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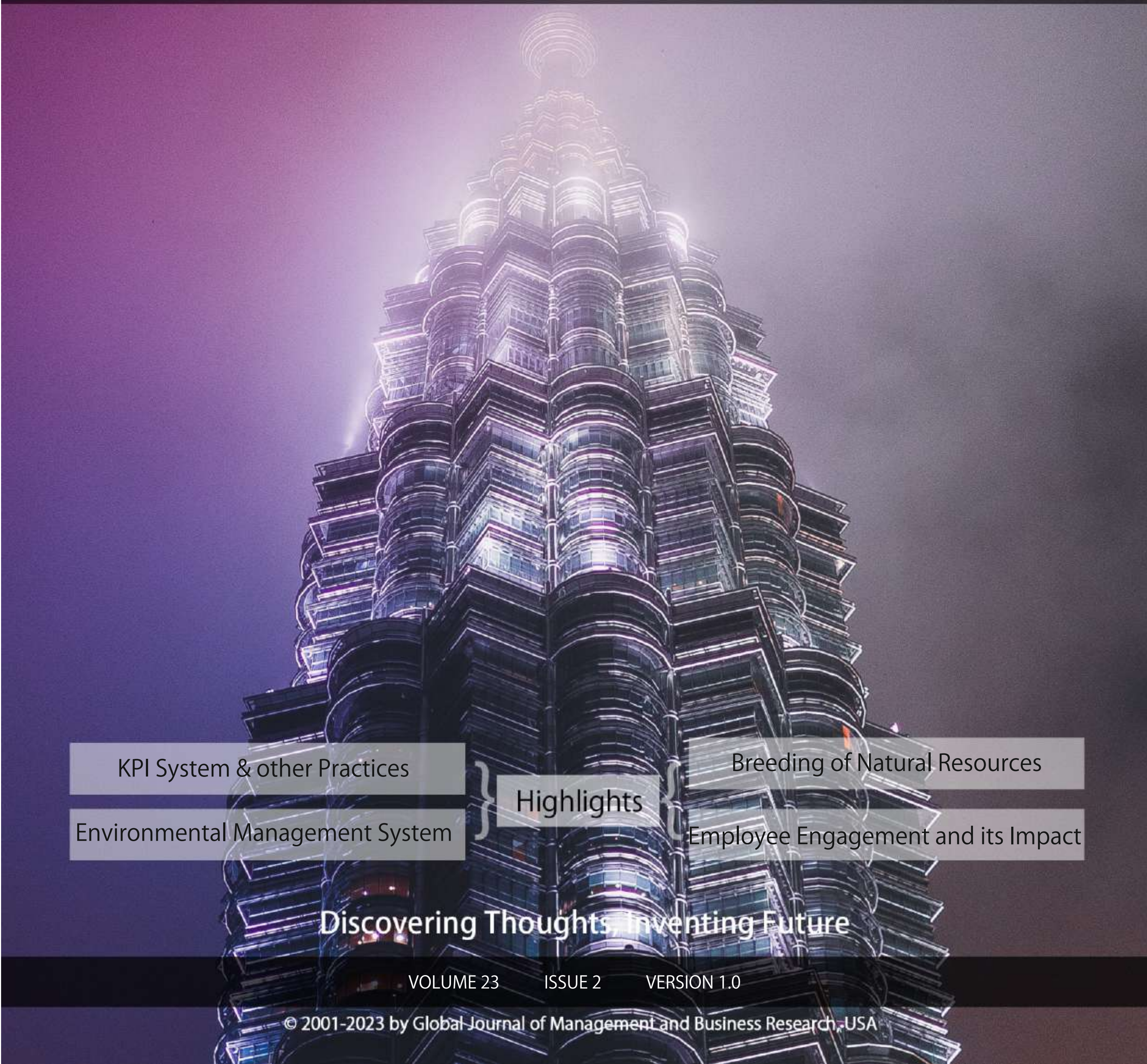

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The Adoption of ISO 14001 Environmental Management System in Supply Chain Warehousing: A Case Study

By Tariq A. Al Turairi & Hussain I. Al Hussain

Abstract- The warehousing system is an important aspect of the supply chain that requires the attention of environmental engineers to assess the environmental impacts of the warehousing activities. This paper aims to address the application of environmental management system in a warehousing organization within Saudi Aramco Oil Company. The main finding was that the successful implementation of environmental management system allows the organization to proactively address environmental impacts and have better control over environmental consequences.

Keywords: environment, environmental management system, ISO 14001: 2015, supply chain, warehousing, green warehousing.

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The Adoption of ISO 14001 Environmental Management System in Supply Chain Warehousing: A Case Study

Tariq A. Al Turairi [α] & Hussain I. Al Hussain [σ]

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I. Introduction

When considering the environmental impacts in supply chain logistics, most attention is given to the transportation. On the other hand, the environmental impact of the warehousing and storage is usually overlooked (Dentch, 2016).According to (Fichtinger, Ries, Grosse, & Baker, 2015), both transportation and storage are considered main drivers of environmental pollution in the global supply chain.

Warehousing is a critical aspect of the supply chain logistics. It allows organizations to tap into the triple bottom line by identifying the value-added activities and capitalizing on them. Although their environmental aspects are usually marginalized by some organizations, it is critical for warehousing organizations to determine their environmental activities to monitor and control their negative environmental impacts and remain sustainable. A sustainable warehouse is a one that achieve the desired profit and customer service level, without compromising the ability of the future generations to meet their need. One of the sustainability main pillars is the Environmental Sustainability, which considers all aspects related to the environment in the product life cycle (Muthu, 2020).

Fortunately, establishing an internal environmental program can help organizations understands their environmental contributions and ensure compliance with local laws and regulations.

The environmental management system was built to "protect the environment and respond to changing environmental conditions in balance with socio-economic needs" (ISO, 2016). In today's world, environmental sustainability is an important business practice, and green supply chain is desirable to gain an edge on the market (Fernando & Saththasivam, 2017).Those benefits have been sensed since early 2000s. Several companies, such as Ford, IBM, Honda.etc, have reported positive feedback on their business figures after using EMS (Morrow & Rondinelli, 2002). In this paper, a case study of the environmental management system (EMS) implementation in a Warehousing Organization within Saudi Aramco will be examined. This study presents a literature background of EMS that provide effective approaches to control environmental risks within the warehouse.

II. Literature Review

The environmental management systems provide an effective tool to measure and control the environmental impacts in businesses, regardless of the size of the company. This literature review is established from the review of multiple journals, books, and websites concerned with supply chain, warehousing, and the environment. Keywords that were used in this research include, "warehousing", "green supply chain", "environmental management system," "warehousing environmental impacts." This literature consists of an overview of environmental considerations of warehousing activities, and EMS framework.

a) *Environmental Impacts of Warehousing Activities*

When considering the environmental impacts of warehousing activities, it is important to understand the corporate supply chain strategy. For example, the number of warehouses and their locations are highly dependent on whether the organization is utilizing a responsive or an efficient supply chain. According to the Association of Supply Chain Management, the responsive supply chain utilizes more safety capacity to mitigate the risk of

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uncertain demand. Therefore, these response-focused supply chain organizations may require multiple warehouses placed at close proximity to customer. In addition, high degree of agility might be needed as well as speedy product delivery. On the other hand, the efficient supply chain is characterized with lower demand uncertainty, lower product variety, and longer product life cycle [8]. The response-focused supply chain requirements are usually accompanied with higher environmental impacts. More warehouses mean more energy consumption that needs to be monitored. Similarly, speedy, and frequent deliveries are associated with higher CO2 and other greenhouse emissions.[8] places most organizations in the middle of the spectrum of efficient and responsive supply chain. Organizations will need to assess their capability to pinpoint the right balance between efficiency and responsiveness. Determining this balance and position is important in identifying the environmental impacts relevant to their associated warehousing practices.[8] lists the seven activities which may take place in warehouses as Receiving, Prepackaging, Put-away, Storing, Order picking, Moving, and Shipping. According to (Fichtinger, Ries, Grosse, & Baker, 2015), one area of environmental impacts is caused by material handling equipment during the warehousing activities. These are closely related to the choice of equipment, and warehouse throughput. However, the environmental impacts from warehousing are majorly generated from heating, cooling, air conditioning, and lighting, and these are associated with the warehouse size and quantity. This is also influenced by the inventory management, inventory requirements, and warehouse design.

Although the abovementioned aspects are considered common, it is important to consider other environmental aspects in order to stay reputable and ensure environmental competency. (Muthu, 2020)identified several major drivers for environmental sustainability including raw materials, energy consumption, water consumption, Wastewater discharge and water pollution, Soil or land pollution, Emissions to air. Greenhouse gas (GHG) or carbon footprint, Hazardous waste management, Toxic and hazardous chemical management, etc.

The study in (Ries & Grosse,et all, 2016) shows that a typical warehouse consumes energy levels between 1025 and 1265MWh and emits between 888 and 1087 tCO2 annually. Simply by replacing luminaires from the known standard incandescent lamps to fluorescents or other alternative such as LEDs might result in a significant reduction in the lighting energy by 80% to 90% which eventually leads to decreasing emissions of between 20% and 34% for the median warehouse. Similarly, improving building's insulation yield a noticeable impact as well; improvements of 9% in energy consumptions and 8% in emissions.

Managing environmental risks requires establishing a systematic approach to managing the environment that tackles the unique challenges of organization's industry. The establishment of an environmental management program can untangle these complexities through following a systematic approach that align with local regulatory requirements and environmental protection laws.

b) EMS Framework – ISO 14001

The International Standard Organization has developed special standards for implementing the environmental management system called ISO 14001. The ISO 14001 is a global standard that provide guidelines to establish an environmental management system. ISO defines the EMS as "part of the management system used to manage environmental aspects, fulfil compliance obligations, and address risks and opportunities" (ISO, 2016). Furthermore, ISO defines aspects as elements that can interact with the environment.

The ISO 14001:2015 covers 7 main sections for the establishment of the environmental management system as illustrated in figure 1 (ASQ, 2023). (ISO, 2016) and (Dentch, 2016) explains each of these requirements in details. This paper will provide a high-level description of the requirements under each section.

1. *Context of the Organization:* This section requires the organizations to understand their context, determine the needs and expectations of interested parties, and determine the scope of the EMS program.
2. *Leadership:* Is the commitment of top management to the EMS program. It also requires the explaining of the stakeholder roles and responsibilities and implementing environmental policies.
3. *Planning:* This is when the identification of aspects, and objectives takes places. Determining the risks involved and establishing compliance obligations are needed for the completion of this section.
4. *Support:* In this section, the organization will need to determine and provide the needed resources, and proper training to and competency of its employees based on their responsibility level. The organization will need to also form their communication plan and create their documentation program.
5. *Operation:* Establishing the operating criteria is an essential area as it is the key to the creation of and enforcing the operation control measures. This section mandates organizations to have an emergency response plan as well for counteract any environmental impact deviations from the establish target level.
6. *Performance Evaluation:* The organization shall evaluate and analyze its environmental performance through regular monitoring to the aspects, program audits, and management review meetings. The ISO 14001 establishes the standards to implement the EMS without specifying environmental performance criteria.

Therefore, it is the organization's responsibility to set their own criteria and strategy that match their vision and mission as well as the environmental laws and regulations using the set forth ISO standards.

7. *Improvement:* This section's goal is for the program to have a continuous improvement by reviewing the gaps and deficiencies from the previous section and generate corrective actions that address the issue thoroughly and solve the root cause of the problems to prevent it from reoccurring.

Figure 1: ISO 14001 Environmental Management Systems (EMS) Framework (ASQ, 2023)

The environmental management system foundation is built on the basis of the Plan-Do-Check-Act (PDCA) model. This model drives the iterative process needed to achieve continuous improvements in the environmental program. Furthermore, organizations can apply this model to the whole program, or to each individual element (ISO, 2016).

"Plan" in the model refers to establishing the environmental objectives, aspects, and targets in accordance with the environmental policies and scope determined by top management. These objectives along with operational controls are implemented in the "Do" phase. During the "Check" phase, management reviews and audits are conducted, and reports are initiated to analyze the program position against the established criteria, and issue action items. The corrective actions are implemented in the "Act" phase to rectify any deficiencies and to continually enhance the EMS program. Figure 2 provides an illustration to the PDCA model association with EMS Framework (Dentch, 2016).

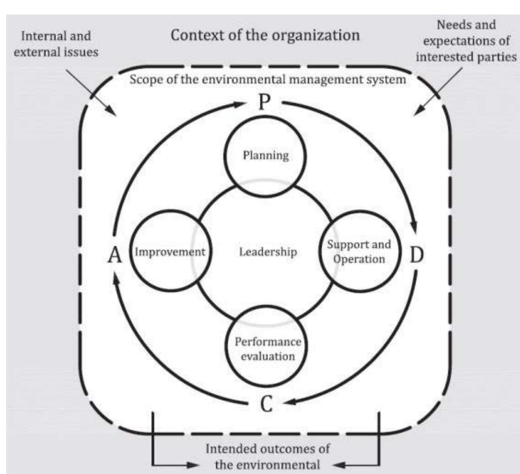

Figure 2: Relationship between PDCA Model and EMS Framework (ISO, 2016) "The Figure Taken from ISO 14001: 2015 is Reproduced with the Permission of the International Organization for Standardization, ISO. This Standard can be obtained from any ISO member and from the website of the ISO Central Secretariat at the following address: www.iso.org. Copyright Remains with ISO"

Originally, the purpose of the EMS is to protect the environment and respond to changing environmental conditions in a systematic way. The ISO 14001 was revised in 2015 with an additional focus. The new revision emphasizes on adopting lifecycle thinking, along with other elements such as leadership and stakeholder. This adoption is likely to drive sustainable development through the environmental management system (Bravi & Santos, et all, 2020; Ciravenga & Martins, et all, 2015; Mosgaard & Bundgaard, et all, 2022). This new version (ISO 14001: 2015) seeks to enhance the strategic approach to the EMS through incorporating lifecycle thinking, corporate social responsibilities (CSR), and circular economy (CE) (Kristensen & Mosgaard, et all, 2021; Mosgaard & Bundgaard, et all, 2022).

III. Research Methodology

This paper embraces a qualitative approach to evaluate the adoption of the recently established environmental management system in a Warehousing Organization that operates within Saudi Aramco Company. It will be referred to as Warehousing Organization (WO) in this paper. The environmental management system that is being adopted in the Warehousing Organization is ISO 14001:2015.

Figure 3: EMS Five Stages

IV. Findings & Discussion

The findings and discussion of this section will be reviewed in accordance with the EMS five staged as shown in Figure 3 (EPA, 2022).

Stage One: Commitment and Policy

Saudi Aramco has established a guideline for Environmental Protection Policy Implementation. This guideline serves as the source for establishing the environmental policy for the environmental management system. The policy requires to address the commitments to comply with regulations, continuous improvements, pollution prevention, worker protection, and environmental and public health protection.

All environmental activities and aspects under the Warehousing Organization adhere to one or more of these policies. Through these policies, the Warehousing Organization strives for full compliance with environmental regulations and maintaining a green operation in warehousing.

Stage Two: Planning

Prior to the development of the action plan, the Warehousing Organization reviews the legal requirements and references. This also includes a review to the latest updates to the ISO 14001 family of standards. Then, the Warehousing Organization starts the process of identifying the aspects and impacts, which includes listing all their environmental activities, products, and services that may have a positive or negative influence on the environment. Based on the identified aspects and legal requirements, the Warehousing Organization sets their objectives targets, and performance measures which are translated later into an action plan with milestones. These milestones are constantly administered by the organization's environmental coordinators and monitored and reviewed by the

Director of the Warehousing Organization on quarterly basis through the Management Review Meetings in Stage Four.

This stage also involves the identification of relevant internal EMS program procedures and forms. The Warehousing Organization has established 12 procedures that covers the requirements of ISO sections in details. These procedures are created throughout the EMS five stages mentioned in figure 3.

Stage Three: Implementation

After creating the action plan, the Warehousing Organization assigns action plan responsibilities to the appropriate entity to ensure that the environmental management system conforms to the requirements of the identified standards. In addition, the Warehousing Organization establishes operational controls as well as emergency controls to manage their environmental aspects in the action plan and ensure the environmental impacts are mitigated or controlled. After that, the needed training is provided to the employees, and the policies as well as the new action plan is communicated to all stakeholders.

Stage Four: Evaluation

The Warehousing Organization plans for and maintains operational licenses, such as the authorization and license to store chemical materials. The management review, and nonconformity & corrective action procedures are established in this step. Periodic monitoring is required for this step which includes conducting management reviews, and auditing the EMS program.

