

Report On
Implementation of SAP at DPGC and its impact on cost optimization

By

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An internship report submitted to the BRAC Business School in partial fulfillment of the requirements for the degree of
BBA

BRAC Business School
Brac University
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Declaration

It is hereby declared that

1. The internship report submitted is my/our own original work while completing degree at Brac University.
2. The report does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The report does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

Student's Full Name & Signature:

Amrita Chhetri
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Supervisor's Full Name & Signature:

Abu Saad Md. Masnun Al Mahi, *PhD*
Assistant Professor, BRAC Business School, BRAC University

Letter of Transmittal

Abu Saad Md. Masnun Al Mahi, *PhD*

Assistant Professor

BRAC Business School
BRAC University

Badda, Dhaka-1212

Subject: **Submission of Internship Report**

Dear Sir,

I am happy to submit my academic required internship report on the topic “**Implementation of SAP at Druk Green Power Corporation limited and its cost optimization**”. This Internship report will highlight my experiences and knowledge I gained during the stay at DGPC, Darla Bhutan for three months. I'm extremely grateful for this opportunity to gained practical knowledge.

Throughout my stay at DGPC their assurances and mentorship helped a lot to make this internship successful and memorable. I believe that the experiences and knowledge that I have received during my internship journey will be very helpful in future.

I hope you will consider my efforts on working on this report

Sincerely yours,

Amrita Chhetri

20304087

BRAC Business School
BRAC University

Date: 8th Nov, 2024

Non-Disclosure Agreement

[This page is for Non-Disclosure Agreement between the Company and The Student]

This agreement is made and entered into by and between Druk Green Power Corporation (DGPC) Bhutan and the undersigned student at BRAC University.

Acknowledgement

I want to extend my heartfelt gratitude to everyone who helped me throughout my internship at Druk Green Power Corporation. This experience has been valuable and it wouldn't have been possible without anyone's guidance and support of individuals. First of all, I am deeply grateful to my Academic Supervisor **Abu Saad Md. Masnun Al Mahi, PhD** for his unstoppable support through the completion of my internship, his time and effort helping me to complete my internship report will be greatly honored, secondly my academic co-supervisor Professor **Dr. Mohammad Mujibul Haque** for being there to support me. Their guidance and support are another reason that I was able to make this report successful.

I would also like to thank my Supervisor at Druk green power corporation **Mr. Hem Raj Nepal** for his outstanding guidance and support during my internship journey. His guidance and support helped me to complete my internship successfully. I would also like to thank the entire employees of Druk Green Power Corporation for pushing me every single day to achieve and learn, their assistance was critical in making this internship a great learning experience.

Finally, I would like to thank my family and friends who have always been my backbone, encouraging me through thick and thin and simply being there with me. Their unwavering support and guidance have always kept me encouraged and motivated.

Thank you all for your unstoppable assistance.

Warm regards

Amrita Chhetri

8th Nov, 2024

Executive Summary

Bhutan, a tiny, Himalayan country located between India and China, relies significantly on hydropower. Hydropower accounts for 45% of government revenue and 12% of GDP, defining Druk Green Power Corporation (DGPC) as the country's largest revenue generator. Which was established in 2007 as a subsidiary of Druk Holding and Investments, DGPC oversees Bhutan's hydropower assets, which include five main plants and six subsidiaries. The development has brought affordable and clean energy to even many of the remote locations, improving quality of life and boosting industrial growth. Druk Green Power Corporation (DGPC) has implemented SAP, signaling a strategy move toward cost optimization and efficiency improvement. This ERP solution addresses issues such as data inaccuracies, manual inefficiencies, and increased business complexity by centralizing data and automating procedures. SAP delivers real-time insights and informed decision-making, resulting in lower operational costs and more production. SAP also improves collaboration, transparency, and regulatory compliance across divisions.

Keywords: DGPC, GDP, ERP, Subsidiaries, Complexity, Delivery.

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List of Acronyms

DGPC	Druk Green Power Corporation
ERP	Enterprise Resource Planning
GDP	Gross Domestic Products
BTFN	Bhutan Trade Fin Net
BBS	Bhutan Broadcasting Services
RGOB	Royal government of Bhutan
DHI	Druk Holding and Investment
CSR	Corporate Social Responsibility
HTC	Hydropower Training Centre
LTC	Leave Travel Concessions
PI	Production Incentive
BAS	Bhutan Accounting Standard
MW	Mega Watt
BFRS	Bhutan Financial Reporting Standard
AASBB	Accounting Auditing Standard Board of Bhutanese
ROA	Return on Asset
SAP	Systemic application program

Chapter 1

Overview of Internship

1.1 Student Information

Name: Amrita Chhetri

ID: 20304087

Program: Bachelor in Business Administration (BBA)

Major/ Specialization: Finance and minor in computer information management (CIM)

1.2 Internship Information

1.2.1 Company Information

Company name: Druk Green Power Corporation.

Period: Three months

Department/Division: Finance

Address: Darla, Chukha, Bhutan

1.2.2. Internship Company Supervisor's Information

Name: Hem Raj Nepal

Position: Associated Head of Finance

1.2.3. Job Scope: Job Description/Duties/Responsibilities

The responsibilities of finance officers at DGPC include planning and preparing financial strategies, conducting due diligence, and maintaining the financial report which includes forecasting budgets for upcoming projects, verifying the documents for the payments, verifying supplies, bills such as miscellaneous, employee's day to day expenses, like free lunch, tea for employees, tour expenses, etc. Placing purchase order and purchase requisitions. Moreover, keeping records for materials purchases, repair, reconstruct, and regulatory compliance. Making sure that the organization achieved financial goals, analysis, risk management, organization Mission and vision successfully and effectively following the financial regulation.

Duties within the finance section include identifying various types of bills from different departments for construction, repairs, purchases of materials, and processing payments. Additionally, the role involves conducting land surveys and generating income. Tracking employee overtime, collecting dues, and managing settlements. This also encompasses handling expenses related to employee tours and overseeing bank statements. These activities are necessary to carry out to run the organization smoothly and to achieve the organization goal on time.

At Druk Green Power Corporation Limited in Darla, Bhutan, I work in the finance and accounts section under the supervision of my manager, Mr. Hem Raj Nepal. To begin with my responsibilities, I am tasked with collecting various bills, including utility bills, overtime, and material purchases, vehicle bills, and ensuring they are thoroughly checked before final payments are made. I also maintain a journal of vendor and customer documents after processing payments. I was assigned to check vehicle bills with internal and external rate and crossed check the amount to pay the drivers. Moreover, I was asked to record the documents

in excel before those documents were uploaded in the SAP in order to make the errorless amount. Additionally, I was also assigned to keep the records of those documents in the book. I was also assigned to maintain the payment Voucher and Journal Voucher book. Finally, I manage daily work activities in the office to gain a clearer understanding of my duties and to enhance my practical knowledge and effectiveness in the role

1.3 Internship Outcomes

1.3.1 Student's contribution to the company

As a finance intern at Druk Green Power Corporation, I gained valuable experience in the finance and accounts section. I volunteered in various sections under finance and account, these included volunteering at the supplies section, where I was responsible for collecting supply documents from different areas and sometimes entering or updating information in SAP for clarity and payment process. I also had the opportunity to work with different bills under the utility section, which involved printing documents, classifying bills from various departments, and maintaining a journal for future reference using Excel. I also helped them to maintain a dedicated notebook with specific serial numbers to ensure documents could be located quickly and not misplaced. I helped them in recording documents in Excel before they were uploaded into SAP to ensure accuracy in the amounts. Additionally, I kept a physical record of these documents in a logbook for them to check the documents in the future. Also helped maintain the Payment Voucher and Journal Voucher books.

Additional contributions included filing documents and clearing out old paperwork by sorting and organizing it. I helped deliver documents to different departments such as the cash section, HR section, for example, once the head of the bills or supplies section completed their review, I ensured the necessary documents were processed for vendor payments, which could be made either in cash or by cheque. If payments were made by cheque, I coordinated

with the cash section to manage those transactions. I also sealed final documents with the appropriate seal to complete the process.

In my final contribution, I assisted in identifying, sealing, and verifying bills and amounts for document approval and payments. This involved various tasks, such as helping the employee section by keeping records, sorting documents, and maintaining entries in Excel and the journal voucher book. Additionally, I facilitated a few payments to external service providers and for the purchase of goods through Bhutan Trade fin Net.

1.3.2 Benefits to the Student

During my journey at Druk Green Power Corporation I got numerous opportunities for me to turn my theoretical knowledge into practical experience. Working hands-on was an exciting way to contribute to the organization and apply what I had learned.

Here are a few benefits that I have received through this internship

First of all, I have developed a very clear understanding of how a state-owned organization operates.

Secondly, I have understood the significance of various transactions, activities and the overall mission, vision, values of the company.

Thirdly, I came to understand practically about SAP Software and its main functions in a corporation.

Finally, with the help from official's guidance and support I was able to engage in practical tasks within the system that helped me to practically learn more about the organization's activities such as keeping records of the bills, purchase order, budget forecast etc.

This experience helped me understand how DGPC utilizes SAP for managing documents, transactions, assets, supplies, and materials, placing purchase orders, or purchase requisitions, etc. Additionally, I understood the general terms and conditions to work under the corporate sector, besides, I learned calculating different bills, recording and maintaining journals, and I was able to use excel more practically.

1.3.3 Problems/Difficulties

My internship at DGPC, which lasted for 3 months, was a very exciting and productive one. However, every coin has its two sides similarly along with the benefits I faced various challenges such as:

Transportation issues: First of all, the DGPC was located far from my place so it was difficult for me to get the car to reach the office on time. Moreover, they did not provide transportation further making it difficult to find a car to reach the office.

Unfocused experience in the first month: During the first month of my internship, I struggled to concentrate fully on my area of interest, which is finance. This was largely due to the mixed working environment. Given the limited number of employees, the works section operated closely with finance and accounts, which caused confusion for several weeks as I tried to regain focus and understand the dynamics.

Lack of resources: Essential resources, such as equipment, were not provided to all employees. For example, not everyone had access to a desktop, and separate workplace additionally, some key information about the company was not readily available on website which made it very difficult for me underrated the history and working environment of the company, moreover it also made it difficult for me to get key information for my internship.

Limited practice opportunities for interns: All tasks and activities were conducted through the company's internal website, and no separate practice platforms were provided for interns to learn and practice to improve their skills.

