%	-6%	100%
Share issuance	-	643	-	-	-	-	100%	-	-	-
Dividend paid	0	-522	-321	0	-562	0%	-93%	-57%	0%	100%
<b>Net cash generated from (used in) financing activities</b>	<b>1,835</b>	<b>610</b>	<b>436</b>	<b>-47</b>	<b>7,768</b>	<b>24%</b>	<b>8%</b>	<b>6%</b>	<b>-1%</b>	<b>100%</b>
<b>NET INCREASE(DECREASE) IN CASH AND CASH EQUIVALENTS</b>	<b>42</b>	<b>-71</b>	<b>42</b>	<b>-16</b>	<b>-28</b>	<b>147%</b>	<b>-250%</b>	<b>149%</b>	<b>-58%</b>	<b>-100%</b>
Cash and cash equivalents at the beginning of the year	34	97	55	71	99	34%	97%	55%	71%	100%
Transfer upon merger	-	8	-	-	-	-	100%	-	-	-
<b>CASH AND CASH EQUIVALENTS AT THE END OF THE YEAR</b>	<b>75</b>	<b>34</b>	<b>97</b>	<b>55</b>	<b>71</b>	<b>106%</b>	<b>47%</b>	<b>136%</b>	<b>77%</b>	<b>100%</b>



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