Stage Five: Review

In this stage, the Warehousing Organization establishes the internal EMS assessment procedure and conducts the internal assessment and compliance evaluation to measure the EMS program performance. The EMS program is audited internally and on corporate level to continually improve the EMS program. The objective of these audits is to determine the progression level of the organization through predetermined EMS levels. Management reviews are also a key part in ensuring the successful EMS program standing in terms of the established key performance indicators. These eventually will ensure that environmental procedures are updated and revised.

Figure 4 is an edited version of figure 1. It is created to show the interlink among PDCA, ISO 14001 framework and EMS stages used to evaluate the Warehousing Organization. The figure shows in what EMS stage the WO addresses the 7 main areas in ISO 14001 framework. The WO combined the requirements of the 7 ISO sections into the EMS five stages as applicable to their operation and organizational size. Based on the literature review of the ISO framework and the details of the WO EMS stages, the WO addresses the requirements of ISO standards sufficiently in the proposed EMS stage. The next step for the WO is to have their EMS program audited by an ISO certifying body to obtain the ISO certification.

PDCA	ISO Framework	EMS Stages
Plan	- Context of Organization - Leadership - Planning	- Commitment and Policy - Planning
Do	- Support - Operation	- Implementation
Check	- Performance Evaluation	- Evaluation
Act	- Improvement	- Review

Figure 4: Link Between PDCA, ISO 14001 Framework, and EMS Five Steps

The Warehousing Organization applied the environmental management system effectively that resulted in an improved environmental impact identification and control. The Warehousing Organization has proved their environmental competency internally through successfully achieving the environmental excellence performance level during the last conducted corporate audit with no major nonconformities. As result of effective implementation and monitoring of the Hazardous Materials program under EMS, the Warehousing Organization maintained the chemical warehouse license and regulatory approval to import, handle, and store hazardous and chemical materials. This authorization was granted after displaying capability in handling such hazardous materials and proving compliance to the environmental laws and regulations.

Furthermore, the established environmental initiatives continue to lower potential environmental impacts. For example, the warehouse intra-movement initiative has demonstrated a considerable positive environmental impact. By applying the Lean Six Sigma approach, the Warehousing Organization managed to reduce the annual intra-movements between warehouses and forklift runtime by 10%along with reducing the associated $CO2$ emissions and energy consumptions. Such initiatives do not only yield evident environmental benefits, but also provide the Organization with additional resources to allocate towards other business aspects.

V. Conclusion

The environmental management system provides a comprehensive approach to managing environmental risks in storehouses, where different types of materials are stored, handled, and transported. Incorporating a well-established EMS as outlined in the ISO 14001: 2015 standard ensures compliance with environmental law and regulations and reduces undesired environmental impacts resulted from warehousing practices. Companies that embrace this system will notice the benefits in a short duration if applied correctly. This study provides a qualitative approach to reviewing the benefits of applying the environmental system. One of the limitations of this study is that it lacks the quantitative measures of the environmental benefits. Calculating the environmental benefits is not an easy task. Mega projects can be complex and difficult to quantify some of the benefits. According to (Dangelico & Pujari, 2010), using scientific and systematic methods for assessing the environmental impacts of a product is a difficult and complex process. Further studies need to be conducted on the standard methodologies of calculating environmental impacts.

Another area to investigate is the concept Design for the Environment (DFE) that is attracting more attention, warehousing organizations need to embrace this concept when purchasing their equipment. According to [8], the DFE concept includes provisions for reuse and recycling. Organizations can purchase eco-friendly pallets and packaging materials. The reduced energy consumption is another consideration in DFE concept. This is when organizations revisit their warehousing networks to enhance their critical path through utilizing Warehousing Management and Transportation Management Systems.

It is recommended to conduct benchmarking with other top-in-class organizations and attending environmental forums and conferences to identify potential environmental technologies and approaches to lower the environmental impacts. This will not only introduce the organizations to new environmental technologies and initiatives, but it will also help in finding the most effective method of calculating the benefit and dealing with environmental impacts.

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Analysis of Impacts in Brazil of CDM Projects Related to Carbon Credit and Global Warming

By Dr. André Félix & M. Eng. Vinícius Maia de Sá

Abstract- The article was developed using an exploratory research method in conjunction with a bibliographical survey on the issues of Greenhouse Gas - GHG emissions, correlating the emission rate with the rate of change in global temperature, demonstrating that GHG emissions cannot be attributed to cause of global temperature rise. Another subject analyzed is the possible cause of the gradual decrease in deposits of Clean Development Mechanism projects - CDM registered by Brazilian companies in the UNFCCC, presents in the discussion the lack of attention to the subject of the competent public agencies, bringing as a consequence the delay in the regulation of the carbon credit market, thus allowing commercial speculations that are prioritized over environmental actions.

Keywords: *carbon credit, GHG, CDM projects, global warming.*

GJMBR-G Classification: *LCC: HD9698.2.B72*

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I. Introdução

Considerando que as mudanças climáticas, entre elas o aquecimento global, têm acontecido naturalmente desde a origem da terra, torna-se difícil separar as causas destas alterações que podem ser naturais, intrínseca ao ser vivo terra através do metabolismo do planeta, ou por ações humanas que possam ter ocasionado mudanças no micro ou mesoclima ao longo da história da humanidade (Leite, 2015). Atribuem-se como possíveis fatores para algumas mudanças climáticas os fenômenos naturais, tais como atividades tectônicas, erupções vulcânicas e alterações na órbita da Terra, contudo o "motor" para as mudanças climáticas são as atividades humanas. Evidências como o aumento das concentrações de CO2 no ar de forma paralela ao aumento da produção industrial desde o período da revolução industrial sugerem que a elevação acentuada dos níveis de temperatura no globo possa ter causas antropogênicas. A queima descontrolada de combustíveis fósseis é considerada uma das ações antropológicas mais preocupantes, pois podem ser responsáveis pela a presença de Gases de Efeito Estufa (GEEs), como carbono, metano e óxido nitroso, que atualmente estão com as maiores concentrações na atmosfera dos últimos 800 mil anos. Somado a isso, a exploração de madeira e o desenvolvimento urbano proporcionaram a devastação de florestas, áreas úmidas e outros "sequestradores de carbono", que são importantes para impedir que o carbono seja liberado na atmosfera. Soma-se a isto as formas de geração de energia elétrica, agricultura, transporte e hábitos de consumo como impulsionadores das alterações climáticas (What Are the Causes of Climate Change?, 2022). O aumento dos GEEs exigiu a adoção de medidas concretas para a sua mitigação. Os trabalhos para isto iniciaram na década de 90; desde então diferentes empreendimentos e ações têm sido introduzidos. O Protocolo de Quioto, a título de exemplo, foi elaborado no ano de 1997 na cidade japonesa de Quioto, a qual leva o nome, e representa um tratado firmado por 192 países com a finalidade de limitar e reduzir a emissão dos GEEs, através de instruções aos países industrializados e nações em expansão econômica para atingirem a meta estabelecida para o controle da emissão dos gases com práticas de sustentabilidade, para isto ações técnico-científicas e ações políticas devem ter troca de informação e serem negociados entre os signatários (What is the Kyoto Protocol?, s.d.). O presente trabalho concentra-se no Brasil e tem como objetivo descrever o estatus do Brasil frente aos depósitos de projetos MDL, a inserção no mercado de Carbono e a relação dos GEE com o aquecimento Global.

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II. Revisão Da Literatura E Método

a) Os Gases De Efeito Estufa e as Suas Formas de Mitigação

Segundo o Painel Intergovernamental de Mudanças Climáticas no mundo as emissões de gases de efeito estufa (CO2, CH4. N2O, HFCs, PFCs e SF6) têm incrementado desde tempos pré-industriais, com um crescimento de 70% entre 1970 e 2004 (28.7 GtCO2 – eq/ano – 49 GtCO2 – eq/ano) (IPCC, 2007). Após este período o incremento foi ligeiramente maior, de 2004 até 2019 registrando-se um aumento de 25%. (38 GtCO2 – eq/ano – 48 GtCO2 – eq/ano) com uma taxa de crescimento de 0.6 GtCO2 – eq/ano (4 Charts Explain Greenhouse Gas Emissions by countries and Sectors, 2020).

Devido a mudança de metodologia adotada pelo IPCC e, considerando o 5ª Relatório de Avaliação (AR5) de 2014, o IPCC fez uma pequena correção nas informações reduzindo o valor da emissão de GEE no ano de 2004 de 49 GtCO2 – eq para 45 GtCO2 – eq, (IPCC Report Graphics, s.d.) divergindo ainda da WRBRasil que apresenta para o mesmo ano um valor de 39 GtCO2 – eq (4 Charts Explain Greenhouse Gas Emissions by countries and Sectors, 2020).

As alterações de metodologia adotada pelos órgãos verificadores incluindo o IPCC não alterou a crescente de emissão no mundo de GEE. Dividindo o período em dois, pode-se perceber que de 1970 a 2004 a taxa de crescimento foi de 0.58 GtCO2-eq/ano, sendo similar à outra parte do período estudado de 2004 a 2019 que apresentou uma taxa de 0.6 GtCO2-eq/ano.

No Brasil a evolução das emissões de GEE deve ser vista sobre dois aspectos: A) Evolução das emissões sem Mudança de Uso da terra e Florestas (Land-Use Change and Forestry - LUCF) e B) envolvendo LUCF. Considerando as emissões sem LUCF, o Brasil teve uma expansão de 239% no período de 1970 a 2020 (0.34 GtCO2 – eq – 1.16 GtCO2 – eq) resultando em um crescimento de 0.016 GtCO2 – eq /ano, que é bem menor que o crescimento mundial.

A taxa de crescimento apurada é confirmada pela WRBrasil, contudo, devido ao uso de metodologia específica utilizando Ferramenta de Cálculo para Balanço de Emissões de Gases de Efeito Estufa em Florestas e Sistemas Agroflorestais no Brasil (GHG Protocol Florestas e SAFs) (Delgado Assad et al., s.d.), chegaram a resultados um pouco diferentes. Para eles o Brasil emitiu em 1990 aproximadamente 0,590 GtCO2-eq e em 2019 1,06 GtCO2-eq, resultando em um crescimento de 80% nesta faixa de tempo, chegando ao mesmo crescimento de 0.016 GtCO2 – eq/ano. (4 Charts Explain Greenhouse Gas Emissions by Countries and Sectors, 2020).

b) Mitigação No Curto, Médio E Longo Prazo

O aumento da emissão de GEE registrada anualmente trouxe, desde a década de 90, preocupações ambientais por parte dos órgãos de controle e das nações que buscam o entendimento sobre o assunto e o direcionamento de ações por meio de encontros multilaterais que ocorrem nas conferências do clima. O IPCC, órgão das Nações Unidas, criado para acompanhar, discutir e orientar ações sobre questão do clima mundial é um órgão técnico com centenas de cientistas, mas também um órgão político, onde os governantes tem acento. Por meio das Conferência das Partes (COP – Conference of the Parties), os governos de modo geral (política e tecnicamente) apresentam soluções que poderão ser adotadas e as já implantadas com objetivo de mitigar as emissões e os impactos causados pela variação antropogênica do clima. O AR6 último relatório emitido pelo IPCC, traz em suas conclusões a necessidade da tomada de decisões com o objetivo de frear o aquecimento global: a) diminuir o crescimento dos GEE mundial; b) não usar combustíveis fósseis; c) implantar ações com quebra de paradigma em todos os setores; d) Reestruturar o estilo de vida; e) eliminar a emissão de CO2; f) aumentar o aporte financeiro para financiamento de mitigação (Schumer et al., 2022).

As questões de mitigação dos efeitos (ou das causas) têm impacto direto na existência do planeta. A preservação da vida, do planeta em si ou dos seres que a habitam estão sempre em pauta, mas as questões econômicas permeiam com facilidade o tema. Uma das formas de mitigação ou de diminuição da emissão de GEE é com a valoração em US$ do CO2. O controle de mercado poderia minimizar a alta de emissão visto que o valor da tonelada recebida poderia substituir o incentivo à novas emissões, para isto duas abordagens são adotadas na análise de como agir nas formas de mitigação da geração dos GEE: A) Avalia a tecnicidade em mitigação (estudos bottom-up), enfatizando tecnologias específicas e regulamentos. B) Avalia o potencial econômico das opções de mitigação (estudos top-down). Podendo ser adotada qualquer abordagem, a que tecnicamente ou economicamente satisfaz o sistema.

Outro aspecto em destaque no resumo do AR6, são A) as boas práticas gerenciais que incluem: treinamento de pessoal, feedback regular e documentação de práticas existentes, e B) mudança dos padrões de estilo de vida e comportamento das pessoas. Sugere que deve haver mudanças nos padrões de consumo que enfatizem a conservação de recursos; aceitação da eficiência energética por fontes renováveis por parte do mercado e por sua vez uma troca cada vez maior da matriz energética; mudanças culturais; mudanças no comportamento ocupacional; e mudanças no setor de transporte, enfatizando o planejamento urbano e um estilo de dirigir mais eficiente. Uma opção de ordem mundial na alteração dos hábitos das pessoas e das políticas públicas seria uma atenção maior ao o setor do pós-consumo que contribui com uma pequena parte às emissões globais de gases de efeito estufa (menos do 5%), no entanto, práticas como a reciclagem e a minimização dos resíduos contribuem positivamente à redução da emissão dos gases através da conservação de energia e materiais. Um exemplo desta redução são os veículos em fim de vida (VFV's) são considerados fontes de matéria prima para a cadeia reversa, podendo contribuir ainda para uma política pública direcionada a renovação de frota menos poluente e tecnologicamente eficaz. (Gonçalves Nogueira & Celina Lange, 2023).

Entre as medidas com implantação já efetivada para mitigar as emissões de gases de efeito estufa temos suprimento de energia e desenvolvimento sustentável. Contudo, essas medidas não têm sido suficientes para diminuir o crescimento global das emissões, levando as corporações a sofrerem a pressão acerca da causa ambiental, partindo de seus investidores, grupos de defesa ambiental, (IPCC, 2022; Kaplan & Ramanna, 2021).

As empresas, em sua maioria americanas, com foco em reverter esse cenário produzem relatórios de cunho ambiental, social e de governança, estimando a responsabilidade das mesmas com as causas ambientais. Os relatórios em sua maioria abrangentes, são constituídos por dados imprecisos, contraditórios e não verificáveis. São mais efetivas as empresas que adotam um dos "mecanismos flexíveis" como ação mitigadora.

c) Mecanismo De Desenvolvimento Limpo

No protocolo de Quioto estão expressos os "mecanismos flexíveis", que foram desenvolvidos para ajudarem os países que possuem compromissos de redução de emissões de gases de efeito estufa (países do Anexo I do protocolo de Quioto) a atingirem as metas ao menor custo possível. (UNFCCC, 1998). O Mecanismo de Desenvolvimento Limpo (MDL) é um dos três "mecanismos flexíveis". Os outros dois mecanismos são: a Implementação Conjunta (JI) e o Mercado de Emissões (ET).

As modalidades e procedimentos para o MDL foram propostas pela Conferência das Partes (COP/MOP). Desde então, diferentes tipos de projetos de redução de gases de efeito estufa (conhecidos apenas como projetos MDL) vêm sendo apresentados à Autoridade Nacional Designada (AND) dos países em desenvolvimento.

Os projetos MDL após uma série de Steps a serem seguidos e com sua efetiva implantação gerarão redução na emissão de gases e podem receber um documento denominado Reduções Certificadas de Emissões (CERs) que devem ser validados e verificados por Entidades Operacionais Designadas (EODs), podendo assim ser posteriormente negociados no mercado global.

No Brasil, a Comissão Interministerial de Mudança Global do Clima, estabelecida em 1999, atua como a AND Brasileira. Os projetos devem ser aprovados, validados, registrados, verificados, monitorados e, finalmente, certificados pelo governo do país anfitrião. A figura 1 lista a distribuição ao longo do período de 2004 a 2019 dos 385 projetos apresentados à United Nations Framework Convention on Climate Change (UNFCCC) tendo o Brasil como Host Country. Destaca-se o período de 2005 a 2012 como o mais promissor, posterior a este período observa-se um declínio nos depósitos até encerrar em 2019. (Fernandes & Leite, 2021).