Challenges with understanding terminology: Upon joining the office, I found it challenging to understand the terms and words commonly used by the employees, which added to the initial difficulty in adapting to the environment.

Lack of structured tasks for interns: Instead of being assigned specific tasks, interns were expected to observe and learn from what other employees were doing, which made it harder to focus on a particular area of work.

Confusion due to lack of foundational knowledge: The variety of tasks and responsibilities, such as record-keeping, managing journals, clarifying bills, and approving them, left me confused because I lacked the basic foundational knowledge needed to carry out these tasks effectively.

1.3.4: Recommendations

First recommendation I would recommend for the organization is to provide proper guidance and specific mentorship for interns, helping them to understand how the organization operates and tailoring tasks to their fields of study. This approach will generate their interest and enhance their learning.

Secondly, offering access to practical software to interns because most businesses rely on such systems and accessing free version of software would greatly benefit interns because this will boost their interest, for example at DGPC give access to SAP applications or tools related to business so that interns will practically learn more and help employees. Practical experience leads to a deeper understanding of tasks, encouraging interns to engage more fully and requiring less training in the future.

Thirdly, compensating interns with a minimum amount or at least managing transportation would motivate students to participate and gain the internet to join as the intern in the organization. This will also encourage more students in future, moreover as paid roles often result in more effective work and there are high chances that organization will find someone who is more reliable for the jobs.

Fourthly, recruiting interns through a proper selection process is just like how employees are being selected because this way organizations will also have high chances of meeting someone who can match their work level.

Finally, assigning a diverse range of tasks specifically designed for interns would provide clearer learning opportunities and better prepare them for future careers.

Chapter 2

Organizational Part

2.1 Introduction

Bhutan is a tiny mountainous country located between two huge countries China and India with a total population of 792,382 in 2024, with a higher proportion of people from rural areas with basic income from agricultural and animal husbandry. Bhutan being a mountainous country has various advantages; however, hydropower was the first and most important source of income seen in the country. Thus, Hydropower contributes 45% revenue to the (RGoB) Royal Government of Bhutan and 12 % to GDP Gross domestic product.

First electricity was introduced in year 1966 from Phuentsholing one of the southern part of Bhutan with installed diesel plant 256Mw to supply the power (Tshering & Tamang,n.d) since then the hydropower is the highest and largest revenue contributor in the country. In 2007 DHI took the opportunity to merge all different plants into a single unit called Dgpc which now generates the highest revenue in the country. Thus, Druk green power corporation limited is a state-owned company generating utility with the vision of harnessing and sustaining renewable energy. The company is a wholly owned subsidiary of Druk Holding and Investment. It was founded under the Companies Act of the Kingdom of Bhutan in 2000 and has its headquarters in Thimphu, Bhutan. The company is a completely owned subsidiary of Druk holding and investment and has been incorporated under the Companies Act of the Kingdom of Bhutan 2000. Its head office is located in Thimphu Bhutan. Over the years, around 40 years Hydropower has been significantly important for people of Bhutan because it plays an important role in contributing to the country's economy. Bhutan has gradually increased the use of hydropower and now presently has the capacity 2453 MW.

This rise in hydropower has benefited all the types and sizes of industries in Bhutan. As a result of it the Bhutanese have reaped significant benefits from it, even the most rural places now have the access to clean, reliable, affordable energy. Therefore, hydropower has contributed to the growth of the nation and increased the living standard of the people in Bhutan.

2.2 Company Overview

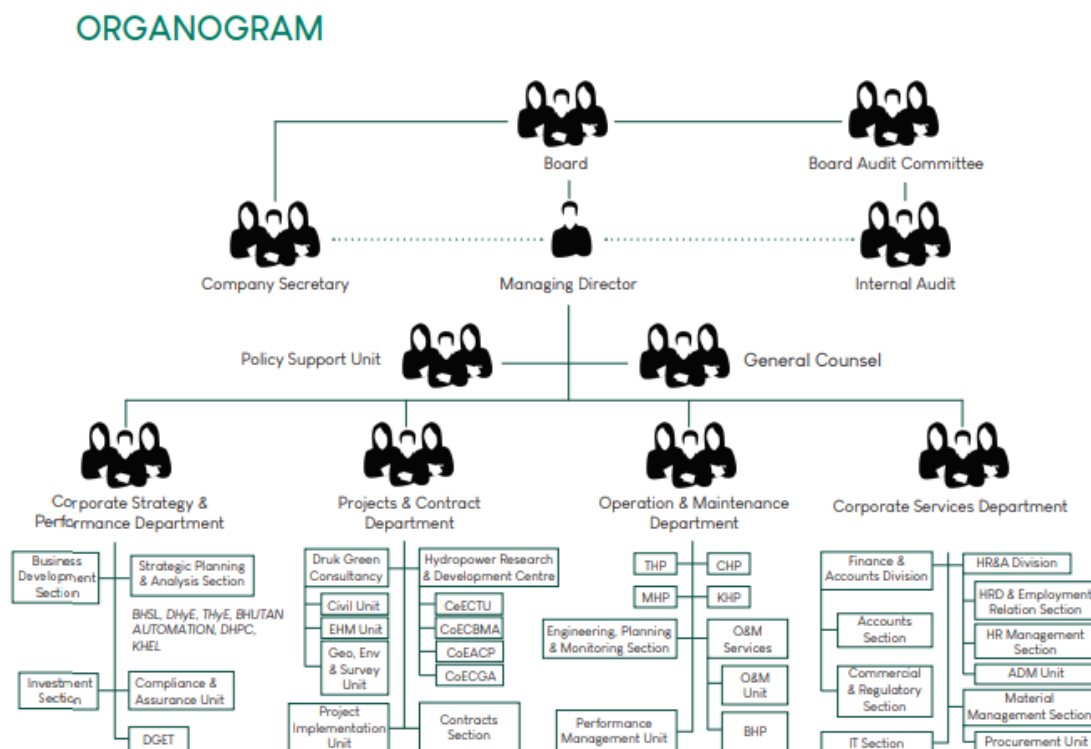


Figure: 1 Organogram

Druk green power corporation limited is a subsidiary company of the most renowned company called DHI (Druk Holding and Investment). DGPC was launched in December 2007 to manage, control and develop Bhutan hydropower resources. With the installed capacity of 2335 MW. DGPC is not only the source of utility in Bhutan but it also contributes the Bhutan highest revenue. DGPC (Druk Green Power Corporation) was to fully

utilize the country's abundant natural resources, especially water. DGPC aims to inspire and develop local expertise in hydropower among Bhutanese citizens. It encourages them to take the lead in managing and developing the country's hydropower sector, ensuring Bhutan can sustainably benefit from its rich water resources. To achieve its goals and objectives, DGPC began developing and constructing new hydropower projects, collaborating with other ventures, and sometimes independently forming subsidiaries. These subsidiaries also provided various services related to hydropower. Over time, DGPC has grown significantly and has become a key subsidiary of Druk Holding and Investments (DHI). It now plays a major role in generating substantial revenue for the country, contributing to Bhutan's economic growth.

As demand for electricity grows internally and externally, DGPC has established five plants and three service sectors, along with forming six subsidiaries. These efforts help DGPC provide reliable electricity services to the people of Bhutan. With these increase demand from both domestic and foreign markets, the supply of electricity is expected to keep expanding, ensuring Bhutan continues to benefit from its hydropower resources.

2.2.1 Board of Directors



Figure 2: Board of Directors of DGPC

2.2.2 General Managers



Figure: 3 General Managers of DGPC

2.2.1 Company Vision

The vision of the company is to maximize revenue and the wealth for the country, manage, develop, and promote hydropower in an effective way.

2.2.2. Company Mission

- Optimizing the earning or the returns of the shareholders through managing and practicing hydro power effectively.
- Considering a first mover advantage through the creation of new hydropower plants with help of other ventures or alone.

- Ensure domestic energy security and economic prosperity and study other alternative sources of energy
- Building and expanding expertise through hiring, education, and training to meet the company's current human resource demands while also ensuring that an effective expansion and succession plan is in place.
- Becoming highly driven and committed, responsible, proactive, and progressive to the organization.

2.2.3 Company Values

- Values and ownership in the company.
- Shared trust and respects among the employees
- Ambitious and promptness
- Honesty
- Responsibility
- Balanced lifestyle
- Responsible for society and the environment

2.2.3 Corporate social Responsibility

1. Dgpc through CSR activities seek to enhance quality of life with the motive of creating quality life term value for the shareholders strengthening Bhutan's Gross National Happiness while supporting society, religion, environmental activities.

2. DGPC also host religious activities every year

3. DGPC also offers emergency rescue support along the highway.

4. Early childhood care facilities were built to help working parents and improve productivity at work.

5. During the outbreak of covid 19 DGPC has taken various initiatives to ensure the Business.

- Business permanence activities with emergency teams in isolation to prevent the outage of power plants.
- Policy like work from home were designed to society and company operation guaranteeing the employee safety.
- Mental wellness guidelines were offered to employees during the period to help employees.

6. As a part of POWER, DGPC also nominated 5 women to participate to address awareness on sexual harassment at work and foster a safe working environment and counted the awareness camping nearby schools.

2.3 Management practices

2.3.1. Leadership forms

The leadership styles in Druk power corporation limited is collectively both democratic and participative.

Democratic form of leadership involves workers at all levels into decision-making procedures, encourages a strong sense of accountability and ownership within the workforce, resulting in a more dedicated and driven team, exposes a broad range of ideas and viewpoints by appreciating different points of view and promoting open communication. Furthermore,

work satisfaction and turnover are generally higher, employees feel their perspectives are respected, which supports stability and long-term success.

On the other hand, a Participative form of leadership is Team members actively participating in decision-making sharing authority and responsibility with the leader. The team is guided by the leader, who functions more as a facilitator as decisions are typically taken by the group as a whole or collectively. This way team member is placed greater while the leader serves the role of facilitator.

2.3.2 Critical Analysis

While based on the types of leadership followed by Druk green power corporation and the critical analysis has company have various advantages and disadvantages:

Potential barriers: Although democratic and participative forms of leadership have numerous advantages, they can also result in slower decision making in the organization, in a fast-moving world delayed decision making can lead to huge loss and disadvantage.

Equalizing power: It is important for DGPC to balance between the employee's participation with the need of effective leadership because excessive on agreement may reduce the transparency and lead to less decisive leadership.

2.3.3. Goals and objectives

Strategic coherence: The combination of democratic and participative leadership shows that decisions are not well informed sometimes and strategically aligned to the company goal, however, leadership's responsiveness to employee feedback ensures that strategic goals are both realistic and attainable.

Flexibility and innovation: Such an approach of leadership encourages flexibility and innovation. In an area like hydropower, where technological developments and environmental concerns are critical, DGPC's leadership style keeps the company innovative and creative.

Long term growth: By emphasizing worker engagement and satisfaction, DGPC can achieve long-term success. Employees that are engaged and committed to the company's objective are more likely to contribute significantly to its success.

2.3.4. Selection and recruitment:

The recruitment and selection process are one of the most critical aspects of any organization, as hiring the right candidate is crucial for achieving the organization's goals and objectives. Just as organizations focus on profits and returns, selecting and recruiting the right people is equally important.

In the case of Druk Green Power Corporation (DGPC), they have traditionally followed certain established methods for recruitment. Until March 31, 2021, the organization primarily used traditional methods of recruitment, which included announcing vacancies through platforms such as Kuensel (a leading newspaper), news channels such as Bhutan times, BBS etc., and other local postings. However, this approach may have limited the reach of potential candidates, as modern recruitment processes tend to utilize a wider range of platforms, including online job portals and social media advertisements for attraction of diverse and qualified applicants for the jobs.

Similarly, in DGPC they do follow correct ways to recruit the employees, until march 31 2021, the organization has not appropriated the recruiting process. The organization followed the traditional method of recruiting the employees which included announcing the vacancy position in kuensel, News channel, posting in any social media or on the company website.

Which followed a proper process of recruiting and selecting the employees from going through their resume and based on resume and experiences shortlisting them and finally taking the candid interview and selecting are placed in the different department based on their major.

The reliance on traditional methods could have limited DGPC's ability to tap into a broader talent pool, making it essential for the organization to adapt its recruitment strategy to meet the evolving demands of the industry and attract the most suitable candidates.

- RSS intended automatic processing
- Create the interface for Human resources and applicants for better communication and effectively completing the application form.
- Create the interface for Administrator of HR to manage the recruitment process
- Update well and recognized GUIs that helps HR to update and post about the job vacancy
- Use a central repository on a SharePoint server to securely store and audit recruitment information.

This RSS is projected to make the recruiting process quicker, more efficient, and more effective by improving online application and hiring process management, and eventually providing an end-to-end online recruitment solution.

2.3.5 Training and development

The Hydropower Training Centre (HTC) was founded in 2021 to leverage DGPC's current experience and resources to train and develop human resources for both the company and the hydropower sector. It provides formal, structured training in technical skills required for

hydropower plant management and maintenance, with a focus on retraining and upskilling DGPC's workers.

HTC is considering expanding its services to other companies involved in transmission, distribution, and hydropower construction in Bhutan. It is also considering expanding its service offerings overseas. Furthermore, HTC intends to work with external authorities and forge partnerships to develop formal certification courses at the center.

2.3.6 Compensation at Druk Green Power Corporation

DGPC follows an effective compensation and reward policy to ensure fair payments and benefits for its employees. Apart from their salaries, which are based on their grade and years of service, employees receive various benefits, including:

- **Bonus:** All employees, regardless of their role, including those working in powerhouses or in basic cleaning jobs, receive an annual bonus based on their salary.
- **LTC (Leave Travel Concession):** Employees earning a monthly salary of BDT 15,000 or less are entitled to double their salary as LTC each year. For those earning more than BDT 15,000, the LTC is lower. For example, an employee with a basic salary of BDT 20,000 would receive LTC of BDT 40,000. However, the maximum LTC amount is limited at BDT 50,000.
- **Production Incentive (PI):** Employees working in powerhouses are eligible for a 7% production incentive if they meet their work targets.
- **Fixed Allowance:** All employees receive a fixed allowance annually.
- **Corporate Allowance:** Department heads, such as the head of finance, are entitled to a 2% corporate allowance.

2.4 Marketing Practices

Druk Green Power Corporation (DGPC), a prominent company in Bhutan, adopts a market penetration strategy as its core marketing approach. Their primary focus is on expanding the hydropower sector and increasing market share through innovation, enhanced distribution, and active customer engagement. Additionally, to increase the market share and outperform industry returns, DGPC conducts roadshows in both developing and developed countries. They recently launched a roadshow in Australia to support their initiatives. As Bhutan's main utility provider, DGPC services a diverse spectrum of internal consumers, including households, offices, stores, highways, schools, towns, villages, government sectors, and cities like Thimphu and Paro. Furthermore, the firm provides electricity to significant industries such as manufacturing and mining, assuring complete electricity coverage across Bhutan. Externally, India is an important market for DGPC, as it is one of Bhutan's top electricity export destinations because DGPC sees India as a reliable partner that allows Bhutan to gain a huge advantage. Bhutan's hydropower exports to India earn significant revenue through India. These are the few marketing practices done by Druk Green Power Corporation on a regular basis.

Moreover, Druk Green Power Corporation's market positioning highlights its purpose as a renewable source of energy that creates income while minimizing environmental and ecological impacts. Additionally DGPC uses traditional mediums for advertising and promotions, including television, radio, and publications like Bhutan Times and Kuensel, news channel such as BBS (Bhutan Broadcast system), social media pages such as Instagram, Facebook pages, TikTok to reach the information to the public, they also practice marketing strategy through collaboration and with the help from ventures and its subsidiaries. Additionally, the company engages in business-to-business communications and utilizes modern platforms, including roadshows and social media channels like

Instagram and Facebook, where they share posts and reels. DGPC also maintains an active presence on its official website for broader outreach.

Among all these marketing practices they mostly use road shows, news channels, newspaper, and social media because this way the information reaches the people at a higher rate. Therefore, these few strategies of Druk Green Power corporation In Bhutan.

2.5 Finance and Account Practices

Druk green power corporation is the renowned state-owned company and has strong financial practices to ensure that the company is generating profit with their main aim of substantially. When preparing financial statements, Bhutanese companies are required to adhere to both the Bhutanese Accounting Standards (BAS) and the Bhutan Financial Reporting Standards (BFRS). Going through the past four years annual report of the company, I have seen that the company has successfully followed all the rules and regulation and are doing better in both the case of generating MW and revenue for the company.

2.5.1 Financial performances

In order to have a clear insight into the company financial performances it is necessary for anyone to have a proper understanding of the financial and accounting practices.

1. Calculation of liquidity Ratio

Current Ratio = Total Current Assets / Total Current Liabilities

Years

2019	3.027
2020	2.686
2021	2.416
2022	1.631

Quick Ratio = Total Current Assets - Inventory / Total Current Liabilities

Years

2019	Nu.	7,681,724,498.90
2020	Nu.	7,729,206,537.95
2021	Nu.	6,790,362,964.69
2022	Nu.	5,738,277,817.22

Nu: Bhutanese currency: ngultrum

Based on the calculation of liquidity, I have found out that for the last four years the current ratio and the quick ratio has declined which suggest that the company is weakening the short-term liabilities. Current ratio of 2019 (3.027) to 2022(1.631) shows that the company is having a tough time to pay off the debts. On the other hand, Quick ratios in 2019(7681724298.90) to 2022 (5738277817.22) indicate that the company is not in the position to cover their liabilities quickly.

2.Calculation of Solvency ratio

Debt to Equity Ratio = Total Debt / Total Equity

Years

2019	0.125
2020	0.135
2021	0.145
2022	0.205

Interest Coverage Ratio = EBIT / Interest Expenses

Years

2019	38.952
2020	33.465
2021	29.824
2022	26.595

Based on the calculation of solvency ratio I have found that the debt-to-equity ratio has increased over the years indicating that the company is becoming more leveraged. Moreover, interest coverage ratio is also declining showing that the company is having difficulty to cover the obligation. Debt to equity ratio in 2019(0.125) to 2022(0.205) indicates that the

company is starting to rely more on debt financing with the year passes, on the other hand interest coverage ratio in 2019(38.952) to 2022(26.595) indicate it is declining

3. Calculation of profitability

Gross Profit Margin = Gross Profit / Sales *100

Years

2019	40.824
2020	45.209
2021	41.408
2022	45.595

Net Profit Margin = Net Income / Sales *100

Years

2019	0.42
2020	37.91
2021	40.75
2022	38.45

Return on Asset = Net Income / Total assets *100

Years

2019	0.09
2020	9.03
2021	9.06
2022	8.21

Return on Equity =Net Income /Total Common Equity*100

Years

2019	1.00
2020	97.49
2021	97.10
2022	97.29

Gross profit margin in 2019(40.824%) to 2022(45.595%) this shows that the increase which means that the company is able to manage the production cost efficiently similarly net profit margin in 2019(0.42%) to 2022(38.45%) is also improved over the year with slight declined in 2022 however the overall net profit over the year indicates that the company is performing better profitability. ROA in the year 2019 (0.09%) and 2022 (8.21%) indicate that the

company significantly made the improvement over the years and has better utilization of assets. While there was a slight decrease in 2022, the company still has a high ROA, indicating managing the asset effectively. On the other hand, ROE in 2019(1%) to 2022(97.29%) has significantly increased over the year which indicates the high profitability in shareholders. Overall, the organization's profitability ratios have improved significantly since 2019, showing steady development in the last few years, despite slight drops in 2022.

4. Calculation of Leverage Ratio

Debt to Asset Ratio = Total Debt / Total Assets

Years

2019	0.11
2020	0.11
2021	0.12
2022	0.17

Equity Multiplier = Total Assets / Total Equity

Years

2019	1.18
2020	1.20
2021	1.21
2022	1.22

The debt to asset ratio has gradually increased over time, from in 2019(0.11) in to 2022(0.17). This indicates a rising reliance on debt to finance assets. Similarly, there is gradual increase in equity Multiplier in 2019(1.18) to 2022(1.22) showing that the company uses the higher debt in the relation of the equity, overall, the company has increased the leveraged however slightly low indicating that company is taking more debt but managed to take the low-risk position.