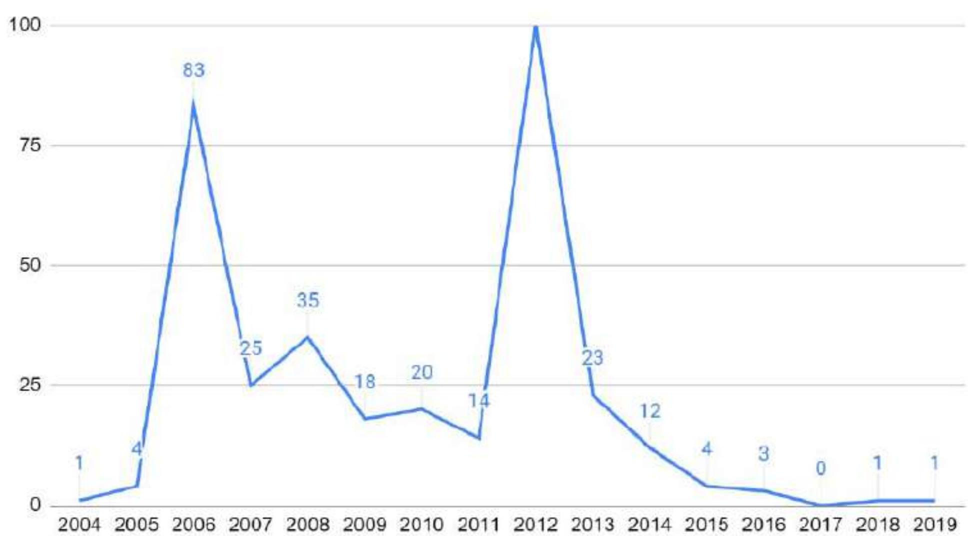

Fig. 1: Distribuição Dos Depósitos De Projetos Brasileiros MDL na UNFCCC Entre O Período De 2004 a 2019
Fonte: Adaptado De (CDM: Project Activities, s.d.)

O declínio de depósitos verificados pode ser atribuído às questões tecnológicas, questões de custo ou de interesse político este último se atribui a falta de regulamentação sobre o tema, gerando incertezas jurídicas. No final de 2019 uma nota do Ministério da Ciência e Tecnologia (MCT) informa que estão suspensas o recebimento das propostas interrompendo o fluxo de depósito. (Mecanismo de Desenvolvimento Limpo, 2021)

As questões tecnológicas e de custos são percebidas na estruturação do projeto, uma vez que as opções de mitigação disponíveis não estão sendo totalmente utilizadas, uma vez que muitas tecnologias são novas nos países em desenvolvimento obrigando ao uso de tecnologias ineficientes, inclusive em países industrializados, além das empreses terem que tratar com a lenta taxa de rotatividade do capital, falta de recursos técnicos e financeiros e as limitações na habilidade das empresas em aceder e absorver a informação tecnológica disponível.

d) Um Exemplo De Projeto MDL Da Indústria Química

O Brasil tem grande potencial na apresentação de projetos ligado no setor florestal e de landfill, porém em 2005 um projeto fora destes eixos foi apresentado e chama a atenção pelo volume proposto para redução de CO2 atingindo 5,961,165 tCO2-eq por ano até 2013. O projeto busca a redução das emissões de N2O em Paulínia, São Paulo. Trata-se de uma planta produtora de ácido adípico, matéria prima principal para a produção do polímero de nylon, onde ocorrem emissões inevitáveis de N2O decorrentes do processo de produção. Estas emissões são normalmente lançadas à atmosfera sem nenhum tratamento tendo em vista que as leis brasileiras não proíbem a emissão desse tipo de poluentes. Considerando este aspecto, a atividade de projeto consiste na instalação de uma unidade para converter, o óxido nitroso em nitrogênio utilizando o processo de decomposição termal. Também compreende a instalação de uma caldeira para a geração de vapor aproveitando os gases de alta temperatura provenientes do oxidador termal. Com a instalação desta unidade de decomposição, a redução anual de emissões de CO2 equivalente seria de quase seis milhões de toneladas (Rhodia P. E. Ltda, 2020). A atividade de projeto tem início em 2007 e término em 2013, sendo que os períodos podem ser renovados. O projeto tem um tempo de vida esperado de 30 anos.

Várias tecnologias foram avaliadas para a atividade de projeto: decomposição termal, decomposição catalítica, reciclagem para ácido nítrico e alimentação para manufatura de fenol. Depois da análise e avaliação dessas tecnologias, o processo de decomposição termal foi escolhido como atividade de projeto. A figura 2 ilustra a operação de decomposição do óxido nitroso.

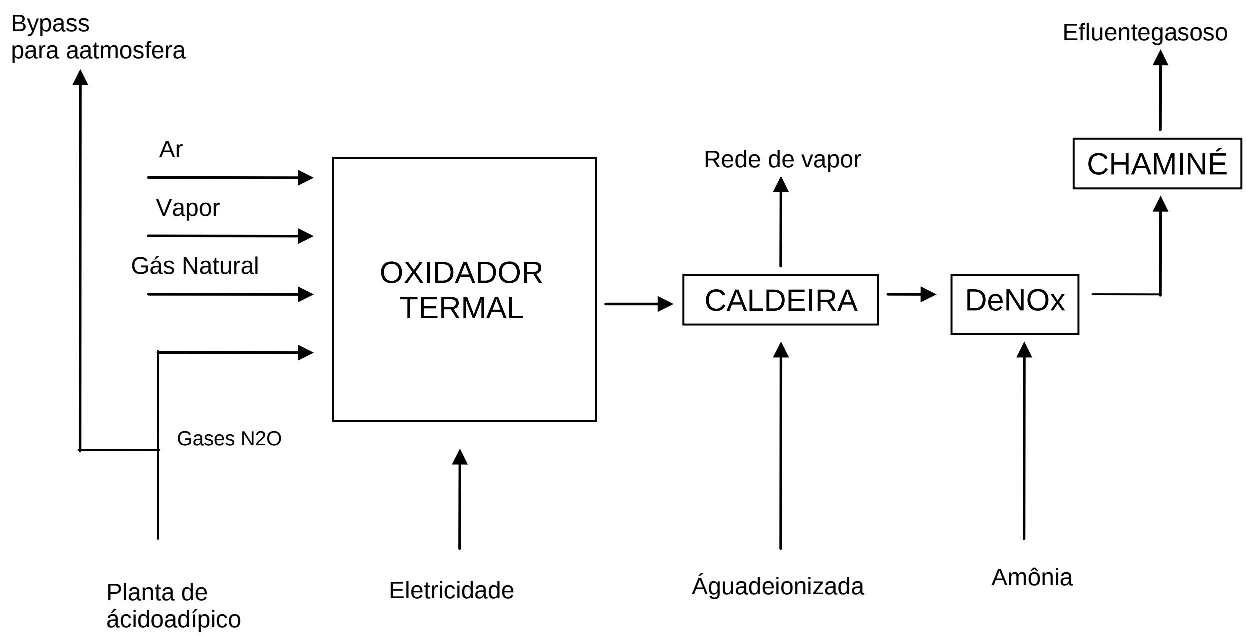

Fig. 2: Fluxo Do Processo De Operação Da Decomposição Do N2O Proposto No Projeto Nº 0116. (Fonte: CDM, 2005)

O óxido nitroso proveniente da planta de ácido adípico é misturado com gás natural (metano) o qual é queimado (oxidado) no oxidador termal. Então óxido nitroso é decomposto, segundo a seguinte equação:

$$CH_4 + 4N_2O \rightarrow CO_2 + 2H_2O + 4N_2$$

Uma vez que a oxidação termal ocorre a altas temperaturas, esta é aproveitada para a geração de vapor em uma caldeira; o vapor gerado é encaminhado à rede de vapor da empresa. A formação de óxidos nitrosos, gases poluentes não desejados, é minimizada através de uma unidade de decomposição desses gases. Finalmente, os gases remanescentes são lançados à atmosfera.

O projeto utiliza a metodologia AM0021 para a decomposição de N2O proveniente de plantas existentes de produção de ácido adípico, tanto para a linha de base quanto para o monitoramento das emissões dos gases de efeito estufa. Essa metodologia foi escolhida levando em conta os critérios de aplicabilidade da metodologia: (1) o projeto deve utilizar o processo de decomposição termal, (2) não deve haver restrições a respeito das emissões de N2O no país anfitrião e (3) Não devem existir incentivos econômicos para a aplicação da atividade de projeto.

As emissões de linha de base do projeto estão constituídas por: as emissões de N2O provenientes da produção de ácido adípico e as emissões de CO2 provenientes da queima de combustíveis fósseis para a produção do vapor que abastece a planta de produção. As emissões de linha de base são calculadas a partir da produção anual de ácido adípico multiplicada por um fator de emissão de N2O. O fator de emissão de N2O é calculado com base no consumo químico de

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ácido nítrico (matéria prima para a produção de ácido adípico). Durante a implementação da atividade de projeto existem vazamentos, emissões que ocorrem fora da fronteira de projeto, que se devem: (1) à queima de combustíveis fósseis para a produção do vapor que alimenta a unidade de decomposição e (2) à queima de combustíveis fósseis para a produção da eletricidade que também alimenta a unidade. Já as emissões de gases de efeito estufa provenientes da atividade de projeto decorrem principalmente da queima do gás natural durante o processo de oxidação do óxido nitroso. Todas essas emissões (linha de base, atividade de projeto e vazamentos) são calculadas com base na produção anual de ácido adípico e fatores de emissão proporcionados pela metodologia utilizada.

A metodologia de linha de base e monitoramento utilizada também proporciona critérios para a avaliação da adicionalidade do projeto. Para isso, emprega-se a ferramenta para a demonstração e avaliação da adicionalidade (EB 16). Essa ferramenta avalia a adicionalidade com base em três condições: (1) não existe regulamentação que requererá a mitigação de N2O, (2) a atividade de projeto não é prática comum no setor relevante e região e (3) a atividade de projeto não é comercialmente viável. Segundo o documento de projeto, essas três condições são cumpridas, de modo que o projeto é adicional.

O cálculo final da redução de emissões, em toneladas de CO2 equivalente, a partir da implementação da atividade de projeto está ilustrado na tabela 1 a seguir:

Tabela 1: Balanço das emissões de linha de base e monitoramento apresentando o saldo após o período final do projeto. (Fonte: adaptado de (CDM, 2005)

Ano 2007 a 2037	Estimação das emissões da atividade de projeto em CO2-eq	Estimação das emissões da linha de base em CO2-eq	Estimação dos vazamentos em CO2-eq	Estimação da redução de emissões em CO2-eq
Por ano	1,166,991	7,129,378	1,122	5,961,265
Vida útil do projeto (30x)	35,009,730	213,881,340	33,660	178,837,950

O projeto ainda encontra dentro da vida útil, é um projeto referência para a linha industrial química, pois os projetos apresentados na UNFCCC concentram-se ainda nas indústrias intensivas em energia.

e) MDL E Crédito De Carbno No Brasil

O objetivo dos projetos MDL é minimizar a emissão e o efeito que o GEE provoca no planeta, a projeção da NASA mostra uma concentração de GEE no planeta direcionado aos países desenvolvidos, geograficamente são os países concentrados no hemisfério norte (NASA's Scientific Visualization Studio, 2023). Considerando esta projeção as nações buscam balancear a quantidade emitida, ou seja, se um país emite muito outro deve emitir menos. Este recurso foi contemplado no Protocolo de Quito e é conhecido como Mercado de Carbono que é contemplado no documento descritivo do MDL.

No Brasil poucas Leis regulamentam ou descrevem o Mecanismo de Desenvolvimento Limpo. A mais recente é o DECRETO Nº 11.550, DE 5 DE JUNHO DE 2023 - Dispõe sobre o Comitê Interministerial sobre Mudança do Clima, seguido por.

LEI Nº 14.590, DE 24 DE MAIO DE 2023 – que altera a Lei nº 11.284, de 2 de março de 2006, que dispõe sobre a gestão de florestas públicas para a produção sustentável, a Lei nº 11.516, de 28 de agosto de 2007, que dispõe sobre a criação do Instituto Chico Mendes de Conservação da Biodiversidade, e a Lei nº 12.114, de 9 de dezembro de 2009, que cria o Fundo Nacional sobre Mudança do Clima.

DECRETO Nº 11.075, DE 19 DE MAIO DE 2022 - Estabelece os procedimentos para a elaboração dos Planos Setoriais de Mitigação das Mudanças Climáticas, institui o Sistema Nacional de Redução de Emissões de Gases de Efeito Estufa e altera o Decreto nº 11.003, de 21 de março de 2022. (Decreto nº 11.075 de 19/05/2022, 2022)

DECRETO Nº 9.172, DE 17 DE OUTUBRO DE 2017. Institui o Sistema de Registro Nacional de Emissões - Sirene, dispõe sobre os instrumentos da Política Nacional sobre Mudança do Clima a que se refere o inciso XIII do caput do art. 6º da Lei nº 12.187, de 29 de dezembro de 2009, e altera o Decreto nº 7.390, de 9 de dezembro de 2010, que regulamenta a referida Política. (Decreto nº 9.172 de 17/10/2017, 2017) O decreto 9172 está em fase de ser substituído pelo Ainda está em desenvolvimento a aprovação do Mercado Brasileiro de Redução de Emissões (MBRE), que tornará, se aprovado, um marco regulatório para o mercado de carbono. (Agência Senado, 2022).

LEI Nº 12.651, DE 25 DE MAIO DE 2012. Dispõe sobre a proteção da vegetação nativa; altera as Leis nºs 6.938, de 31 de agosto de 1981, 9.393, de 19 de dezembro de 1996, e 11.428, de 22 de dezembro de 2006; revoga as Leis nºs 4.771, de 15 de setembro de 1965, e 7.754, de 14 de abril de 1989, e a Medida Provisória nº 2.166-67, de 24 de agosto de 2001; e dá outras providências.

LEI Nº 12.187, DE 29 DE DEZEMBRO DE 2009. Institui a Política Nacional sobre Mudança do Clima - PNMC e dá outras providências.

DECRETO Nº 5.882, DE 31 DE AGOSTO DE 2006 - Modifica os arts. 5o, 12 e 16 do Decreto no 5.025, de 30 de março de 2004, que regulamenta o Programa de Incentivo às Fontes Alternativas de Energia Elétrica - PROINFA, e dá outras providências.

Considerando o CO2 como o gás de abundância em sua emissão na composição do GEE é então o principal para ser atacado como minimização dos efeitos. A Remoção de Dióxido de Carbono (Carbon Dioxide Removal - CDR), pode ser na redução da emissão ou na sua captura gerando o principal fator na comercialização do “crédito de carbono”.O funcionamento deste “mecanismo de flexibilização” é dado pela captura e venda do volume capturado ao país que não conseguiu alcançar a meta, porém deveria. A captura de uma tonelada de CO2, torna-se um crédito a ser comercializado de acordo com um dos modos adotados no projeto que pode ser modo unilateral que trata de projeto desenvolvido, valorizado e aplicado no próprio país sem um cliente relacionado; modo bilateral que trata de projeto entre um país desenvolvedor do projeto (normalmente país industrializado) e um país hospedeiro (normalmente um país em desenvolvimento) o valor do crédito é estabelecido pelo país desenvolvedor; modo multilareal que trata de projetos desenvolvidos por um fundo internacional e instalados em um país de escolha conforme critérios. Neste caso o valor do crédito é estabelecido pelo fundo.

O mercado de carbono conta com o sequestro do carbono, evitando que de alguma forma este vai à natureza aumentando a poluição e ou contribuindo ao efeito estufa. Quatro formas de sequestro de carbono são utilizadas: CCS: Carbon capture and storage, trata de uma forma de sequestrar carbono de um processo armazenando permanentemente o volume capturado; Dentro do CCS temos o CCSbP: Carbon capture and storage by photosynthesis; trata de projetos de reflorestamento com objetivos diversos onde há contabilidade de sequestro de carbono por fotossínteses; CCUS: Carbon Capture, Utilization and Storage, trata de uso do CO2 sequestrado em algum produto, como a fabricação de combustíveis sintéticos à base de CO2; BECCS: Bio-energy with Carbon capture and storage que trata de usar o CO2 como bioenergia ou seja além de capturar o CO2 usa-se como bioenergia encontrados mais facilmente em usina com uso de biomassa; DAC – Direct Air Capture; este método trata da captura de CO2 direto do ar. (Edvardsson, 2020; EPBR & Machado, 2023).

Nos últimos dois anos a obtenção de negócios com base no mercado de crédito de carbono começou a se alavancar. Vários projetos estavam na espera da regulamentação, contudo já se desenvolviam enquanto esperava. O principal mecanismo adotado no setor florestal do Brasil é o Reduction of Emissions from Deforestation and Forest Degradation (REDD), utilizado no Pantanal (na Serra do Amolar - Mato Grosso do Sul – MS) com potencial de redução de 430 MtCO2 até 2030 - Projeto da empresa colombiana ISA CTEEP. (Correia & Oliveira, 2023).

Empresas estrangerias fazem no Brasil um tipo de grilagem na busca de projetos direcionados ao mercado de crédito de carbono, isto é possível devido a não integração política e ou de interesse da gestão pública. O mercado especulatório percebeu esta lacuna e resolveu nos últimos 2 anos fazer investimento pesado. Envolveram tribos indígenas e loteamento de terras ainda em floresta. O discurso de cuidar das árvores para proteger o mundo está carregado com na transformação do cuidado com meio ambiente em dinheiro. (Antunes, 2023). Questões como essa atropelam o desenvolvimento de Leis e normas, fazendo com que um tipo de letargia envolve as discussões, atrasando em décadas a elaboração definitivas de leis e normas pois coloca em confronto o desenvolvimento econômico e a preservação ambiental (SOS FLORESTAS, 2017).

f) Aquecimento Global

O mundo está esquentando e é gradativo a cada ano, (Figura 3) é notório que há uma taxa de aquecimento em expansão no último século. No planeta o aquecimento é percebido com ênfase no hemisfério norte (Mersmann et al., 2016) e no Brasil tanto o aquecimento como a região geográfica de aquecimento se replicam à observado no planeta. Em 2021 o Brasil apareceu como o país com uma média de aquecimento maior que o mundo, registrando níveis de 2,0 ºC, já acima do estabelecido na meta global de 1,5 ºC. (*The evidence is clear: the time for action is now. We can halve emissions by 2030. — IPCC*, 2022).

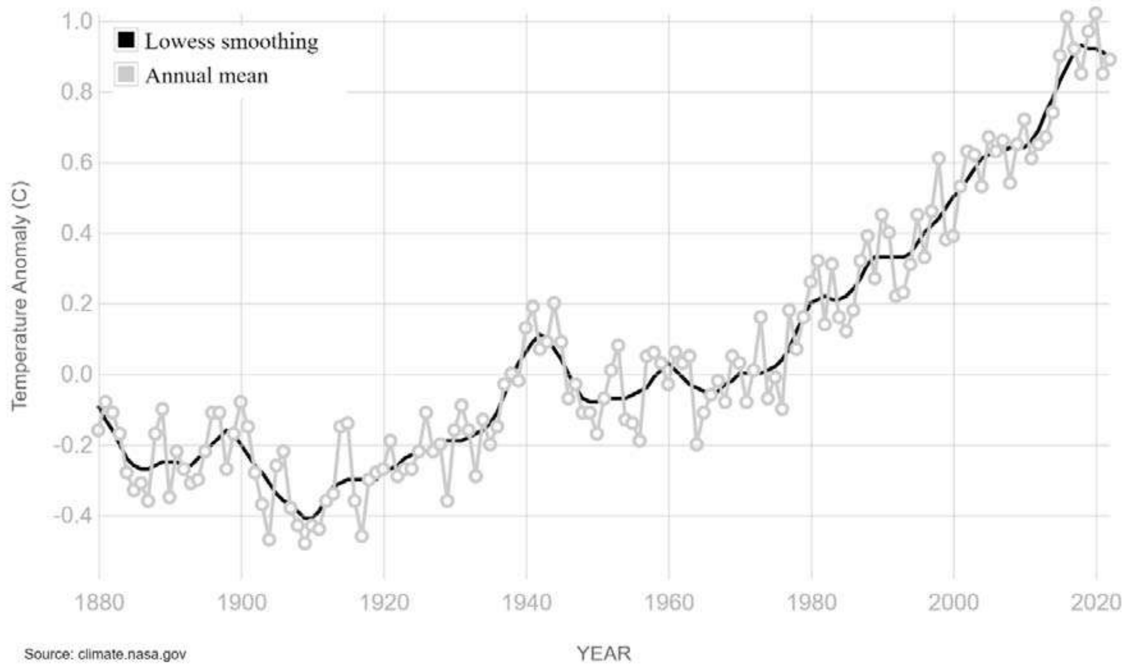

Fig. 3: Variação Da Temperatura Terrestre No Período De 1880 A 2020 Fonte: (NASA/GISS, 2022)

A emissão de GEE também está em expansão. A figura 4 é uma sobreposição dos estudos da NASA quanto à temperatura (linha preta) sobre o gráfico de emissão de GEE da WRI Brasil (área colorida). Percebe-se um aumento nos últimos anos da temperatura global quanto das emissões de GEE.

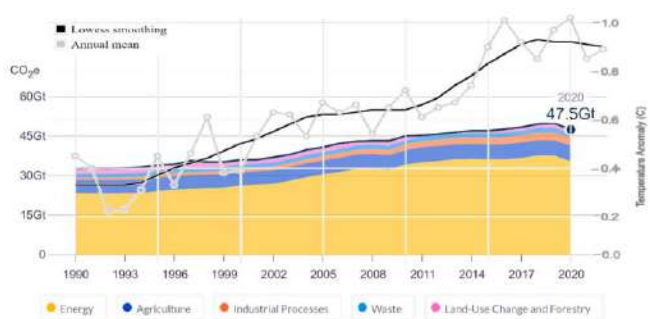

Fig. 4: Aquecimento global (linha preta) sobre a distribuição dos GEE (área colorida) no mundo. Fonte: adaptado de (4 Charts Explain Greenhouse Gas Emissions by Countries and Sectors, s.d.; NASA/GISS, 2022)

A figura 05 apresenta correlação entre as emissões de GEE e o aumento de temperatura global, nesta correlação foi utilizada uma projetação da taxa de aquecimento no Brasil, igual ao do mundo.

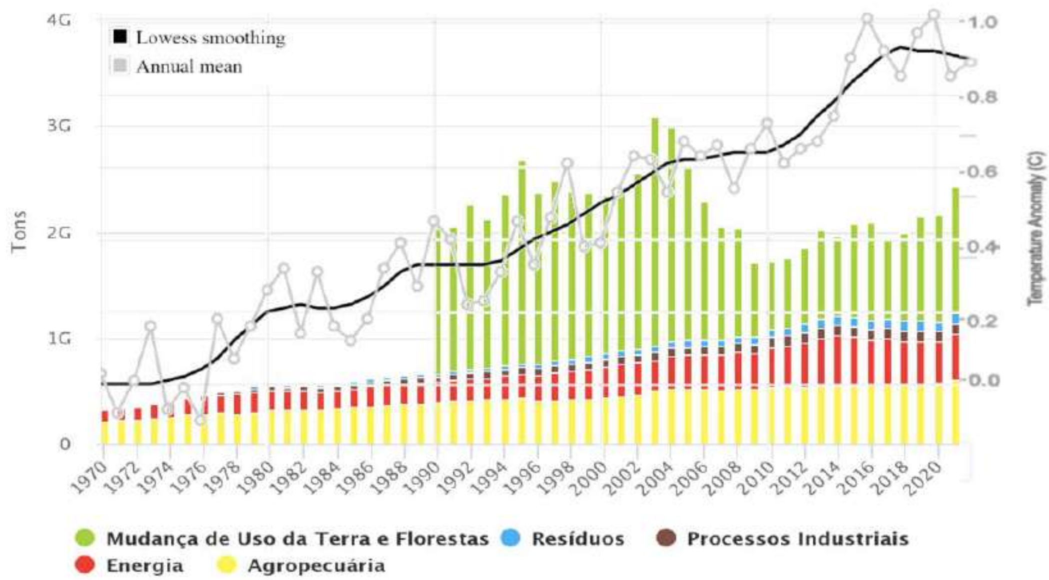

Fig. 5: Sobreposição Do Gráfico De Variação De Temperatura (Projetada No Brasil) Sobre A Emissão De GEE No Brasil, Incluindo Mudança De Uso Da Terra E Florestas - LUCF   Fonte: Adaptado De (SEEG, S.D.)

Pode-se notar que a inclusão de LUCF não provocou uma alteração na taxa de aquecimento, permitindo inferir que o aquecimento no Brasil pode ter outras fontes, além de estudos mostrarem que não há uma distribuição equilibrada do aquecimento e a região Norte e Nordeste destacam-se apresentando um aquecimento superior do que o restante do Brasil. (METSUL.COM, 2021)

Para ajudar empresas e governos a medir e gerenciar as emissões de GEE que causam o aquecimento global, o WRI (World Resources Institute) e o WBCSD (World Business Council for Sustainable Development) desenvolveram em 2001 um conjunto de normas, diretrizes, ferramentas e treinamentos chamado greenhouse gas (GHG) Protocol. Esse protocolo se aplica a vários setores e atividades, como cidades, florestas, agropecuária, ciclo de vida do produto, entre outros. O objetivo é criar um modelo global padronizado para que atores públicos e privados possam comunicar de forma confiável o impacto climático de suas ações em termos de emissão de GEE e planejar ações de redução.

Essa ferramenta, no entanto, apresenta alguns desafios e limitações, como a dificuldade e a diversidade dos métodos de cálculo das emissões de GEE, que podem tornar difícil a comparação e a verificação dos resultados; a falta de padronização e de transparência nos critérios de definição dos limites e escopos dos inventários, que podem gerar inconsistências e lacunas nas informações reportadas; a limitação dos dados disponíveis e confiáveis sobre os fatores de emissão e as atividades emissoras, especialmente nos países em desenvolvimento, que podem comprometer a precisão e a representatividade dos inventários; e a ausência de uma regulamentação legal ou de um mecanismo de incentivo que estimule a participação voluntária das empresas e organizações na elaboração e na divulgação dos inventários. (Kaplan & Ramanna, 2021; WRI & WBCSD, s. d.)

O ESG (Environmental, social and Governance) por outro lado, configura como um dos principais critérios para avaliar o desempenho de uma empresa atualmente, pois demonstra o seu engajamento com as questões ambientais, sociais e de governança corporativa, que são cada vez mais importantes para a sociedade e para os investidores. O ESG é um modo de medir o desempenho de sustentabilidade de uma organização e de comunicar o impacto climático de suas ações em termos de emissão de gases de efeito estufa (GEE) e de planejar ações de redução.

Em sua forma atual o ESG é mais um modismo do que uma solução. Cada um dos seus três domínios (Ambiental, Social e Governança) apresenta diferentes possibilidades e dificuldades de medição, fato não tratado adequadamente pelos padrões de divulgação existentes. Como consequência, poucos relatórios ESG se aprofundam de forma significativa nas questões morais dentro dos três domínios e nos ganhos da empresa. (CFA Society Brazil, s. d.; Kaplan & Ramanna, 2021).

III. Conclusion

O metabolismo terrestre natural pode provocar os efeitos negativos percebidos atualmente no planeta, contudo não se pode negar que ação antropológica está acelerando o processo de reação do planeta às ações humanas que ficaram mais intensas a partir da Revolução Industrial.

O Protocolo de Quioto é dado como uma solução mágica para a diminuição destas ações de destruição, como por exemplo a diminuição das emissões de GEE, descritos nos relatórios como necessária e urgente.

As ações provenientes deste protocolo não conseguiram diminuir a taxa de 0,6 GtCO2 eq/ano, e assim, decisões técnicas tendem a encontrar uma barreira nas decisões políticas, como pode-se observar pelo resumo do AR6 que sugere que sejam feitas: a) diminuição do crescimento dos GEE mundial; b) não usar combustíveis fósseis; c) implantar ações com quebra de paradigma em todos os setores; d) Reestruturar o estilo de vida; e) eliminar a emissão de CO2; f) aumentar o aporte financeiro para financiamento de mitigação.

Estas sugestões exigem dos signatários sacrifícios políticos e econômico de crescimento que não está claro no desejo das nações.

No Brasil o impasse entre interesse comercial versus ambiental é percebido em várias áreas, observa-se como exemplo o longo tempo em discussão da legislação que trata da reciclagem ou renovação da frota de veículos movidos à combustão e por sua vez emissores de GEE.

Os projetos MDL tiveram um período relevante para o Brasil, com destaque à vários projetos, como o caso de empresas com projeto de recuperação ou diminuição de N2O, porém não está claro os ganhos diretos com os projetos.

Ganhos financeiros são mais perceptíveis quando se entra no mercado de Crédito de Carbono, que começa a expandir na prática puxando em seguida o desenvolvimento de legislações, que aparecem para regular o que já está de alguma forma na prática ocorrendo no território brasileiro.

Este mecanismo flexível coloca as florestas brasileiras em foco, pois os principais projetos de crédito de carbono CCS, CCSbP, CCUS, dependem da preservação ou manejo das áreas verdes, permitindo a ação de várias empresas estrangeiras em busca de ganhos com base nas áreas verdes e povos lá inseridos.

Projeções da NASA permitem inferir que controlar as emissões por si só ou o uso das áreas verdes como os oceanos, não serão suficientes para ajudar o planeta. Apenas uma interrupção da principal fonte geradora de GEE, a combustão em toda sua forma. Assim novamente, o interesse político deve ser superior às questões econômicas. Um direcionamento rápido para a mudança da matriz energética no planeta pode ser o caminho para alterar as projeções.

O Mercado do Crédito de Carbono parece ser a nova ordem econômica mundial. As nações para cumprirem a meta de emissão basta adquirir de outras nações que não conseguem chegar à meta, o excedente positivo. Parece que em plena era da Industria 4.0 já atingindo o 5.0, o sistema feudal está cada vez mais vivo; o preço de desenvolvimento de uns está ligado à estagnação de outros.

Um outro fator a ser observado é a correlação entre aquecimento global e emissão de GEE, os dados apresentados no mundo e no Brasil, mesmo com inclusão de LUCF que representou uma elevação bruta nos dados de emissão de GEE a partir de 1990, mostram que a taxa de aumento de emissão de GEE não acompanha a taxa de aumento de temperatura global. Pode inferir que não é sensato atribuir apenas ao GEE o aquecimento global. Melhores estudos devem ser feitos para apontar a percentagem de participação dos GEE no aquecimento, a percentagem de participação do ciclo natural terrestre e quais os outros fatores que podem compor o sistema responsável pelo aumento.

É notório que no Brasil não há um consenso sobre os temas discutido aqui neste artigo, cientificamente não se conseguem assegurar o que deve ser feito e se o que está em desenvolvimento como o crédito de carbono são efetivos ou apenas comercial. Fica evidente a dicotomia da necessidade de atuação nas questões climáticas e ambientais em comparação com a urgente necessidade de crescimento econômico, que passam por ações não poluentes contudo não é efetiva enquanto a matriz energética brasileira não mudar, e isto impacta em novas tecnologias e quebra de paradigma nas ações do cotidiano.

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Employee Engagement and its Impact on Organization's Performance: Case Study

By Mohammad Salman Alghafli, Hani Khudher Alzahrani & Tariq Abdulrahman Alturairi

Abstract- Engaging employees effectively is vital for organizations that want to outperform their competitors. Extensive research and studies have been conducted on this topic, emphasizing the importance of employees' physical and mental well-being for their engagement and contributions to company advancement. Therefore, fostering employee engagement becomes a powerful tool for organizations to solidify their market position. This study will address the concept of employee engagement and its drivers through a literature review. Additionally, a case study will be presented, focusing on one of Saudi Aramco's leading organizations that achieved commendable scores in a corporate employee engagement survey. The findings of this review establish a direct correlation between engaged employees and desired performance and outcomes for companies.

Keywords: *employee; employee engagement; perfor-mance; communication.*

GJMBR-G Classification: *LCC: HD5550.32.S27*

EMPLOYEEENGAGEMENTANDITSIMPACTONORGANIZATIONSPERFORMANCECASESTUDY

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Employee Engagement and its Impact on Organization's Performance: Case Study

Mohammad Salman Alghafli [α], Hani Khudher Alzahrani [σ] & Tariq Abdulrahman Alturairi [ρ]

Abstract- Engaging employees effectively is vital for organizations that want to outperform their competitors. Extensive research and studies have been conducted on this topic, emphasizing the importance of employees' physical and mental well-being for their engagement and contributions to company advancement. Therefore, fostering employee engagement becomes a powerful tool for organizations to solidify their market position. This study will address the concept of employee engagement and its drivers through a literature review. Additionally, a case study will be presented, focusing on one of Saudi Aramco's leading organizations that achieved commendable scores in a corporate employee engagement survey. The findings of this review establish a direct correlation between engaged employees and desired performance and outcomes for companies.

Keywords: employee; employee engagement; performance; communication.

I. Introduction

Employee engagement is widely acknowledged as a crucial element in achieving organizational success. The Materials Services Department (MSD), one of the organizations under Saudi Aramco, has successfully implemented employee engagement initiatives, yielding significant positive outcomes. Employee engagement has fluctuated over the years, including substantial challenges globally in 2022. Globally, the overall employee engagement index currently stands at 62%, a decrease from its peak of 69% in previous years (Statista, 2023). Despite the prevailing challenges in global employee engagement, MSD has achieved a remarkable 15% increase from its last assessment, demonstrating its exceptional dedication to employee engagement and interactions.