1. Calculation of DUPONT analysis

Net profit margin = Net income /Revenue

Years

2019	0.00
------	------

2020	0.38
2021	0.42
2022	0.38

Asset Turnover=Revenue/Total asset

Years

2019	0.22
2020	0.24
2021	0.22
2022	0.21

Equity multiplier = Total asset / Total equity

Years

2019	1.18
2020	1.20
2021	1.21
2022	1.223

Decomposition of Return on Equity = Net Profit / Sales *Sales / Total Assets * Total Assets / Total Com Equity

2019	0.01
2020	0.97
2021	0.97
2022	0.97

There is an increase in net profit margin from 2019 to 2020 indicating that the company is becoming profitable and able to manage the expenses and cost, however, 2021 to 2022 net profit margins is a slightly decreased factor like increased expense. on the other hand, asset turnover from 2019 to 2020 has increased indicating that the company is efficient in using asset to generate the sales, however, 2020 to 2022 has decreased indicating company is not efficiently using asset. Finally, equity multiplier in 2019 to 2022 has been increased steadily showing that the company is using more debt finance its asset.

In case of decomposition of return on equity, ROE in 2019 to 2021 has been increasing, 2021 to 2022 has been slightly decreased. This increase in ROE indicates that the company is using their assets more efficiently improving the net profit margin, however, decreased ROE issue to decline in asset turnover.

For calculation of DUPONT analysis

Years	Net profit/ sales	Sales/ Total Asset	Total asset / Total common Equity
2019	0.004150237	0.215858101	11.216846
2020	0.379115052	0.238110125	10.799188
2021	0.407473303	0.222292032	10.720467
2022	0.384524741	0.213409369	11.855639

The company's ROE (DUPONT) has changed over time. In 2019, the ROE was extremely low (0.010049), owing to a very low profit margin (0.004150). In 2020, the ROE increased significantly (0.974855) due to a large increase in the profit margin (0.379115). However, the ROE has decreased significantly in 2021 (0.971039) and 2022 (0.972888). This could be attributed to a decrease in the profit margin or asset turnover ratio.

2.5.2 Accounting Practices

Account practices is a crucial step for any organization likewise Druk Green Power corporation under BAS follows an accrual basis of accounting, which records revenue and expenses as they are incurred or received. It offers a more accurate assessment of the financial condition. It facilitates the evaluation of profitability of the company. It also enhances financial planning and decision-making by providing accurate and timely data. Furthermore, accrual accounting accurately records financial arrangements such as credit sales and long-term contracts and improves the comparability of financial statements of the company. Moreover, Druk green power corporation follows all the steps of the accounting cycle from the start of identifying the transaction and preparing the balance sheet. Make sure to follow all accounting rules to avoid any false reports and more importantly. These include recording transactions, posting entries, preparing financial statements, income statements, ratio analysis and balance sheet.

Bhutanese organizations must comply with the (BAS) Bhutanese Accounting Standards and Bhutan Financial Reporting Standards (BFRS) while making financial accounts. The provisions of 244 of the Companies Act of Bhutan 2016 and the Accounting Standard Regulations for Companies in Bhutan 2012 require Bhutanese companies to comply with to accounting standards established by the Accounting and Auditing Standards Board of Bhutan (AASBB) in 2010 to improve the country's accounting and auditing practices in the country. Accounting auditing standard board Bhutan releases Accounting standards interpretation and Bhutanese accounting standards additional documents like as the Conceptual Framework for Financial Reporting and exposure drafts.

2.5.1 Depreciation Method

Druk green power corporation follows the straight-line depreciation method, which depreciates its property, plant, and materials while accounting for cumulative depreciation losses. Expenses directly associated with obtaining the asset are included in the asset's cost. In addition to reflecting the asset's gradual value loss from wear and tear of the assets.

2.5.2 Accounting disclosure

In order to comply with the Bhutanese Accounting Standards (BAS) and other financial reporting obligations, Druk Green Power Corporation (DGPC) must follow the proper accounting disclosures. These disclosures must contain crucial information like financial statements such as the cash flow, income, and balance sheets and must be presented in proper significant accounting principles such revenue recognition procedures, depreciation techniques, and asset valuation also required the account disclosure for smooth flow. In addition, DGPC must report all post-balance sheet events, linked party transactions, and risk management procedures.

2.6 Operations Management and Information System Practices

Druk Green Power Corporation Limited (DGPC) is a leading utility company in Bhutan, playing a crucial role in managing hydropower resources. With increasing demand both domestically and internationally, it's essential for DGPC to oversee its operations effectively and utilize advanced technologies. DGPC's operations management includes overseeing daily tasks, ensuring full utilization of resources, and managing both power plant activities and office work. To streamline these processes, DGPC uses SAP as its information system. The company transitioned from Tally to Druk Payment and finally implemented SAP. They also use tools like BTNF and Excel to support their work. Excel helps keep data accurate and error-free for use in SAP, while BTNF is used for processing payments for goods or services ordered from third or second countries.

SAP helps DGPC with collecting, processing, and sharing information with stakeholders. It is used for inventory management, tracking ordered, purchased, and unused inventory, and monitoring equipment. Additionally, SAP manages financial data, accounting, and reporting, making it easier for the company to make decisions. It also centralizes employee information, including salary and hiring processes, improving overall efficiency.

2.7 Industry and Competitive Analysis

Porter's five forces analysis is used to analyze Industry and competitive analysis. Through this analysis we can understand how Druk green power corporations face the competitive environment.

2.7.1 Porter's Five Forces Analysis

Threat of new entrant: DGPC has low threat of new entrant

Druk Green Power Corporation (DGPC) has low threat of entrance because it receives the benefits from government as it is a state ownership and also enjoys the sustainable economy of scale which result in a low risk from rivals. Moreover, having a new rival in this industry would involve a significant investment in land, technology, and equipment which is very expensive and unlike big government companies can only compete. Furthermore, severe government laws and regulations provide significant entry barriers, causing it challenging for potential competitors to enter the industry. DGPC's strong background and experiences in managing power plants gives an additional competitive edge, making it difficult for new businesses to match its expertise.

Suppliers bargaining powers: DGPC has low supplier bargaining powers.

Druk Green Power Corporation has low supplier bargaining power because DGPC is a state-owned company when any company is state owned or controlled by government it is very tough for competitors to enter into the market, one reason is because all the rules and regulations are set by government and it applies to all. Moreover, DGPC depends on natural resources for its operations, which limits supply power and Suppliers have little negotiating power because there are few alternatives on the market.

Buyers bargaining Power: DGPC have high bargaining powers

Druk green power corporations have high bargaining power because there are relatively few alternatives to power generation, making hydro power the top provider in the country even though solar and wind energy are available limitedly, hydropower is still the most popular

source of electricity. Moreover, it is also cheap and cost effective compared to other sources of energy such as solar energy, biogas, and wind energy in the Country.

Threat of Substitute products: DGPC have low Threat of substitutes

Druk green power corporations have low threat of substitutes because other alternative sources of energy such as biogas, solar energy, wind energy makes a very minimal portion of the market, as 90% of the market in Bhutan uses hydro power. Therefore, Hydropower is the first and favored source of electricity in the country because of its cheaper rate.

Rivalry among competitors: DGPC have low Rivalry among competitors

Druk green power corporation have low rivalry among competitors because DGPC being a government company faces a very little competition because hydro power is only a huge source of energy in the country and other sources of energy only accounts small portion which made DGPC a low competitor's threat and it is only energy that is export to the India that made it clear that the company is facing less pressures o from other alternative sources of energy.

2.7.2 SWOT Analysis

Strengths:

- **Abundant Renewable Energy:** DGPC benefits from a significant supply of renewable energy through hydropower.
- **Government Support:** As a government-owned entity, DGPC receives strong support for backing, regulations, and other aspects from Government.
- **Operational and technical:** DGPC has extensive experience in managing the large projects such as Hydropower, they have long expertise in technical and operation of the company which make DGPC a unique company among other companies.

- **Revenue Generation:** DGPC generates a good amount of revenue from Hydropower projects and it is one of top revenue generators in the country through exporting the electricity internally and externally.

Weakness:

- **Capital Requirement:** DGPC requires huge capital to set up a new hydro power project and to repair the machines etc. Therefore, they will face huge debt and face the financial risk.
- **Impacts:** DGPC may impact the environment while setting projects, the building of dams, can have a harmful influence on nature and environment.
- **Limitation:** DGPC has only one export area that is (India) to export the electricity therefore they face the market limitation. which means scope for market is very less.

Opportunities:

- **Rising demand for electricity:** The growing need for electricity, both locally and globally, provides chances for DGPC to expand its business operations.
- **Expansion Potential:** DGPC can expand its hydropower projects in Bhutan and form collaborative ventures to get access to new markets.
- **Technological innovations:** Continuous improvement of hydropower technology and employees can improve the company's success.
- **Expansion Potential:** DGPC can expand its hydropower projects in Bhutan and form collaborative ventures to get access to new markets.
- **Technological innovations:** Continuous improvement of hydropower technology and employees can improve the company's success.

Threats:

- **Climate Change:** Global warming and climate change can affect water levels and seasonal flows, disrupting production can cause the threat to DGPC.
- **Dependency on India:** Heavy reliance on the Indian market might limit the market scope. DGPC vulnerable to changes in policies, rules, and regulations that could impact revenue.

Environmental Regulations: Increasing environmental regulations and safety concerns may pose challenges in building and managing hydropower projects.

2.7.3 Identifying the competitive Advantage

2.7.3.1 common Strength

The first common strength in DGPC is ability to access the abundant renewable resources, with that there is a strong support from the government where maximum interest of government rules and regulation are based on the interest of DGPC and finally there is the advantage of technical expertise for the management of the projects, moreover, DGPC's enjoys the natural resources to generate the income and revenue in the country.

2.7.3.2. Imitable strength

The first imitable strength could be that the generating the income or revenue meeting the need of domestic while other players can enter the market to fulfill the demand and might led them to fill the gap of environment impact through camping and meetings

2.7.4 Distinctive strength

The first distinctive strength of the DPGC is that they have strong government links and enjoy unique benefits from them which are difficult for private companies to match, they also

build a strong long-term relationship with India making them achieve competitive advantage. Finally, they are the first organization to continue offering the renewable energy externally and internally.

Therefore, with conducting the SWOT analysis and identifying the competitive DPGC lies on the strong long-term relation with India, their vision of continuing offering renewable energy, Its strong support from government making it difficult for the other competitive to gain the competitive advantage.