Organizations should consider implementing motivational initiatives to foster optimal levels of engagement, as it directly correlates with organizational performance and outcomes. Failing to nurture employee motivation will undoubtedly hinder their performance, negatively impacting organizational outcomes. In contrast, motivated employees generate positive outcomes, as highlighted by Manzoor (2011). Therefore, prioritizing employee engagement through addressing their needs becomes paramount, as it leads to improved performance and the achievement of organizational targets (Achim, Dragolea, & Balan, 2013). Furthermore, nurturing talented employees manifests higher levels of motivation, which positively influence other employee' performance and behavior, ultimately drive optimal productivity. Therefore, the challenge lies in retaining motivated and talented employees, which grants organizations a competitive advantage (Chen et al., 2012).

The motivation levels within the workplace significantly impact employee productivity levels. Employees who possess enthusiasm and motivation for their roles carry out their duties flawlessly, thereby advancing the organization's objectives (Scott, 2019). Consequently, organizations must ensure that their motivation and engagement programs effectively address the diverse needs of their employees. Failure to account for these differences may result in a lack of motivation and performance that falls short of expectations, ultimately impeding attaining desired outcomes. For instance, implementing a recognition and reward system that offers certificates for achievements may not serve as the desired motivator for some employees. Instead, they may value financial rewards or reduced working hours (Scott, 2019). In light of this, this paper emphasizes the significance of implementing various engagement programs to enhance individual performance and ultimately achieve company goals. The case study will examine the implemented engagement program and compare it with existing literature, providing a comprehensive analysis of effective strategies in this domain.

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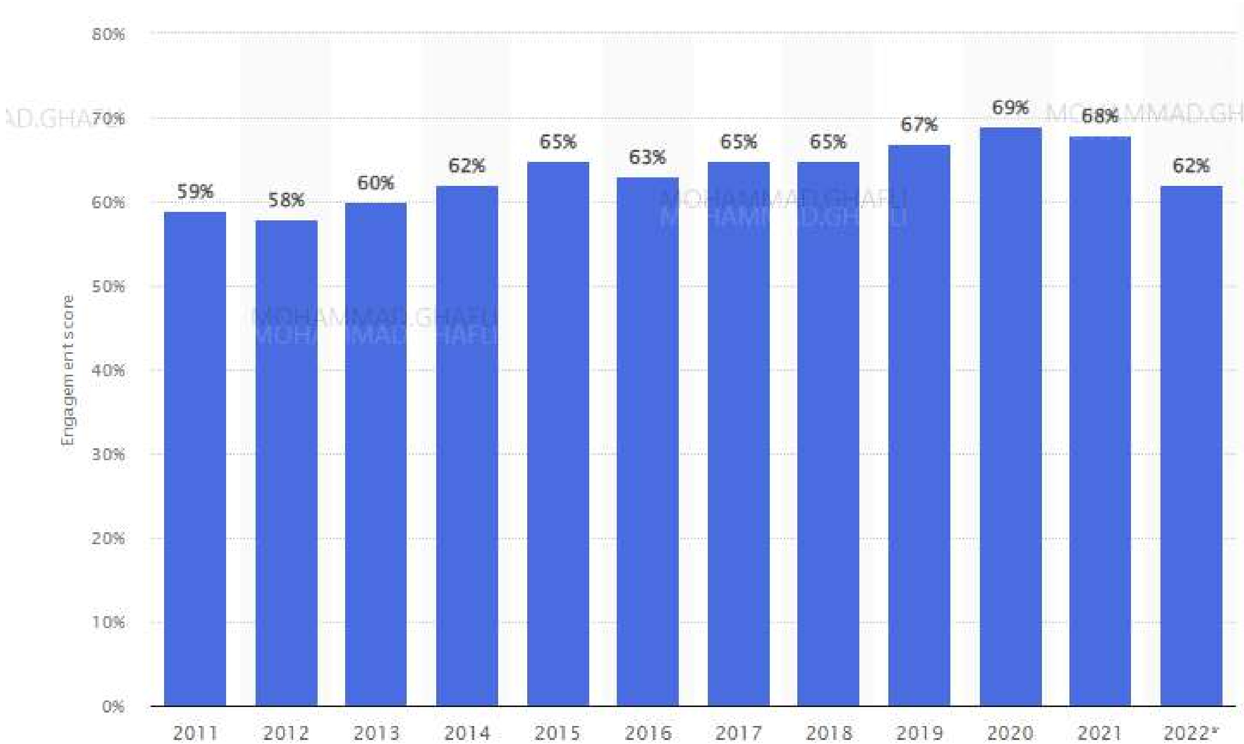

Figure 1: Engagement Score of Employees Worldwide from 2011 to 2022 (Statista, 2023)

II. Literature Review

Employee engagement, as defined by Cook (2012), refers to the positive perceptions, feelings, and proactive behaviors exhibited by employees concerning achieving organizational goals for various stakeholders, including customers and colleagues. It encapsulates a positive attitude and value system that employees hold towards their organizations (Robinson et al., 2004). Engaged employees demonstrate a deep understanding of the business context, actively contributing towards improving performance, and working collaboratively with others to achieve the company's strategic objectives. According to Development Dimensions International (DDI, 2005), there are five essential actions that employers must take to foster an engaged workforce. These actions include aligning efforts with the organizational strategy, empowering employees, promoting teamwork and collaboration, supporting employee growth and development, and providing appropriate support and recognition.

Numerous studies have revealed a positive association between engagement, commitment, and organizational outcomes such as employee retention, profitability, productivity, and safety (Cesário & Chambel, 2017). Gbadamosi (2003) emphasized the significance of engagement as a crucial element for individuals to work with a deep understanding and awareness of the organization, thereby fostering their commitment. He further highlighted that employees' desire to remain with a company is nurtured through their commitment. The study conducted by Schaufeli and Salanova (2007) demonstrated the impact of engagement on organizational commitment, revealing a positive relationship between engagement and organizational commitment. The same study also identified that higher levels of engagement lead to improved performance, job satisfaction, attendance, innovation, and motivation. Moreover, highly engaged employees positively influence learning and motivation within the organization (Rameshkumar, 2020). Based on these findings, it is crucial for leaders and managers to invest in programs that promote employee engagement heavily. Doing so will ultimately contribute to organizational effectiveness, foster innovation, and provide a competitive advantage.

Employee engagement is a multidimensional concept encompassing the emotional, cognitive, and behavioral aspects of employee involvement and commitment. The literature review examines various definitions, theories, and models proposed in existing research. Employee engagement has been linked to several positive outcomes, including increased job satisfaction, organizational commitment, and productivity, as well as decreased absenteeism and turnover. Key factors influencing employee engagement include effective communication, recognition, professional development, and ongoing assessment. Several studies have explored the relationship between employee engagement and organizational outcomes. For example, a study by Shuck and Reio (2014) found that employee engagement and well-being are positively related and that well-being moderates the relationship between engagement and job performance. Another study by Kular (2008) found that employee engagement positively relates to job satisfaction, organizational commitment, and job performance. However, there are still gaps in the literature, and more research is needed to fully understand the complex nature of employee engagement and its impact on organizational outcomes.

There are many drivers for employee engagement that are depend on the employees' preference. Mani (2011) identified four drivers which are employee welfare, empowerment, employee growth and interpersonal relationships. Also, ten (10) Cs of Employee Engagement were identified by Seijit (2006) which are Connect, Career, Clarity, Convey, Congratulate, Contribute, Control, Collaborate, Credibility and Confidence. Rational, emotional and motivational are three predictors of engagement that were identified by (Towers Watson, 2009). Understanding the response-bilities and roles is considered under the rational engagement. On the other hand, emotional related to how much passion employee can bring to job. Finally, motivational is how the staff are willing to invest to do their tasks. Researches have proven the relationship between the employee engagement and organizational performance outcomes such as profitability, productivity, customer satisfaction and employee retention (Coffman, 2000; Ellis and Sorensen, 2007 and Heintzman and Marson, 2005).

III. Methodology

In order to fulfill the objectives of this paper, a single case study approach was adopted to investigate the implementation of Employee Engagement within one of the organizations which belongs to Saudi Aramco. The utilization of a single case study allows for the development and exploration of various concepts (Voss et al., 2002), offering a comprehensive and in-depth understanding of the phenomenon under investigation (Saunders et al., 2019). However, it is important to acknowledge the limitations associated with generali-zing the outcomes of a single case study (Gay and Bamford, 2007; Yin, 2013).

The primary data for this study were primarily collected through face-to-face semi-structured interviews. Additionally, archival data, such as reports, internal documents, and records of implemented projects and initiatives, were utilized to augment the practical evidence (Ciano et al., 2020). To ensure the validity and reliability of the collected data, interviews were conducted with both the managers and section heads in each division. Following the guidance of Voss et al. (2002), a comprehensive database was created for each case, comprising the interview transcripts, field observations, and relevant reports, which were then subjected to thorough analysis. Finally, in order to enhance and validate the reliability of the study's outcomes, the suggested strategies by Eisenhardt (1989) were followed.

This paper aims to contribute to the field by examining the impact of employee engagement initiatives implemented by the Materials Services Department (MSD) on employee satisfaction, retention, productivity, and customer satisfaction. Through a mixed-methods approach combining quantitative surveys and qualitative interviews, this study explores the effects of these initiatives on employee engagement and provides valuable insights and recommendations for organizations seeking to enhance employee engage-ment and achieve positive organizational outcomes. By employing this rigorous research methodology, the paper aims to provide valuable insights into the implementation of Employee Engagement within the selected organization, while acknowledging the boundaries and emphasizing the credibility of the findings.

IV. Results

This paper focuses on comprehensively exploring the impact of employee engagement initiatives implemented by the Materials Services Department (MSD). By analyzing both quantitative and qualitative data, this study provides a robust examination of the effects of these initiatives on critical organizational dimensions, including employee satisfaction, retention, productivity, and customer satisfaction.

Quantitative data analysis involved the use of employee surveys designed to capture diverse experiences and perspectives within the workforce. These surveys effectively measured the extent to which engagement initiatives influenced key metrics within the organization. Meticulous interpretation of the data provided significant insights into the benefits achieved by MSD through the implementation of these initiatives. In addition to quantitative data, qualitative data collection involved feedback sessions and individual interviews with employees. These direct interactions offered valuable evidence, personal accounts, and narratives, contributing to a comprehensive under-standing of the impact of the engagement initiatives. The combination of quantitative and qualitative data allowed for a holistic view, incorporating both numerical indicators and personal experiences.

The implementation of engagement initiatives resulted in a significant improvement in employee satisfaction, as evidenced by the significant increase of approximately 37% in Operational Excellence score between 2017 and 2021. This improvement reflected enhanced fulfillment, motivation, and contentment among employees within their roles. Effective communication strategies emerged as one of the most influential factors driving this surge in employee satisfaction. By providing regular updates on organizational goals, values, and expectations, MSD established an open dialogue with employees. Additionally, the organization created avenues for employee feedback and concerns, enhancing transparency in the workplace. This well-structured communication framework fostered a stronger sense of connection and purpose among employees, contributing to overall satisfaction.

Another notable result of the engagement initiatives was the exceptional employee retention rate of 98% within MSD. This high rate is directly correlated with initiatives focusing on employee recognition and professional development. By acknowledging employee contributions and promoting growth, the organization instilled a sense of ownership and accountability in its work, nurturing a culture of continuity and advancement. The engagement initiatives also transformed productivity metrics within the organization. Engaged employees, motivated by comprehensive training programs and professional development opportunities, improved their skill sets and gained a better understanding of their roles. This investment in employee growth led to increased productivity levels and overall organizational performance. Additionally, the initiatives positively impacted customer satisfaction. Engaged employees, aligned with the organization's goals, provided superior service, going above and beyond customer expectations.

Qualitative feedback from employees supported the quantitative findings, aligning personal experiences with overall trends. Employees appreciated the opportunities for growth and career advancement provided by the organization. They acknowledged the inclusive and collaborative work culture fostered through the engagement initiatives, which instilled a sense of belonging and ownership. These enriching insights provided a deeper understanding of how employees perceived and experienced the effects of these strategies on their work. A recurring theme in the qualitative data was the significance of effective communication. Employees felt more connected to the organization due to regular updates on organizational objectives and the opportunity to voice their feedback. Transparency and dialogue played an essential role in employee satisfaction. Recognition was instrumental in creating a positive work environment. Employees felt valued and appreciated when their contributions were recognized, leading to higher job satisfaction and motivation to contribute and grow within the organization.

In terms of productivity, engaged employees maintain greater focus, commitment, and purpose in their roles. The effective implementation of comprehensive training programs and professional development initiatives resulted in a more competent and motivated workforce. The qualitative data further highlighted the impact of engagement initiatives on customer satisfaction. Engaged employees provided exceptional service to meet customer needs. This strong correlation between employee engagement and customer satisfaction underscores the importance of employee engagement in improving customer interactions.

In conclusion, the comprehensive employee engagement initiatives implemented, by MSD have demonstrated significant positive impacts on employee satisfaction, retention, productivity, and customer satisfaction. These outcomes were achieved through the meticulous implementation of effective communication strategies, employee recognition programs, professional development opportunities, and ongoing assessments. The findings emphasize the importance of an engaged workforce, with employees who are satisfied, productive, and committed to the organization's goals, leading to improved organizational outcomes

V. Discussion

The analysis of the results provides valuable insights that reaffirmed the transformative power of robust employee engagement initiatives. The significant outcome achieved by MSD, including enhanced employee satisfaction, retention, productivity, and customer satisfaction, underscore the vital role of open dialogue, acknowledgment, career advancement, and ongoing assessment in driving employee engagement and organizational success. Open and transparent information exchange fosters a strong connection between employees and the organization, making employees feel valued and heard, fostering a shared sense of purpose and job satisfaction. Improved dialogue not only lifts employee morale but also cultivates a collective commitment toward organizational goals.

Acknowledgment and appreciation through initiatives such as peer-to-peer appreciation initiatives and quarterly awards ceremonies instill a culture of motivation. This culture positively impacts employee morale, instilling ownership in their work and strengthen commitment. Investment in comprehensive learning opportunities and internal leadership development showcases MSD's commitment to nurturing talent and promoting career growth. Equipping employees with the necessary skills and providing clear paths for progression results in increased satisfaction, improved capabilities, and enhanced performance.

Sustainability and ongoing assessment are essential for maintaining long-term employee engagement. MSD's strategy to regularly evaluate engagement initiatives and makes necessary adjustments based on employee feedback ensuring their relevance and impact. Incorporating feedback mechanisms, such as surveys and focus groups, allows MSD to actively seek input from employees, identify challenges, address concerns, and fine-tune engagement strategies.

The impact of MSD's employee engagement initiatives extends beyond internal dimensions. Improved productivity and customer satisfaction substantiate the direct correlation between an engaged workforce and overall business performance. Engaged employees, motivated by effective communication, recognition, and professional development, deliver exceptional results and superior service to customers. The substantial improvement in innovation participation indicators highlights the organization's ability to foster a culture of innovation and creativity through its engagement strategies.

In summary, the findings reaffirm the pivotal role of effective communication, employee recognition, professional development, and ongoing assessment in driving employee engagement and enhancing business success. MSD's comprehensive engagement initiatives have yielded significant positive outcomes, including increased employee satisfaction, retention, productivity, and customer satisfaction. Emphasizing these factors enables organizations to foster a positive work culture, promote employee growth and development, and ultimately drive organizational success. These insights and strategies provide a valuable roadmap for organizations seeking to enhance employee engagement and establish a thriving, productive workforce.

VI. Lessons Learned and Recommendations

a) *Key Lessons Learned*

The analysis of the results and discussions has yielded several key lessons learned regarding employee engagement within MSD. These lessons can provide valuable insights for organizations seeking to enhance their own employee engagement initiatives.

Lesson 1: Open Dialogue is Crucial

MSD's commitment to open, transparent dialogue created a strong connection between employees and the organization. Regular updates, feedback opportunities, and transparent conversations played significant roles in employee satisfaction and engagement. Organizations should prioritize establishing solid information exchange channels to keep employees informed, engaged, and connected.

Lesson 2: Acknowledgment and Appreciation Drive Engagement

Appreciation initiatives created a positive work environment within MSD. The acknowledgment and celebration of employee contributions fostered a culture of motivation. Organizations should implement robust appreciation programs that highlight and reward outstanding performance, fostering a sense of value and ownership among employees.

Lesson 3: Invest in Learning Opportunities and Career Advancement

MSD's focus on career advancement initiatives had a profound impact on employee engagement. By providing comprehensive learning opportunities and clear paths for career growth, employees felt supported, motivated, and empowered. Organizations should invest in the growth and development of their employees, offering opportunities for acquiring new skills, expanding knowledge, and advancing within the organization.

Lesson 4: Continuous Assessment and Adaptation are Essential

Sustaining high levels of employee engagement requires continuous assessment and adaptation. MSD's commitment to ongoing evaluation and feedback allowed for the fine-tuning of engagement strategies. Organizations should establish feedback mechanisms, such as surveys and focus groups, to regularly assess the effectiveness of their engagement initiatives. By actively seeking employee input, organizations can address emerging challenges, improve strategies, and ensure engagement initiatives remain relevant and impactful.

b) *Recommendations for Enhancing Employee Engagement*

Building on the key lessons learned, the following recommendations are proposed for organizations seeking to enhance employee engagement:

Recommendation 1: Foster a Culture of Open Dialogue

Establish a strong information exchange framework that emphasizes transparency, regular updates, and two-way dialogue. Regular communication fosters a sense of belonging and alignment with organizational objectives.

Recommendation 2: Implement Robust Appreciation Programs

Design and implement comprehensive appreciation programs that acknowledge and celebrate employee contributions. Incorporate both formal and informal recognition initiatives, such as peer-to-peer acknowledgment, employee spotlights, and awards ceremonies.

Recommendation 3: Invest in Learning Opportunities and Career Growth

Create a culture that values employee growth and career advancement. Provide opportunities for learning, skill enhancement, and career progression. Establish mentorship programs, leadership development initiatives, and training programs that align with employees' career goals and organizational objectives.

Recommendation 4: Continuously Assess and Adapt Engagement Strategies

Regularly evaluate the effectiveness of employee engagement initiatives through surveys, feedback sessions, and performance evaluations. Actively seek employee input and use the feedback to identify areas of improvement and adapt strategies accordingly. Embrace a culture of continuous improvement and respond to changing employee needs and organizational dynamics.

VII. Conclusion

The study recommends that organizations should implement and enhance their employee engagement programs. Additionally, regular feedback is crucial for employees to receive and helps encourage open lines of communication. Moreover, training and development programs can enhance the knowledge and skills of employees. Furthermore, organizations should consider implementing recognition programs to reward high-performing staff and motivate others to improve their skills and knowledge. Finally, as evidenced by the literature and the case study, it is crucial for employees to have a clear line of sight that connects their daily activities to the organization's objectives and strategies. By implementing these recommendations, organizations can foster a culture of employee engagement and drive better performance and outcomes.

Acknowledgement

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KPI System & other Practices in Bikroy.com Limited

By Arpa Florence Purification

Introduction- a) Background of the Study- Bikroy.com is a private company established in 2012 and has different sections, which are especially dedicated to private and business advertisements for property, electronics, vehicles, home appliances, sports and jobs.

I choose this company because, I found out about the company's KPI background and other facilities are very appealing and enchanting. If I work with this company, others will get the chance to know about it.

GJMBR-G Classification: LCC: HD4801-8943

Strictly as per the compliance and regulations of:

KPI System & other Practices in Bikroy.com Limited

Arpa Florence Purification

Chapter One

I. Introduction

a) Background of the Study

Bikroy.com is a private company established in 2012 and has different sections, which are especially dedicated to private and business advertisements for property, electronics, vehicles, home appliances, sports and jobs.

I choose this company because, I found out about the company's KPI background and other facilities are very appealing and enchanting. If I work with this company, others will get the chance to know about it.

b) Importance of the Study

The owner of Bikroy is a Global Tech Firm, named Saltside Technologies, which is a Sweden-based company. Bikroy started its business in Dhaka, Bangladesh in 2012 and currently Bikroy has more than 200 employees within six departments. Departments are – Human Resources, Finance, Tele Sales, Ad Sales, General Sales (Market Place, Jobs, Property, Vehicles). Bikroy stepped in the e-commerce sector and an online platform called Buy Now in 2016.

Bikroy provide several benefits:

- Festival Bonus
- Maternity benefit
- Death Benefit
- Provident Fund
- Gratuity Scheme
- Group Insurance
- Key Performance Indicator quarterly target based

Bikroy also organize several motivational programs for their employees:

- Moner Janala – A Women leadership program – arranged quarterly
- Celebrations of National Occassions – Pohale Boisakh, Victory Day, Mother Language day, Women's Day, Mother's Day, Father's Day etc.
- Birthday Celebration monthly based
- Yearly annual picnic
- Half yearly event
- Monthly lunch- every department can have a lunch together once in a month

Author: e-mail: arpa.purification@gmail.com

c) Objective of the Study (Specific)

- To improve personnel's understanding of KPI's
- To improve awareness of maintaining such performance
- KPI practices in the company
- Variance of KPI and other benefits in different companies

d) Objective of the Study (Broader)

In broader case the objective is how the company set and implemented its Key Performance Indicator (KPI) and what role does the company play to compete in the competitive market comparing Bikroy com with Amazon.com and Daraz.com.

e) Scope of the Study

This report deals with the Key Performance Indicator (KPI) practices in a company named Bikroy.com where the focus point will be deciding what to measure, collecting the data, analyzing the data, reporting the results and finally take action based on the result.

f) Source and Method of Data Collection

For this term paper purpose, I am using both primary and secondary data.

i. *Primary Data*

Primary data collected from interviewing people inside and outside the organization.

ii. *Secondary Data*

I have collected secondary data from different sources.

- Collect information from head office
- Collect data from survey
- Use the website of Bikroy.com
- Use questionnaire method for comparison

g) Limitation of the Study

- Not able to collect some confidential data
- Some data collected from online
- Some people ignore to do the survey questionnaire.

h) Methodology

This term paper aims to study on KPI system and practices in Bikroy.com limited, data will be collected from internal source, website and past company history.

I will use Qualitative and descriptive research methodology for this term paper.

I have prepared some questionnaire and took survey from 10 people and based on that prepare a graph on the opportunities that different companies provide.

Chapter Two

II. Literature Review

a) Literature Review

E-commerce involves buying and selling of products through an online platform and the medium between them will be electronic, primarily through internet.

The e–commerce business transactions occur as either business-to-business (B2B), business- to-consumer (B2C), consumer-to-consumer or consumer-to-business.

Bangladesh's first full-fledged e-commerce company, akhoni.com founded in 2011 and later in 2016, re-branded as bagdoom.com. Also, another online shopping platform ajkerdeal.com was launched in 2011. Later on Bikroy.com started its business on 2012 and still sustainable in the e-commerce section with full pride.

E-Commerce business sector have different positive affect either on business or on customer. For example- it reduce the production cost, improve the business communication in a faster and improved way, increase the productivity, provide good quality service and facilities.

Although e-commerce is not new in Bangladesh, more than 165 million people with 33% mobile penetration in Bangladesh use this e-commerce but it has to increase its operation in the rural sector. The main cause of not improvement in the rural sector is the internet connection, less technical advancement and less economical support.

However, Bikroy.com started its journey on 2012 and Daraz.com started its business in 2015 but Daraz.com is currently one of the leading e-commerce platform in Bangladesh nowadays. Fairmart Electronics also opened its online selling platform in 2020 and running its operation in full phase.

The main advantage of e-commerce is, that it can reach to wider audience in one Technical advancement way and the disadvantage is Prevalence of online fraud. Recently Fairmart Electronics company faced this kind of fraud case and the amount of their loss is more than 4 lac.

The following are the different types of e-commerce platforms:

- Business-to-Business (B2B)
- Business-to-Consumer (B2C)
- Consumer-to-Consumer (C2C)
- Consumer-to-Business (C2B)
- Business-to-Administration (B2A)
- Consumer-to-Administration (C2A)

Chapter Three

III. About the Company

a) Company Profile

Established in 2012, Bikroy.com is the Largest Marketplace of Bangladesh. Our mission is to serve the underserved markets and to create sustainable value for the community in the process. We are 200+ employees in 6 major cities of Bangladesh, that continuously are working in the spirit of facilitating trading, entrepreneurship, innovation, and an unwavering focus on meeting the needs of the community. The most prominent categories of our portfolio are: Mobiles, Electronics, Vehicles, Property, and Jobs. You can also find home & living items, pets & animals, hobbies, sports and kids items, fashion, health and beauty items, education, services, business & industry products, and food & agriculture products on the site. Bikroy is a subsidiary of Saltside Technologies (saltside.se) which also runs the largest marketplace in Sri Lanka (ikman.lk). We are backed by 3 investors: Kinnevik, Hillhouse Capital and Brummer & Partners. At Bikroy, we aspire to grow as a company along with our talent. We are committed to offer career development opportunities and benefits within the framework of a diverse work environment. We encourage creativity and provide the environment to achieve great things at work. Bikroy is one of the few organizations of Bangladesh, which is actively working towards ensuring increased female participation in the workplace and the result is quite encouraging. We thrive to work with smart and passionate people who can deliver great results. After joining us, you will find plenty of opportunities, freedom, and a large dose of adventure.

i. *Departments and Employees*

Bikroy has more than 200 employees within six departments. Departments are – Human Resources, Finance, Tele Sales, Ad Sales, General Sales (Market Place, Jobs, Property, Vehicles). Bikroy stepped in the e-commerce sector and an online platform called Buy Now in 2016.

ii. *Events for Employees*

- Moner Janala – A Women leadership program – arranged quarterly
- Celebrations of National Occassions – Pohale Boisakh, Victory Day, Mother Language day, Women's Day, Mother's Day, Father's Day etc.
- Birthday Celebration monthly base
- Yearly annual picnic
- Half yearly event

- Monthly lunch- every department can have a lunch together once in a month

iii. *Employee Benefits*

- Festival Bonus
- Maternity benefit
- Death Benefit
- Provident Fund
- Gratuity Scheme
- Group Insurance
- Key Performance Indicator quarterly target based

iv. *Leaves Policy*

- Festival holidays
- Earned leave
- Sick leave
- Casual leave
- Maternity leave
- Paternity leave

v. *Separation Policy*

- Termination
- Resignation
- Retrenchment
- Lay off
- Discharge from service
- Retirement
- Dismissal

There are 16 broad categories available in Bikroy.com's online portal and these are:

1. Mobiles
2. Electronics
3. Home & Living
4. Vehicles
5. Pets & Animals
6. Property
7. Hobbies, Sports, Kids
8. Women's fashion & beauty
9. Men's fashion & Grooming
10. Business & Industry
11. Education
12. Essentials
13. Jobs
14. Services
15. Agriculture
16. Overseas Jobs

vi. *Buy Now*

Bikroy.com introduce buy.now service from 2016, which means the company will deliver the product to the seller's doorstep. The delivery partner of bikroy will pick up the item from seller and deliver it to the buyers doorstep and buyer can give payment only after his/her satisfaction.

b) SWOT Analysis of Bikroy.com

A SWOT analysis is a study undertaken by an organization to understand its internal strengths and weaknesses as well as its external opportunities and threats. A SWOT analysis can be carried out for a product, place, industry or a person.

Here SWOT analysis of Bikroy.com describing below:

i. *Strength*

The strengths are:

- Easy to use the online market
- Most of the buyers are online buyer
- Advertising cost is free
- Privacy policy- hide personal information to post ads

- Payment system- can be done after getting the product
- Support Bengali language
- Target audiences- All BD population

ii. *Weakness*

The weaknesses are:

- Currency support- only BDT taka accepted.
- Global rich- no support
- Rural area- lack of technical advancement
- No competitive advantages- as consumer generated

iii. *Opportunities*

The Opportunities are:

- Has multiple business model option
- Can create employment
- Audience can gather IT knowledge to operate the software
- If they can operate business in rural sector, then they can increase audience number
- Marketing can bring fast mover facility

iv. *Threat*

The threats for the company are:

- Old products- customer may refuse to take
- Hand-to-hand transaction is risky because of fraud user
- New online marketplaces are onboard like- Daraz.com, Shajgoj.com etc.

c) Performance Management System of Bikroy.com

Being consistent with the Company's requirements, the purpose of Bikroy.com's performance management system is to ensure that:

- Employees perform work that accomplishes the business needs of the Company
- Employees' work aligns with the strategic goals of the work unit and the organizational values of the Company
- Employees clearly understand the quality and quantity of work expected
- Employees receive ongoing information about how effectively they are performing relative to expectations
- awards and salary increments are consistent with Employee performance
- opportunities for Employee development are identified and provided
- Employee performance that does not meet expectations is addressed
- Management applies performance ratings in a fair and consistent manner.

Performance appraisal information is one consideration in making other personnel decisions, such as promotions, disciplinary actions, layoff determinations, and salary increase eligibility. The supervisor of the Employee should review the work plan and position description on an annual basis to ensure that the position is appropriately classified for the recurring duties assigned.

d) STP process of Bikroy.com

The Segmentation, Targeting and Positioning (STP) Model helps to position a product or service to target different groups of customers more efficiently. STP stands for: Segment your market. Target your best consumers.

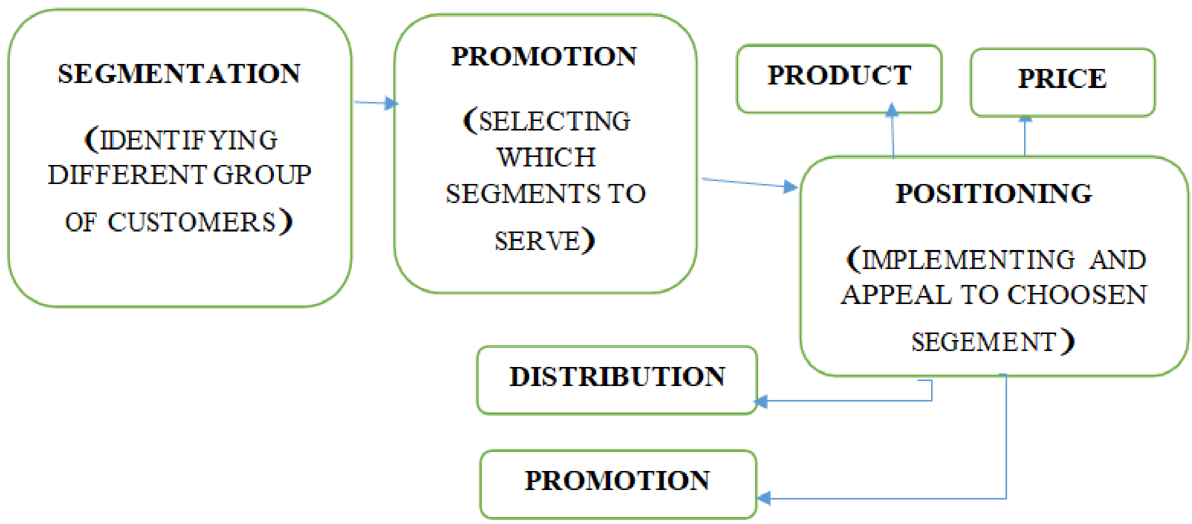


Fig: STP Process

i. *Segmentation*

As stated by University of Southern California (2012), when is market is divided into sub groups, known as market segments, in order to create product differentiation strategies.

There are several types of segmentation like:

➢ Demographic

In this process, market is segmented on the basis of age, gender, education, income, occupation etc.

➢ Geographic

It is when the market is segmented on the basis of city, state, country or some other variables.

➢ Psychographic

It is when market is segmented on the basis of life cycle, social class, blue collar, behavior, opinions, objectives and ethics.

ii. *Targeting*

It is the second step of STP process. After the market has been separated into segments, the marketer will select a segment to target and resources will be used based on the target.

Different types of targeting sectors are:

- One supplier-one segment- one product
- One supplier- one product- target all segments
- One supplier- different brands- target different segment

iii. *Positioning*

It's the third and final part of STP process

- First, the marketer needs to segment the market
- Then target the specific consumer/customer
- Finally process with the products based on consumer demand

Basically, STP process help the marketers to find out the gap between the target consumers and the marketed product. Bikroy.com can segregated their market and sales based on the STP process and can broaden up their business.

Chapter Four

IV. Key Performance Indicator

a) *What is Key Performance Indicator (KPI)*

KPI's are the key parts of the measurable objective, which is made up of a direction, benchmark, target and timeframe.

Key Performance Indicator depends on the performance of an employee. Here Perform of an employee stands for-

P - Purpose
E - Empowerment
R - Relationship
F - Flexibility
O – Optimal Performance
R – Recognition and Rewards
M – Morale

Therefore, performance means – whatever we do, whatever we act and whatever we accomplish within a specific timeframe.