2.8 Summary/ Conclusion

To conclude, by harnessing Bhutan's hydropower resources, DGPC makes major contributions to the country's economic development. Its 2,453 MW capacity has a significant impact on GDP and government revenue. DGPC was established in 2007 with the installed capacity of 2335 MW under the subsidiary of Druk Holding and investment. The primary goals of DGPC is to generate the revenue in country without hampering or impacting the environment and practicing substantiality and also to maximize shareholder returns, maintain energy security, increase hydropower, develop human resources, and advance sustainability and social responsibility. DGPC stresses employee involvement, innovation, and skill development through a modern recruitment process, technical training initiatives, and programs. The company's marketing and operational initiatives place a high value on environmental activities and the development of renewable energy.

In terms, Marketing practices DGPC concentrates on reaching new markets through roadshows, interacting with consumers, and increasing the availability of electricity and uses both conventional and cutting-edge marketing techniques to present itself as an energy supplier that is environmentally conscious and sustainable. DGPC strictly follows Bhutanese Accounting Standards (BAS) and the Bhutan Financial Reporting Standards (BFRS), aligned

with International Financial Reporting Standards (IFRS). It uses SAP software to improve operations management, inventory control, financial processing, and employee information management. DGPC is well-positioned to grow and keep enhancing Bhutan's energy security.

2.9. Recommendation

DGPC must continue to concentrate on providing secure and affordable energy to rural and urban locations. Doing so, DGPC can contribute to improving quality of life and overall economic development in the country. Implementing stronger environmental impact assessments, and community participation initiatives can help to reduce environmental impact. Engaging with local communities, addressing concerns, and including them into project planning can generate goodwill and assure sustainable development. DGPC needs to continue making investments in skill development programs and environmental conservation. By developing a workforce with profound technical skills, DGPC may become more self-sufficient, eliminating reliance on foreign expertise. Although DGPC's democratic and participative leadership promotes diversity and innovation, it can also result in delayed decision-making. The DGPC should develop a framework for making quicker, more decisive decisions.

To improve financial stability and growth, DGPC needs to enhance liquidity management to satisfy short-term obligations, minimize dependency on debt to increase interest coverage, and optimize asset use for greater efficiency. Stakeholder trust must be maintained by regular compliance to Bhutanese Accounting Standards (BAS) and Financial Reporting Standards (BFRS). A continued focus on lowering production costs could boost profitability. Implementing technology solutions such as SAP to improve production efficiency and maintenance could result in further operational savings. DGPC should take a data-driven strategy, acquiring information about customer preferences and media habits. This could

assist improve the balance between traditional and digital media, while guaranteeing that resources are allocated to the most productive platforms.

Chapter 3

Project Part

Implementation of SAP at DPGC and its impact on cost optimization.

3.1 Introduction

SAP (system application program) which is also called (Systemanalyse und Programmentwicklung by German in early 1972) at DGPC signifies a significant change in the organization's strategy over the years for them on overseeing its business operations and procedures. Keeping with the current competitive market it is extremely important for any organization to optimize the expenses, likewise it is also crucial for DGPC to optimize the costs while ensuring the cost efficiency in the organization. SAP, is a simple yet effective software making its way to the world. This software of ERP (enterprise resources planning) is now adopted by the companies in order to increase the processes, data management, and to promote better decision making.

The decision to implement SAP at DGPC was motivated by the need to address multiple issues, such as data errors, inefficiencies in manual procedures, increasing complexity of handling multiple business tasks, etc. This project will look how DGPC's cost optimization tactics have been affected by the adoption of SAP, analyzing the ways in which the program has lowered operating expenses, enhanced time management with better decision making, and raised overall productivity.

The implementation of SAP is to fit into a larger trend in the sector, as businesses are using integrated software solutions to stay competitive. SAP provides real-time insights through data centralization and workflow automation, enabling companies to make better informed decisions. This move was intended to save costs for DGPC, but it also improved departmental

collaboration, increased process transparency, and improved regulatory compliance. SAP's role in streamlining processes and minimizing expenses has grown increasingly important as the organization continues to grow and adapt to a changing market. My goal in doing this research is to comprehend how SAP has changed the operational framework of DGPC which led to optimizing the cost.

3.2 Background/ Literature Review

SAP software has become critical tools for modern companies due to its unique functions and simple usage. With the help of SAP companies can manage their core activities on their tip of the fingers these features have made SAP a leading software in the world.

In 1972 SAP came into existence to support the operations of the business by 5 former IBM employees. The aim to develop SAP was to establish a standard enterprise that could integrate all the types of business operation and facilities real time data processing.

Moreover the DGPC implemented the SAP in the year 2011 with the sole reason being to offer real time information, consolidated accounts, and centralized billing, making bill payments possible regardless of consumer location, simplify administrative tasks while improving inventory, asset, and project management (Ihundrup,2009) Furthermore, SAP's real-time data analytics and reporting tools enabled DPGC to track routine processes, such as procurement and inventory management, which can be automated to save money on labor and increase operational efficiency.

3.3 Objectives

Board objective

To evaluate the impact of SAP and its cost optimization at DGPC emphasizing on overall operations, resources allocation and performances

Specific Objective

To determine operational cost saving as a result of implementation of SAP at DGPC.

To evaluate cost optimization after SAP implementation.

To compare the previous system with SAP.

To evaluate benefits received after implementation of SAP.

3.4 Significance

Cost efficiency is important for all the types of organization for its success and long-term stability. DGPC, as a state-owned firm, cost efficiency allows the organization to favorably impact Bhutan's economy by delivering higher returns supporting national economic goals.

Implementing SAP systems in DGPC improves cost efficiency by combining essential operations such as finance, accounts, supply chain and procurement into a single system. Moreover, SAP's automation features can save labor costs by eliminating manual data entry and processing, reducing errors, and allowing staff to focus on more valuable duties. SAP's management capabilities improve stock levels, lower warehousing costs, and avoid surplus inventory. Furthermore, its inbuilt vendor management improves contract negotiation and procurement efficiency, resulting in additional savings and financial analysis and compliance solutions simplify auditing and regulatory reporting, reducing compliance costs and allowing for faster, more accurate financial decision-making. Overall, SAP will enable DGPC to be more productive and cost-effective.

3.5 Methodology

This study relied heavily on primary sources of data and a quantitative research design. Structured survey questionnaires were used to collect data on the experiences, perceptions, and observations on SAP implementation in the organization from the employees. The survey was carried out using Google Forms, making it more accessible and convenient for respondents. Participants had two weeks to complete the survey, during which their privacy and confidentiality were thoroughly protected.

The survey comprised individuals from various roles representing a wide range of positions thus included different departments such as operations, human resources, finance, and IT. This desired sample size included people who were actively involved in or affected by SAP implementation such as junior-level employees, like technical and administrative workers, who manage day-to-day activities while providing operating assistance. Mid-level employees who manage departmental activities and play an important role in process implementation.

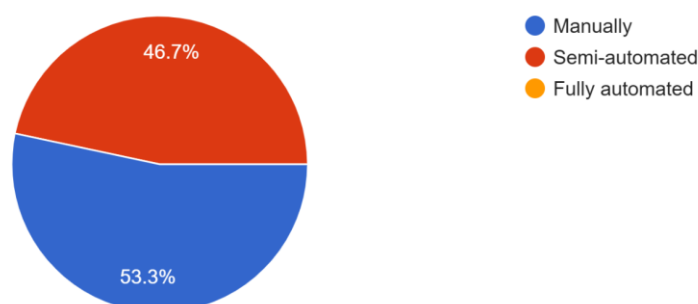
A total of 15 employees were chosen to participate in the survey. The criteria for choosing participants included a variety of positions and responsibilities to eliminate bias and give complete information. The majority of the information came from primary sources, such as survey results, and was supplemented by direct communication with employees. This diversity was purposefully chosen to provide a thorough knowledge of SAP's impact on cost optimization.

3.6 Findings

These findings and discussions will be incorporated into the organization. The data collected from 15 respondents provides insights into the effectiveness of SAP in reducing operational costs, streamlining processes, and enhancing organizational efficiency.

1. How were routine tasks like payroll, invoicing, inventory and scheduling handled before SAP implementation at DGPC?

15 responses

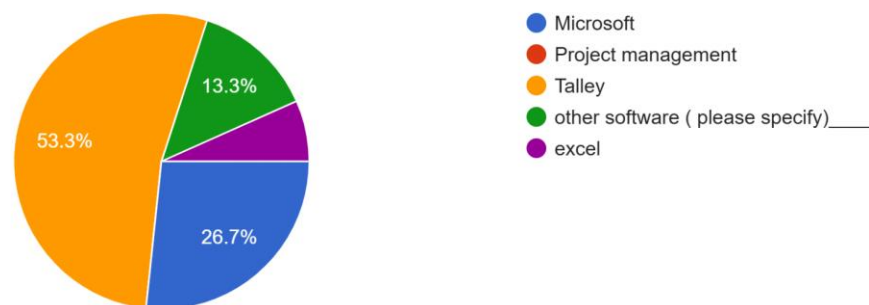


Before implementing SAP, DGPC depended largely on manual processes and complex systems to conduct regular functions such as payroll, invoicing, inventory, and scheduling. Based on the data collected respondents stated that 53.3% of works and tasks were done manually, 46.7% were done semi manually and no task or activities were done fully automated. Thus, before implementing SAP at DGPC had various issues due to its reliance on manual processes and temporary platforms.

These difficulties included time-consuming and error-prone manual activities, data inconsistencies between departments, delayed response times, and increased security threats associated with manual data handling and storage. Moreover, these challenges impacted the DGPC's operational efficiency and capacity to make informed decisions. Therefore, DGPC has a chance to use automation and permanent platforms and the ability to increase efficiency, operational works and reduce costs.

2.What platforms did DGPC utilize before the implementation of SAP?

15 responses

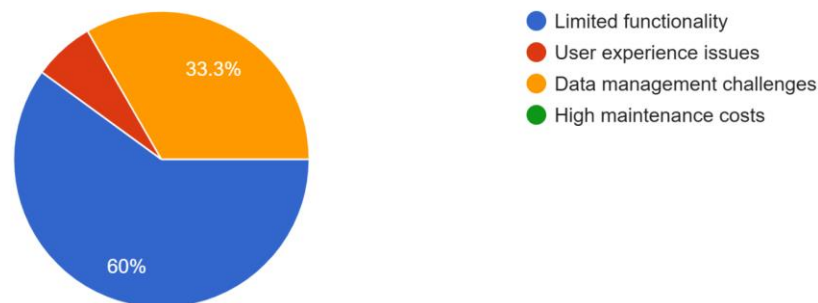


Before SAP implementation DGPC did not have a fixed platform to perform the work. There were many fragmented platforms and these platforms resulted in higher cost. Based on the data collected 15 respondents stated that before SAP they used Talley to keep the records,

sometimes they used Microsoft such as excel. Respondents said that 53.3% of work was done through Talley, 26.7% done through Microsoft and 13.3 % of work was done through other softwares. This indicated that if DGPC had implemented a permanent platform they could save huge money because spending money on buying different platforms indirectly requires more funds. Therefore, we can conclude that SAP has the ability to reduce the cost of buying a permanent platform.

3.What were the main challenges faced with the previous systems ?

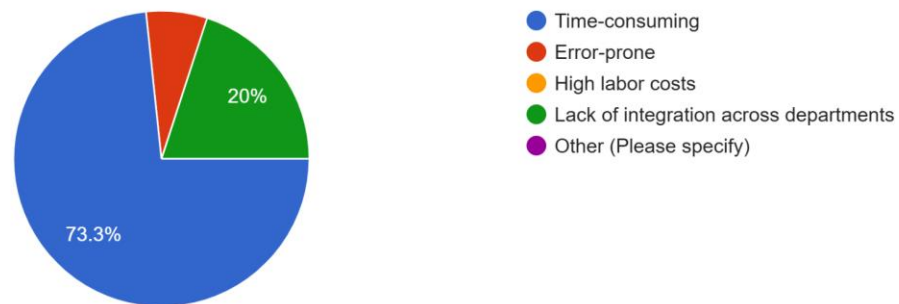
15 responses



During the time, DGPC had no fixed platform to manage their activities thus they used a variety of platforms, including Excel, Tally, project management, etc. Such approach frequently resulted in data discrepancies and a lack of connection between systems. Furthermore, the reliance on manual processes led to slower reaction times and increased security issues. 15 respondents stated that before implementation they faced many challenges but limited functionality and data management were real challenges. Based on the data collection, 60% of respondents said that they had a tough time because of limited functionality and 33.3% said that it was difficult for them to manage the data. These difficulties hampered the DGPC's operational efficiency and capacity to make informed choices. Thus, lack of a uniform system has contributed to inefficiencies and increased expenses therefore, can conclude that SAP could increase productivity and save costs through Fixing data inconsistencies and strengthening integration.

4. What were the main challenges in managing manual processes before SAP was introduced?

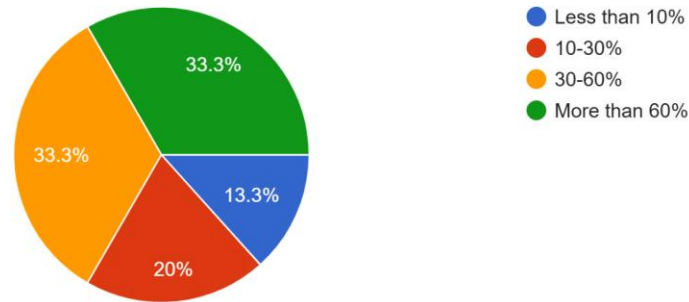
15 responses



Before implementing SAP, one of the main challenges was that employees struggled to complete daily tasks efficiently, as information had to be processed sequentially. Respondents noted that this process was time-consuming and highlighted the lack of integration across departments, making it difficult for teams to access results and track performance across the organization. Among these 15 respondents 73.3% stated their main challenges managing manual processes is due to time consuming because it took time to reach the information and to carry out the task, 20% stated that there was no integration across the departments this made it difficult for them in managing the manual processes. after implementation SAP, it is shown that more than 60% of day-to-day activities were done through SAP which indicated that the SAP has helped the employees in managing everyday processes more effectively than before. However, there is a belief that SAP may not fully automate all operations, necessitating some user intervention.

5.How much time has SAP saved in processing routine tasks (e.g., payroll, financial reporting)?

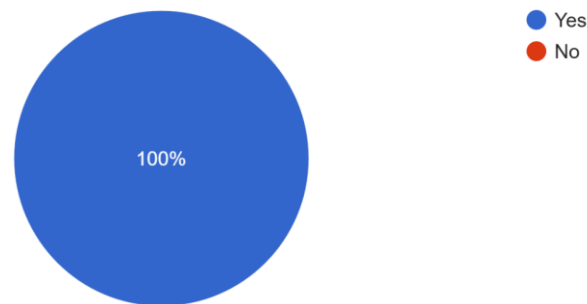
15 responses



After implementation of SAP, DGPC's tasks and activities have saved time compared to the previous system. Based on the data collection more than 60 % of time was saved, 33.3% respondents stated that 30-60% to more than 60% time has been saved due to SAP, 20% said 10-30%, 13.3% said that less than 10% time has been saved in processing tasks. Once SAP was implemented DGPC benefited in completing the works on time. This can be concluded that the SAP reduced the time consumption and reduced the cost of making quick decisions.

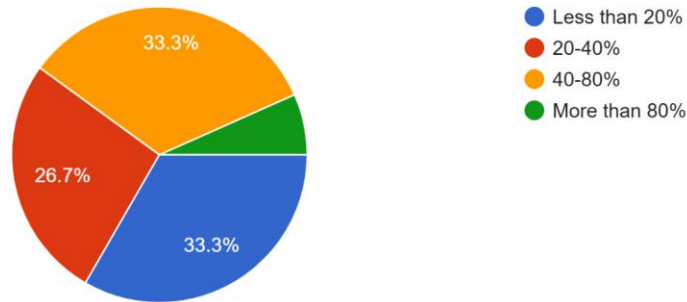
6.Has SAP reduced the number of employees needed for routine administrative tasks?

15 responses



7.If question no 6 is YES, then by approximately what percentage?

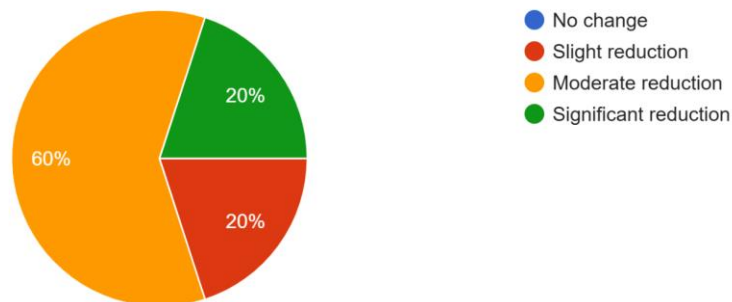
15 responses



SAP has not only reduced the manual workload but also reduced the number of employees to fulfill the jobs, respondent stated that the number of employees has reduce by 100% which implies that SAP has successfully introduced automation and optimized procedures, even though the number of percentages on reducing the resulting number of employees is smaller it still shows that SAP implementation is not a waste. Additionally, 33.3% respondents stated that the number of employees has reduced to less than 20% to more than 40%-80% and 26.7% stated that the number of employees has reduced by 20-40%. This might potentially lead to cost savings and better productivity. Therefore, can conclude that SAP implementation at DGPC has reduced the numbers of employees which directly means saving funds to hire extra labor.

8.How has SAP impacted labor costs (e.g., reduced overtime, fewer temporary workers)?

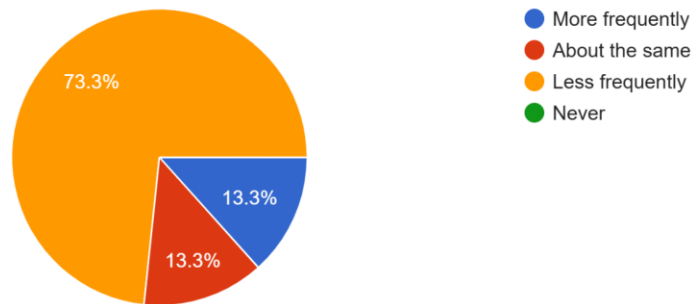
15 responses



The graph indicates that SAP has had a mixed impact on labor expenses. While 60% respondents reported a moderate reduction in labor cost and 20% significant reduction. while the remaining respondent reported that there is a slight change in labor cost after implementing SAP at DGPC. This suggests that SAP has the potential to save labor costs by not hiring the extra labor to get the work done. Therefore, can conclude that after implementation of SAP the cost optimization has been achieved in a minimal amount.

9. Since implementing SAP, how often do procurement errors (e.g., overstocking, understocking) occur?

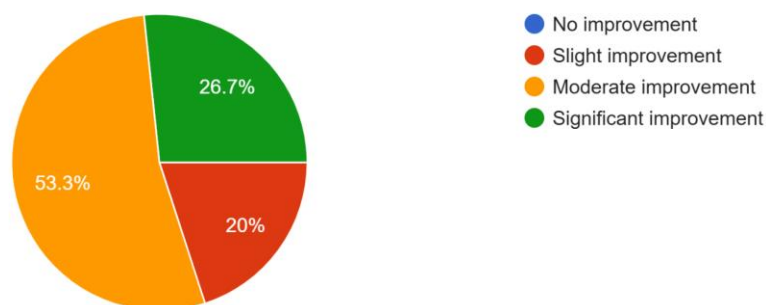
15 responses



SAP implementation also helped organizations in maintaining smooth flow of tasks and works by correctly recording the documents and tracking the errors and mistakes, 73.3% of respondents responded that after SAP implementation at DGPC has lessened procurement errors occur in the organization, 13.3 % stated that only frequent proclamations occurred.

10. How has SAP improved inventory and management?

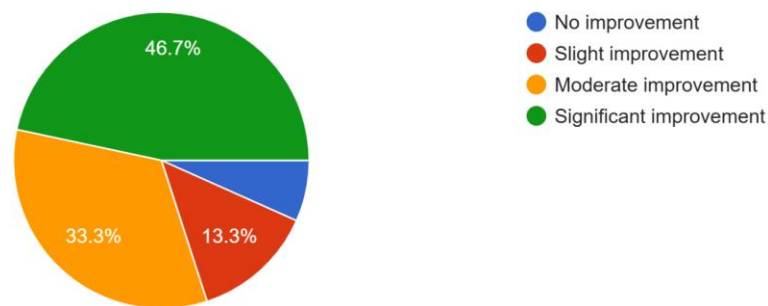
15 responses



The responses show that SAP had a positive impact on inventory management, for the vast majority of respondents, with 53.3% reporting significant improvement, 20% reporting moderate improvement, 26.7% observing little change, and none reporting no improvement. This positive impact can be given to a variety of factors, including SAP's ability to deliver real-time visibility into inventory levels, allowing DGPC to avoid stock outs and overstocking. Also, SAP's forecasting features provide more exact demand prediction, which improves inventory management. By automating and streamlining inventory management procedures, SAP assists businesses in eliminating errors and increasing productivity.