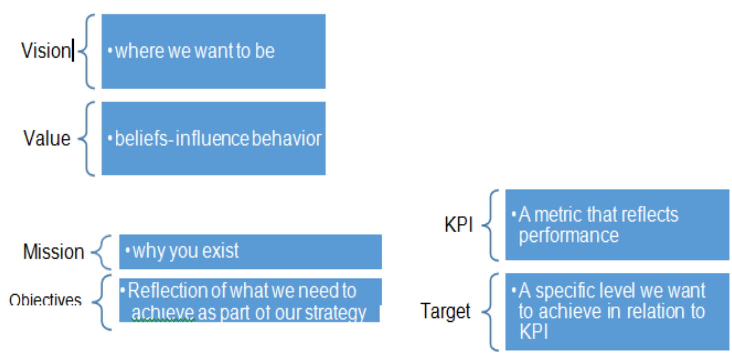
Through Key Performance Indicator (KPI) we have to assess attributes, competencies, Effort and finally got the outcome or result.

For example- Increase sales per project 50% to 60% by 2015, which is a target for Sales department and this target must have to be fulfilled by the year 2025. If this target is fulfilled then the department will get their KPI.

The objective of KPI must be specific, measurable, achievable, action driven and time bounded. In bikroy.com KPI is not only incentive rather than it depends on his/ her assessment. Based on the assessment, the promotion and the rank increased.

b) Cascading Key Performance Indicator

In order to set up key performance indicator (KPI) we have to focus on some key points. They are:



c) History of Key Performance Indicator (KPI) system

KPIs have a long and illustrious history. While no one knows the exact origins, it is believed that the emperors of the Chinese Wei Dynasty (3rd century) rated the performance of members of their family in the first known instance of rudimentary KPI usage.

Three major types of Key Performance Indicators (KPI's) are

1. Quantitative indicators that can be presented with a number.
2. Qualitative indicators that cannot be presented as a number.
3. Leading indicators that can predict the outcome of a process.

The three major types of Key Performance Indicators are:

- Revenue growth.
- Revenue per client.
- Profit margin.
- Client retention rate.
- Customer satisfaction.

d) Importance of Key Performance Indicators in a Business/Company

Key performance indicators, also known as KPIs, help you measure and evaluate the effectiveness of solutions, functions and processes in your business. KPIs take into account your business' strategic goals and measure performance against a specific target, defined from a strategic, planning or budget point of view

e) KPI Practice in Bikroy.com

In bikroy.com limited different departments have there own KPI set up procedure

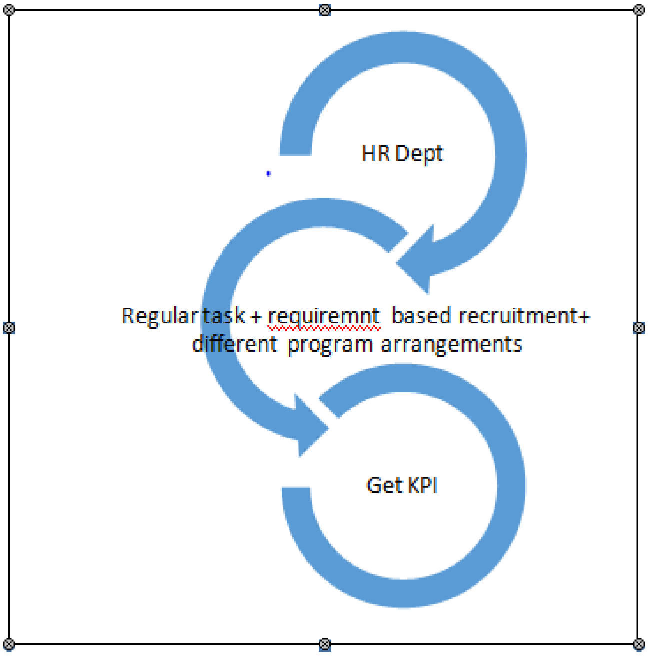
Organization Name: Bikroy.com limited

Departments Name:

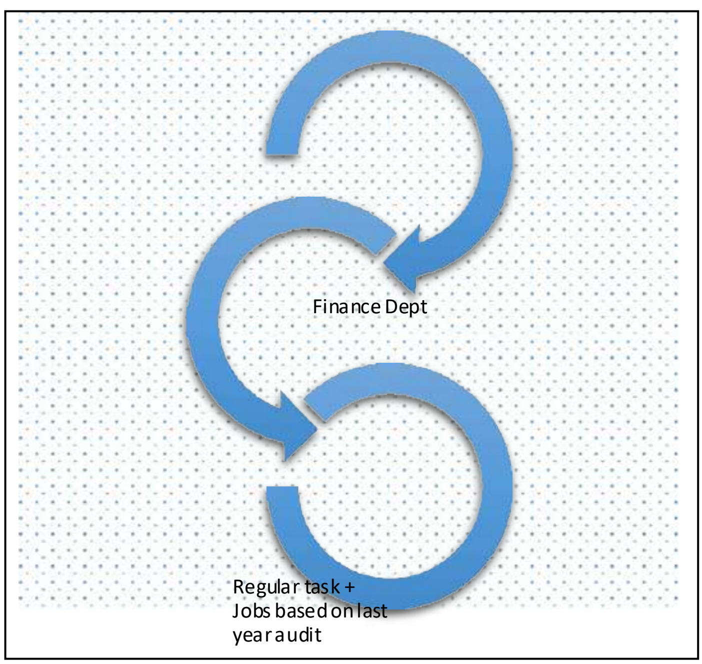
- ✓ Human Resources
- ✓ Finance
- ✓ Tele Sales
- ✓ Ad sales

Department Wise Targets

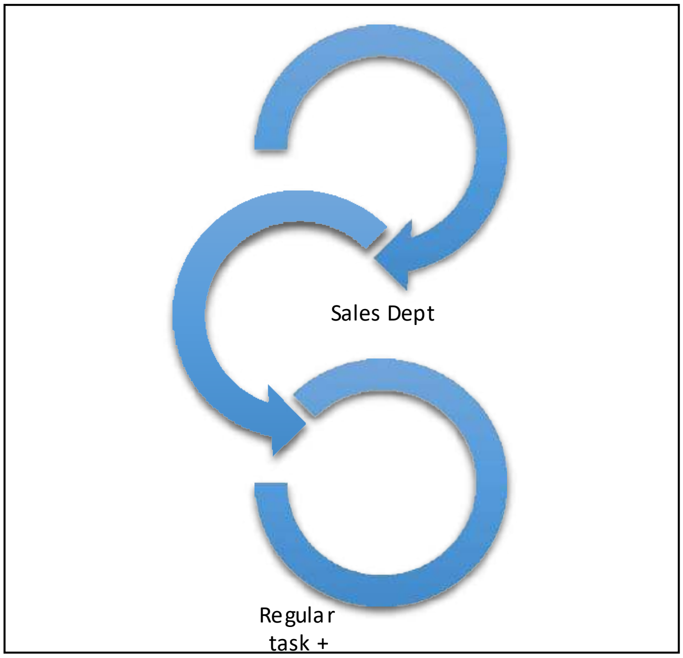
i. *Human Resources Department*



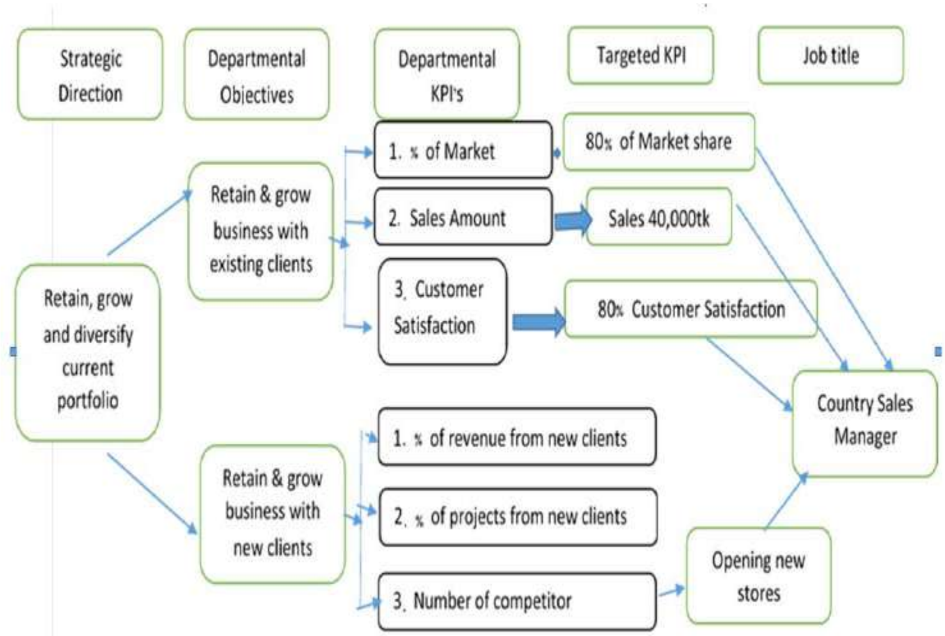
ii. *Finance Department*



iii. *Sales Department*



f) Cascading Departmental KPI of Bikroy.com Limited



g) Competitor of Bikroy.com

Bikroy.com that is established in 2012 is the Largest Marketplace of Bangladesh. Bikroy.com is doing its monopolistic business since its establishment. Now nationally it has competitors like Daraz.com, Shajgoj.com, priyoshop.com etc. Internationally it can also be comparable with Amazon.com.

i. *Amazon.com*

Amazon.com, Inc. is an American multinational technology company that focuses on e- commerce, cloud computing, digital streaming, and artificial intelligence. It has been referred to as "one of the most influential economic and cultural forces in the world", and is one of the world's most valuable brands.

Amazon.com founded in July 5, 1994, Bellevue, Washington, United States. The number of employees working in amazon.com is 1,608,000 (2021) and the revenue is 469.8 billion USD (2021).

ii. *KPI of Amazon.com*

Amazon Key Performance Indicator (Amazon KPI) works mainly to visualize a comparison between a key-value and its target value. Amazon Key

Performance Indicator (Amazon KPI) displays a value comparison, the two values being compared, and a progress bar.

Amazon Key Performance Indicator (Amazon KPI) spells your Ecommerce Success. Your E-commerce goals and Amazon Key Performance Indicators (Amazon KPIs) should be strategically aligned to convert more customers and drive higher profits. This is the success mantra to work smart to sell more.

- It is the best idea to reduce Product Sales lost due to out-of-stock. Amazon Key Performance Indicators (Amazon KPIs) include current inventory, Estimated Lost Sales (Units), Avg. Unit Sales per Week, Sales Rank to name a few.
- Sincere efforts should be made to boost sales in a planned way. Amazon Key Performance Indicators (Amazon KPIs) include daily sales, conversion rate, site traffic.
- Increase Buy Box Wins consistently and progressively. Amazon Key Performance Indicators (Amazon KPIs) include Amazon Feedback rating, customer service metrics, Late Shipment Percentage, Refund Requests.
- Increase conversion rate in a planned way and try to reach the optimum output. Amazon Key Performance Indicators (Amazon KPIs) include conversion rate, shopping cart abandonment rate, associated shipping rate trends, competitive price trends.
- Increase Amazon Feedback rating percent depending upon the number of customer inquiries. Amazon Key Performance Indicators (Amazon KPIs) include the number of times you have late shipments, the total number of customer service inquiries, Feedback score tracking.
- Work towards reducing customer service calls by half in the next 6 months. Amazon Key Performance Indicators (Amazon KPIs) include service call classification, identifying pages visited immediately before the call, events that lead to the call.

Amazon's KPI mostly depends on three sectors –

- ❖ Sales
- ❖ Profit
- ❖ Inventory (on hand)

Amazon Advertising Cost of Sales KPI (Amazon ACoS KPI) is the most preferred method of delivering campaign and keyword profitability data, it is important to know this metric and its ranges at the account level, the product category, and the traffic segment level.

One of the latest additions to Amazon Seller KPIs (Amazon Seller KPIs) is the Amazon Inventory Performance Index KPI. Amazon Inventory Performance Indicator KPI is a metric that determines how well you are managing your inventory and stocking up on products that are in demand. The score ranges from 0 to 1000. A score below 350 indicates that your account has issues, and you need to improve it. A score above 400 indicates that your account is performing well. You need to monitor your account health to keep an eye on the Amazon inventory dashboard and act upon suggestions that Amazon has to offer.

The Product Conversion Rate gives you the details of how many buyers purchased your product after landing on your product page. Amazon Product Conversion Rate = Total Orders/Customer Glance views.

h) Comparison (Bikroy.com with Amazon.com)

Bikroy.com VS amazon.com

If I consider, Amazon.com as a competitor of Bikroy.com then the following sector can be considerable-

- Amazons key performance indicator (KPI) depends on sales, profit, inventory and Bikroy.com's key performance indicator (KPI) on depends sales, profit and online platform (customer views in portal, click, impression etc.)
- Amazon Key Performance Indicators (Amazon KPIs) include conversion rate, shopping cart abandonment rate, associated shipping rate trends, competitive price trends but as bikroy.com do its business nationally that is why conversation rate is not a factor for bikroy.com
- Amazon as an international company has huge business variation whereas Bikroy.com is still unable to do business in the rural sectors.
- Amazon Advertising Cost of Sales KPI (Amazon ACoS KPI) is the most preferred method of delivering campaign and keyword profitability data as well as Bikroy.com do it same.
- Amazon Key Performance Indicators (Amazon KPIs) include the number of times you have late shipments, the total number of customer service inquiries, Feedback score tracking. On the other hand, bikroy.com's Key Performance Indicator depends on timely delivering product, customer review, number of sales and number of advertising.
- Bikroy.com introduce new online marketplace – Buy now which is the most usable site on Bangladeshi people and it increases the sales growth of bikroy.com

i) Another Competitor of Bikroy.com - Daraz.com

Daraz.com is a business to customer (B2C) model customer of Rocket. Its officially started its journey in 2015. For Bangladeshi people after bikroy.com all people started using daraz.com. The company's mission is to become world's largest e-commerce platform outside India and China. Their goal is to provide best product in a best and reasonable price. Daraz is an online shop and its purchase happens through online. Daraz gets commission on every sales and they generate their revenue. Darza did their promotion through facebook, Instagram and email marketing.

Facilities and Benefits for the Employees of Daraz.Com

Gratuity Scheme

- 182 days Maternity Leave
- 15 days Annual Leave
- 10 days sick leave
- 5 days casual leave
- Gender equality employment
- Overtime payments during campaigns

The Performance Appraisal process of Daraz.com

- Self Appraisal-

Employees appraise their own performance based on values, skillsets and goal performance.

- Manager Appraisal-

Team managers appraise the performance of their employees based on the self-appraisal (values, skillsets, goal performance).

- Departmental Growth-

Department managers review & discuss the appraisal outcomes based on scores, identify the low, medium and high performers across the department and new employee goals.

- Appraisal Meeting-

Team Managers have session with Employees with final outcome.

j) Comparison (Bikroy.com with Daraz.com)

Bikroy.com VS daraz.com.bd

After analyzing data of Daraz.com it has been found that their benefits, schemes and Human resource appraisal policy is quite similar.

1. Evaluate employee self-appraisal – Both Daraz and Bikroy evaluate their employees performance and based on that take any kind of decisions.
2. Goal based KPI – Bikroy.com set a goal for their every departmental staffs beside their regular tasks and based on that provide their KPI quarterly. On the other hand Daraz follow SMART principle – Specific, Measurable, Assignable, Realistic, Time-bound.
3. Performance standard/Promotion/Increment – Bikroy.com's KPI is target and process based. On the other hand Daraz.com's KPI is performance based.

Chapter Five

V. Survey

a) Questionnaire Survey

In order to get a knowledge of the other companies Key Performance Indicator and other benefits, I took survey of thirty (30) people with ten (10) questionnaire to get an idea of the other sectors like garments, bank, NGO, hospital and education. After getting the result, I found out most of the employees are not satisfied with their company benefits and most of them did not maintain Key Performance Indicator (KPI) in their organization.

The detail questions and the results, I am describing through the flow chart model below-

i. *Survey Details*

Sample Size: 30

Sample Questions: 10

Sample Industries: Garments sector, Bank, Education, NGO, Hospital

The questions are following:

1. Does your company have Key Performance Indicator?
   Yes/No
2. If yes, what is the time period for KPI calculation?
   3 month/6 month/1 year
3. To whom KPI is calculated?
   All employees/Permanent/Temporary
4. Competency calculation type in your company?
   Quantifiable/Measurable
5. KPI measurement system-
   Process based/Target based
6. Are you satisfied with your KPI system?
   Yes/No
7. What other benefits does your company provide?
8. Does your company provide performance recognition award (e.g. employee of the month, an employee of the department, etc.)
9. Does your company have leave encashment policy?
   Yes/No
10. Are you satisfied with your company's benefits and KPI measurement system?
    Yes/No, if No please specify which sector you want to improve?