11.Has SAP improved the scheduling and tracking of maintenance activities?

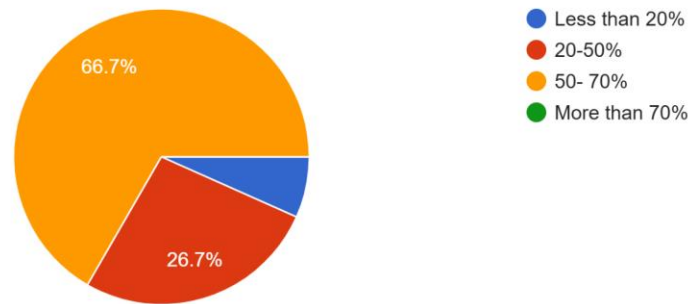
15 responses



After implementation of SAP in the company employee's response that there is only improvement of task and activities in the organization Based on the information collected from respondents 46.7% stated that there is significant improvement in works like scheduling, tracking, recording, managing, 33.3% stated that there is moderate improvement in the works process than before an 13.3% stated the slightly improvement of the works. Therefore, one can conclude that SAP implementations have more benefits than the previous system.

12. What percentage of overall operational costs has DGPC saved since SAP implementation?

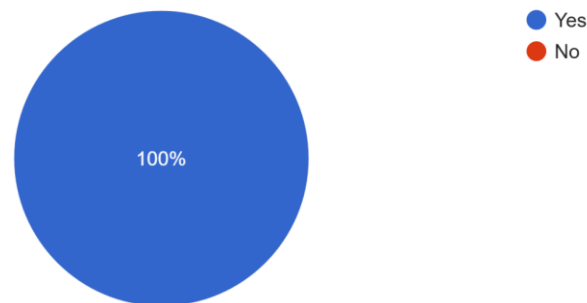
15 responses



After implementation of SAP has improved the operational cost in the organizations. Respondents stated that the SAP has benefited them in various ways which one way the operational cost has improved. 66.7% of respondents said that SAP has improved the operational works and saved the cost up to 50-70%, 26.7% respondents stated that 20-50% of operations; works has improved and operational cost is reduced this indicate that the company has been benefited with the implementation of SAP and can conclude that SAP is preferred software and permanent tool for DGPC.

13. Has SAP improved cost allocation and budget control across departments?

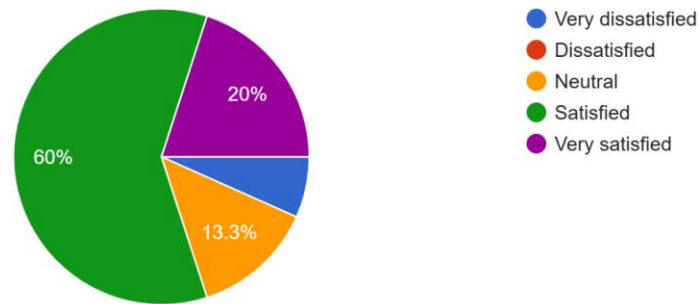
15 responses



Moreover, it is shown that the SAP reduced the cost. All 15 respondents stated that SAP has improved cost allocation and budget in the organization. This indicates that the company SAP implementation has a cost efficiency.

14. Overall, how satisfied are you with SAP's role in cost optimization at DGPC?

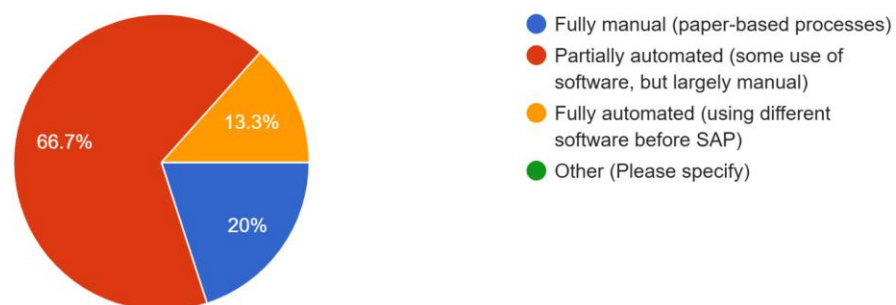
15 responses



SAP implementation has fulfilled the role of cost optimization in the company. Based on the data collected respondents reported the improvement in these areas. They noted that SAP has enabled organizations to fully leverage the system's benefits, leading to efficient management of costs and budgets. After implementation SAP employees have been satisfied because of the highest number of respondents reported that SAP has made their work easier. And reduced operational costs for DGPC, with 66.7% of respondents reporting savings between 20-50%, while 26.7% reported savings of less than 20%. This reduction is likely due to increased efficiency, minimized waste through improved inventory management, and data-driven decision-making.

15. How was procurement managed before SAP implementation?

15 responses



Implementation of SAP at DGPC, with 66.7% of respondents reporting fully paper-based processes, 13.3% using a partially automated system that still relied heavily on manual work, and 20% managing procurement through fully automated systems using different software. This predominantly manual setup likely led to inefficiencies and potential errors. The switch from other platforms such as Tally, excel to SAP appears to have resulted in a more automated procurement process, enhancing efficiency and accuracy. This shift to SAP was most likely motivated by the need for increased efficiency through process automation, improved insight into procurement processes for better decision-making, and cost savings through streamlined processes.

16.What additional improvements would you suggest for maximizing cost optimization using SAP at DGPC?

- Upgraded versions or extra SAP modules should be used to improve workflows and future-proof processes, potentially increasing operational efficiency and cost savings.
- Emphasis on employee training and skill development ensures employee proficiency with SAP is critical for cost optimization since it increases productivity, minimizes errors, and guarantees that the software's full potential is realized.
- SAP's potential to record every transaction provides significant cost savings. Encourage frequent use of SAP reporting and analytics tools to assist uncover cost-saving opportunities and improve decision-making.
- Using a lean management strategy in SAP processes helps reduce waste and streamline operations

3.6.1 Discussion and recommendations

Results of finding show SAP implementation at DGPC considerably improved efficiency, cost optimization, and production by overcoming the limitations of previously manual working system and fragmented systems.

However, they faced various challenges before and after implementation of SAP at DGPC, the major challenge before adopting SAP at DGPC are time-consuming on manual activities, data discrepancies, and a lack of cross-functional interaction. The reliance on numerous platforms, such as Tally and Excel, led to increased operating expenses and inefficiencies.

After implementation of SAP at DGPC, it was challenging for employees to adapt to the new system due to insufficient training and awareness of SAP's abilities and benefits. As a result, the software's capabilities were underutilized, and certain operations continued to be carried out manually such as budget forecasting, documents records. Secondly, lack of a specialized technical support team resulted in delays in resolving issues, negatively harming the user experience and frustrating employees

However, SAP has optimized procedures to reduce manual workloads, employee expenses, and time spent on repeated operations, this technology has improved inventory management, procurement reliability, and employee efficiency by allowing for real-time visibility and integration between departments. The conversion to SAP resulted in significant cost savings, with respondents pointing out the lower operational and personnel costs, as well as improved budget control. Respondents pointed out SAP's contribution to minimizing errors and promoting data-driven decision-making. To optimize SAP's benefits, DGPC might consider adding new modules, providing employee training to maximize the system while identifying cost-saving opportunities. Overall, this move to SAP has resulted in a more simplified, integrated, and cost-effective system of operations for DGPC.

In order to maximize SAP's potential, DGPC should provide more employee training and assistance, guaranteeing employees can use the system efficiently, decrease manual effort, and improve data accuracy. Continuous support, such as a dedicated helpdesk, will help to resolve technical difficulties and improve user happiness strengthening change management and communication approaches would help employees adapt to SAP by keeping them informed of changes and benefits, thereby lowering resistance and increasing positive system adoption.

DGPC should monitor inventory levels, demand forecasting, and procurement cycles for the purpose to optimize stock levels and save costs. By better synchronizing inventory management with changing market demands, DGPC can improve overall efficiency. Sap's scalability and customization possibilities should be reviewed on a regular basis to ensure long-term compatibility and ensure that the system continues to meet the organization's goals.

3.7 Summary/ Conclusion

DGPC has seen a significant increase in operational efficiency, cost optimization, and workflow automation after implementing SAP. The move to SAP was motivated by DGPC's aim to address issues such as manual procedures, unstructured data, and limited process automation, all of which hampered efficient decision-making and resulted in operational inefficiencies. The study's findings indicate that SAP has significantly improved DGPC's cost management and budget allocation by automating procedures, eliminating human labor, and reducing errors. SAP's data centralization provides DGPC with real-time insights, enabling better decision-making and more control over spending. Specifically, improvements in inventory management and procurement efficiency while cutting operational costs. The survey results confirm that SAP has had an impact on labor expenses, with many respondents reporting cost savings due to reduced manual burden and higher productivity. Overall, SAP adoption at DGPC demonstrates a strategic convergence with market trends towards integrated software solutions. SAP has not only reduced costs by automating key business processes and enabling data-driven decision-making, but it has also improved DGPC's competitiveness in a changing market. These findings show SAP's usefulness as a cost-cutting tool, assisting DGPC in meeting its long-term goals of sustainable growth and operational excellence.

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Appendix A.

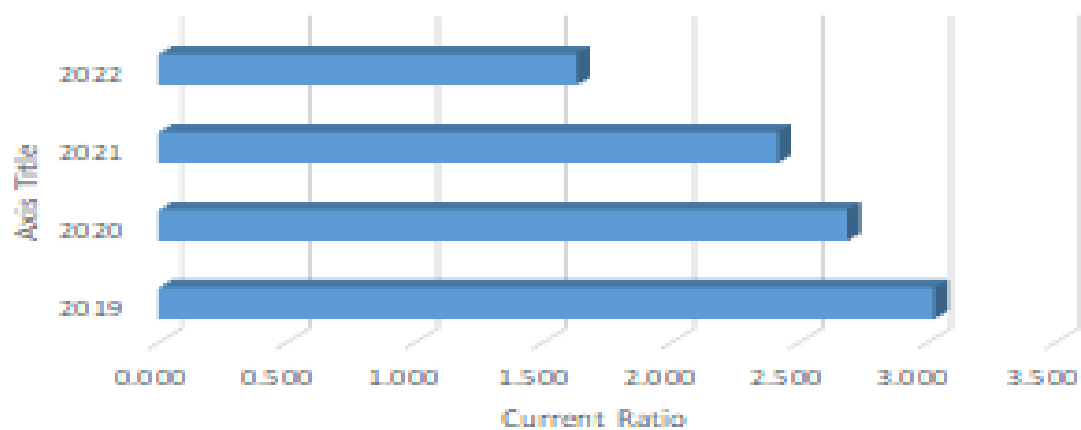
Graphs of Financial Performance

1. Liquidity.

1. Calculation of liquidity ratio		
Current Ratio = Total Current Assets / Total Current Liabilities		
Years		
2019		3.027
2020		2.686
2021		2.416
2022		1.631

Quick Ratio = Total Current Assets - Inventory / Total Current Liabilities		
Years		
2019	Nu.	7,681,724,498.90
2020	Nu.	7,729,206,537.95
2021	Nu.	6,790,362,964.69
2022	Nu.	5,738,277,817.22

1. Graph for Liquidity Ratio



2. solvency Ratio

2. Calculation of Solvency Ratio

Debt to Equity Ratio = Total Debt / Total Equity

Years

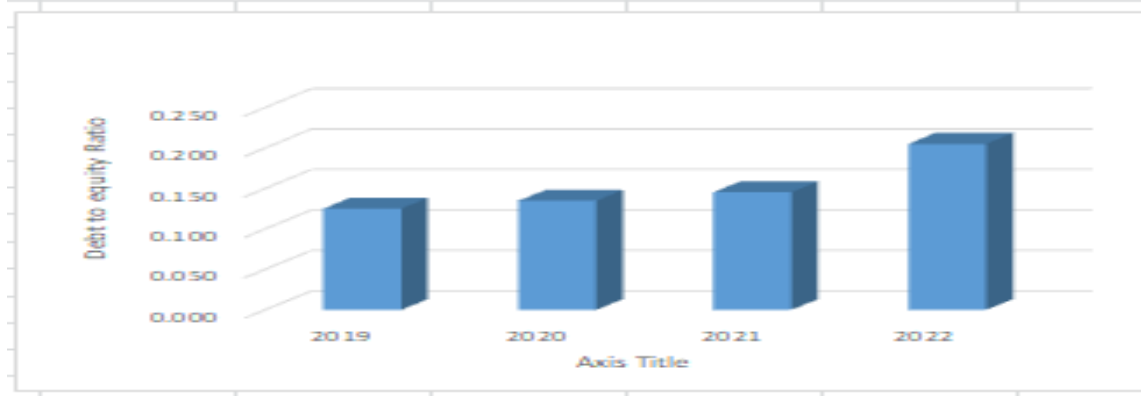
2019	0.125
2020	0.135
2021	0.145
2022	0.205

Interest Coverage Ratio = EBIT / Interest Expenses

Years

2019	38.952
2020	33.465
2021	29.824
2022	26.595

2 Calculation of solvency ratio



3. Profitability Ratio

3. calculation of profitability ratio

Gross Profit Margin = Gross Profit / Sales *100

Years

2019	40.824
2020	45.209
2021	41.408
2022	45.595

Return on Asset = Net Income / Total assets *100

Years

2019	0.09
2020	9.03
2021	9.06
2022	8.21

Net Profit Margin = Net Income / Sales *100

Years

2019	0.42
2020	37.91
2021	40.75
2022	38.45

Returnon Equity =NetIncome /Total Common Equity*100

Years

2019	1.00
2020	97.49
2021	97.10
2022	97.29

3 Graph for Profitability



4. Leverage ratio

4. Calculation of Leverage Ratio

Debt to Asset Ratio = Total Debt / Total Assets

Years

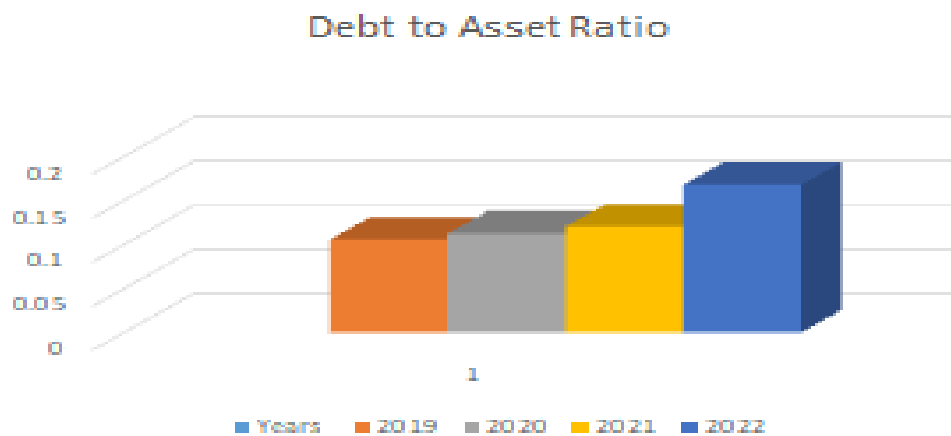
2019	0.11
2020	0.11
2021	0.12
2022	0.17

Equity Multiplier = Total Assets / Total Equity

Years

2019	1.18
2020	1.20
2021	1.21
2022	1.22

4 Graph for Leverage Ratio



5. Market share

5. Calculating Market share

Earnings per share = Net income after tax / Total no of com outstanding share

Years

2019	154.237
2020	156.848
2021	156.293
2022	142.442

5. DUPONT Analysis

6. Calculating DUPONT Analysis

Net profit margin = Net income / Revenue

Years	
2019	0.00
2020	0.38
2021	0.42
2022	0.38

Asset Turnover = Revenue / Total asset

Years	
2019	0.22
2020	0.24
2021	0.22
2022	0.21

Equity multiplier = Total asset / total equity

Years	
2019	1.18
2020	1.20
2021	1.21
2022	1.223

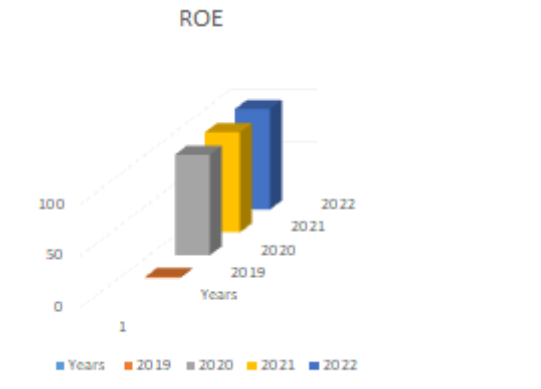
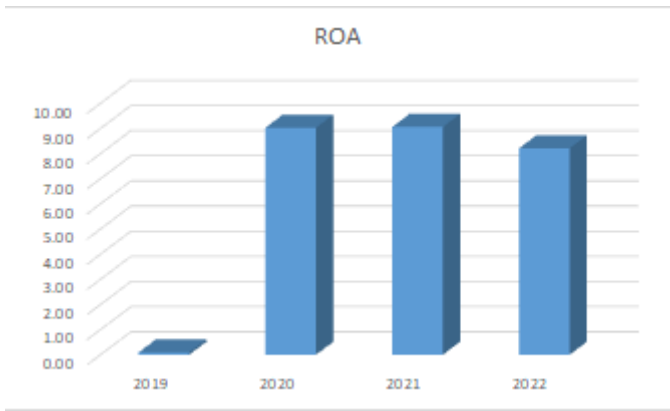
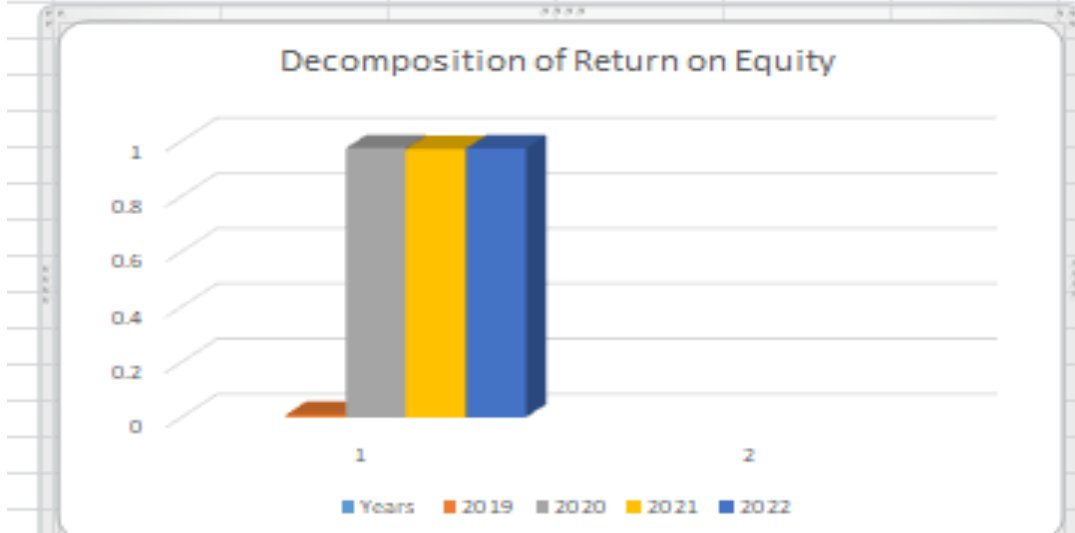
Decomposition of Return on Equity = Net Profit / Sales * Sales / Total Assets * Total Assets / Total Co

Years	
2019	0.01
2020	0.97
2021	0.97
2022	0.97

For calculation of DUPONT analysis

Years	Net profit/ sale	Sales/ Total	Total asset / Total com
2019	0.00415024	0.2158581	11.2168
2020	0.37911505	0.2381101	10.7992
2021	0.4074733	0.222292	10.7205
2022	0.38452474	0.2134094	11.8556

6. DUPONT ANALYSIS



GRAPH FOR NET PROFIT AFTER TAX

Year	Net income after tax
2019	49465313.86
2020	5057739085
2021	5097113620
2022	4624405781