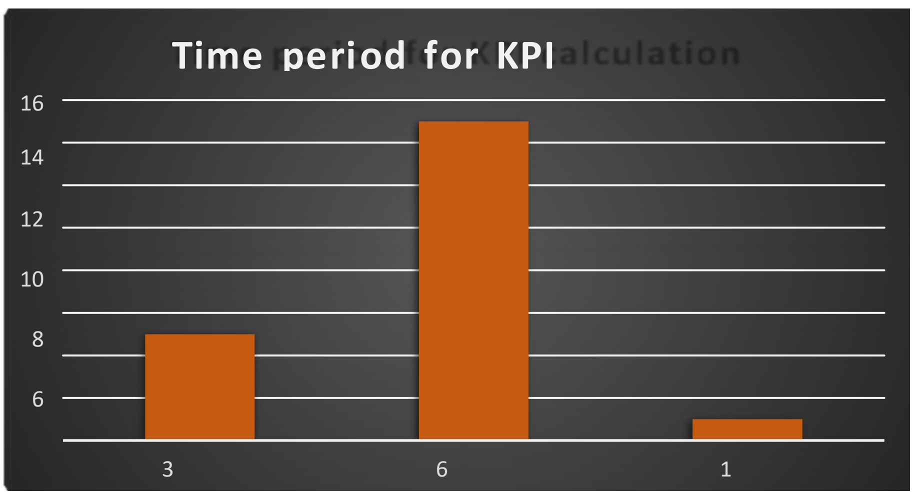
Chapter Six

VI. Findings

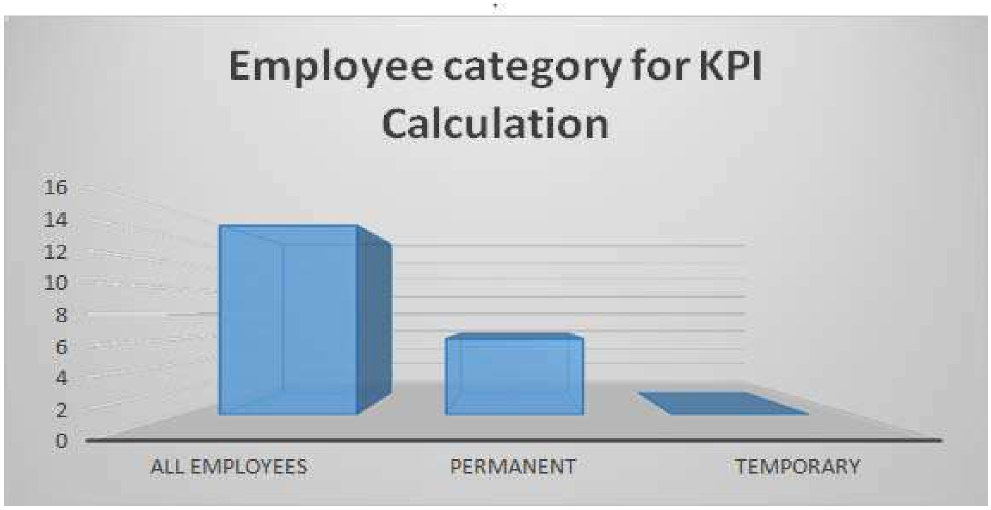
a) *Analyzing the Survey through Flow Chart*

Question 1– Among 30 people, 70% that means 21 people told that their company have KPI system and 30% that means 9 people told that their company does not follow KPI system.

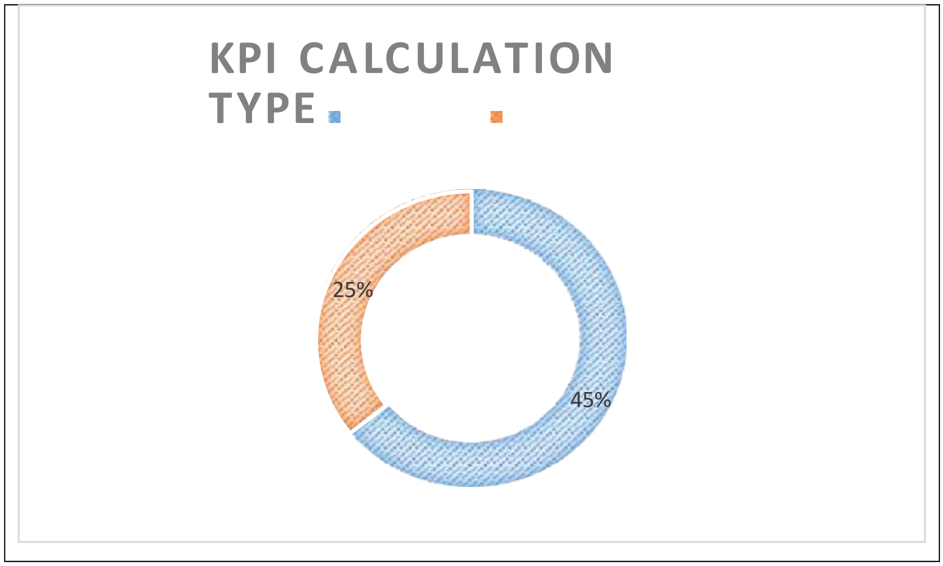
Question 2 – Among 21 person, 5 persons told that their company follows KPI quarterly, 15 persons told that their company follows half yearly and only 1 person told that their company follow KPI annually.



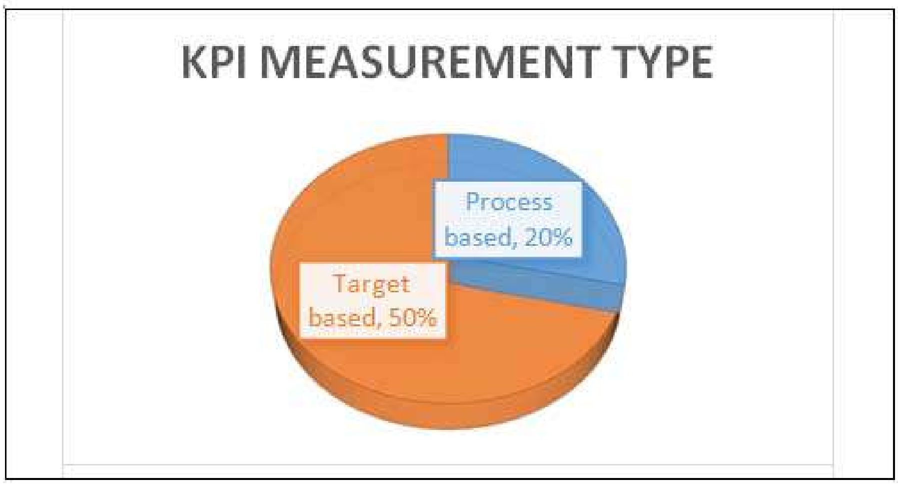
Question 3 – KPI is calculation is done for all employees, 15 people among 30 selected that and 6 people selected that only permanent employees they done KPI.



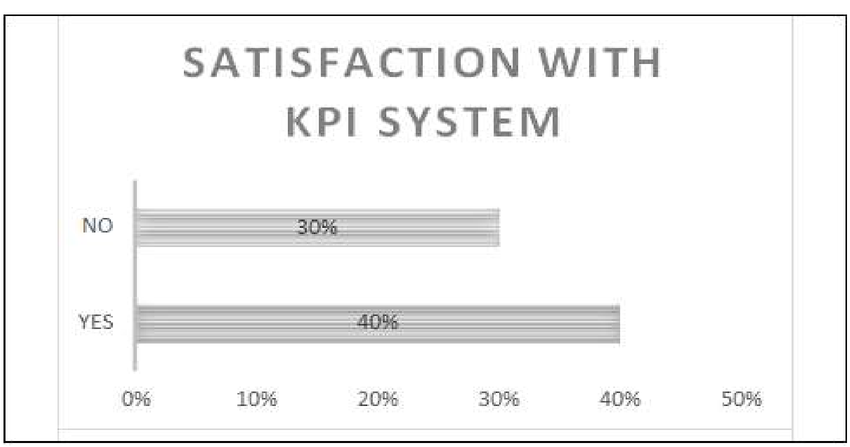
Question 4 – Among 70% of people who have told that their company has KPI, the 45% told that they follow a Quantifiable type KPI system and 25% told that they follow Measurable type KPI system.



Question 5 – Among 70% people -50% select that they follow target based KPI system and 20% follow Process based KPI system.



Question 6– After taking survey, I have found out that 40% is satisfied with their KPI system and 30% is not satisfied with their KPI system.

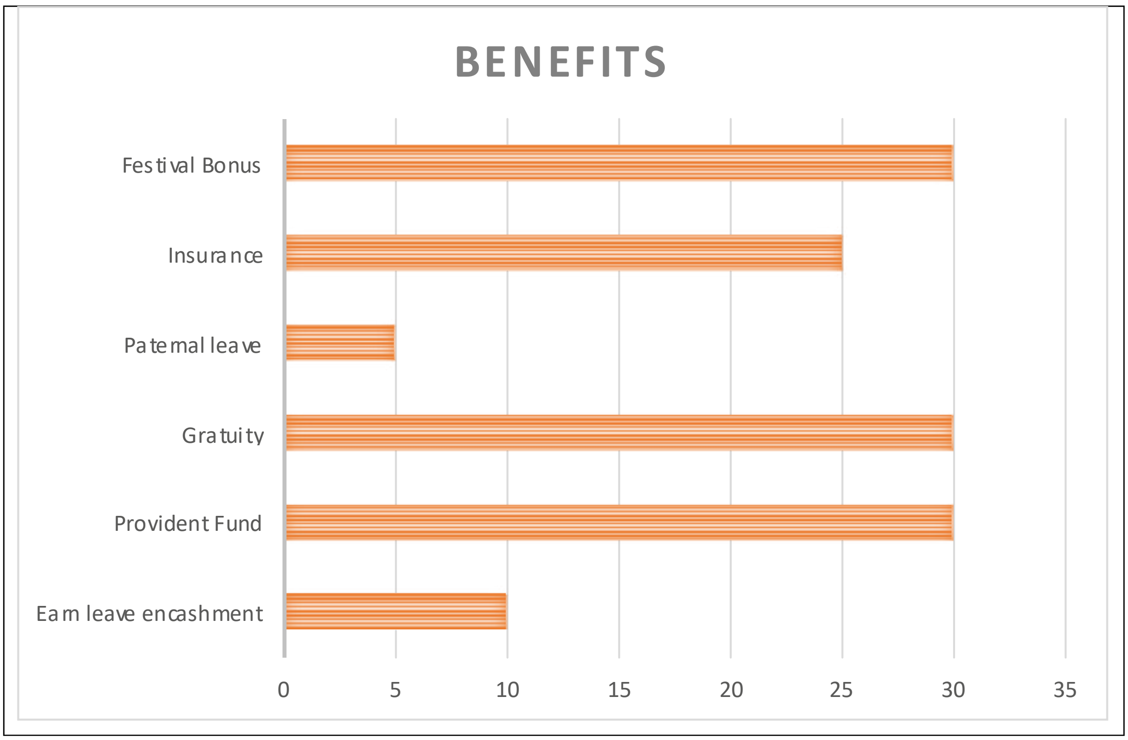


Question 7– After taking a Survey of 30 people, we Found the Following Data

Earn Leave Encashment	Provident Fund	Gratuity	Paternal Leave	Insurance	Festival Bonus
10	30	30	5	25	30

In Bikroy.com, they Provide Following Benefits:

- Festival Bonus
- Maternity benefit
- Death Benefit
- Provident Fund
- Gratuity Scheme
- Group Insurance
- Key Performance Indicator quarterly target based



Question 8– Among 70% People of my Survey they Provide Following Data

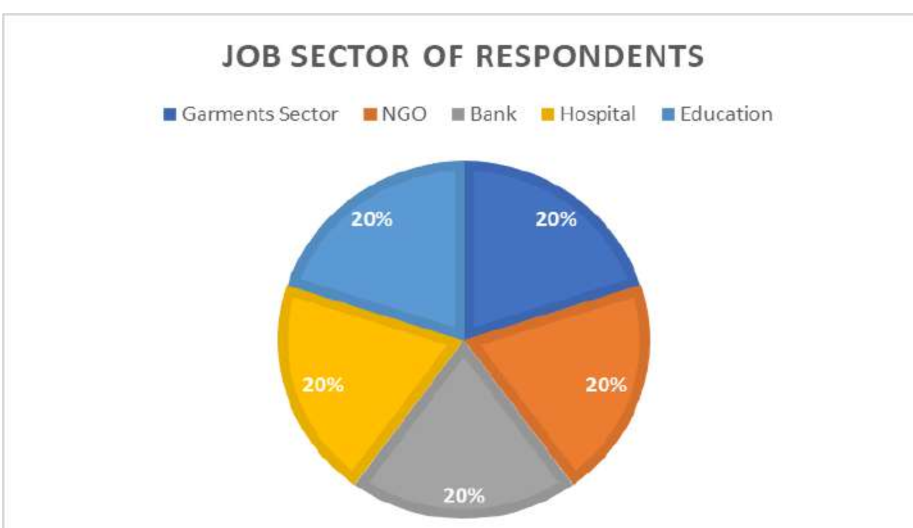
Employee of the month	Employee of the department	Great Performer	Face of the company	Star of the year
2	5	3	5	6

Question 9 – Earn Leave Encashment Policy Survey Result

Question 10 – The last question of my survey was about their satisfaction with the benefits that the company provides them, among my 30 candidates all of them told that they are not satisfied but they did not mention in which sector they want to improve.

Summary:

I took survey of 30 people, among them their job sectors are from different categories.



Chapter Seven

VII. Conclusion

a) *Conclusion*

Our country is under developed country and personal computer and internet is very important for living our day-to-day life. These improvements of Technical and Technological sectors helping the e-commerce section to develop its business. However, the users and customers of Bikroy.com are increasing day by day by using the internet but the rural sectors still need time to come under this horizon.

Bikroy.com is still under the rank of number one in Bangladesh. In order to keep its position the company have to follow some techniques and tips from the international company Amazon.com. Amazon.com is the top rank company in the whole world and by following its footsteps Bikroy.com can develop some of its sectors. Daraz.com is another growing up company in Bangladesh that is doing great in Bangladesh. If Bikroy.com failed to operate in a technical way then it is sure that Daraz.com will take its position. Therefore, Bikroy.com have to be much aware and careful for its future footsteps.

The best sectors of Bikroy.com is- it is quick, convenient and easy to operate just simply by opening an account. New and used both products are available in the website of bikroy.com in a convenient and cheap price. No advertising cost is there to give advertisement that attracts the customers. On the other hand, Daraz only offer new products and some people are still unaware of the name of Daraz which is a plus point for Bikroy.com.

Bikroy.com have a strong market share and highest productivity. They provide great benefits to their employees that motivate them a lot to work properly and efficiently. Day by day the operation of bikroy is increasing and I believe if the company operate in this way it will be the top one in the country rank.

Chapter Eight

VIII. Recommendation

a) *Some Policy Recommendations*

The recommendation bikroy.com are given below:

1. *Conduct Aggressive Promotion:* Increasing promotional activities always attracts customers and it is so much beneficial. Therefore, my suggestion is Bikroy should start boosting their advertisement. In addition, they should advertise their company's internal culture among others.
2. *Open more Outlets in Different Areas:* Bikroy.com relies on the online direct and retail distribution method. It is important for them to expand its direct reach in rural districts also.
3. To be competitive, Bikroy.com should comply with an international standards company, such as Amazon.com.
4. Bikroy.com is currently happy with its current market trend but it has to keep this trend in order to keep its current position.
5. Bikroy.com company's KPI and benefits system are so high and more motivational rather than other companies but they have to give such benefits all the time whether any kind of market fall situation also.
6. Bikroy.com have only limited number of employees, if they recruit more employees then the unemployment rate of our countries will reduce.

Findings from my study is currently the company is doing great and their employees are satisfies with the benefits and the market positions they have. I hope and pray that they keep this trend in future and such way the other companies of Bangladesh get the benefits and become motivated to work in their current sectors.

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Breeding of Natural Resources in Socially owned Territories, Sierra Occidental, Jalisco, Mexico

By Víctor Manuel Sánchez Bernal, Pedro Figueroa Bautista, Gerardo Cruz Sandoval, Victor Manuel Villalvazo López, Marcela de Guadalupe Pelayo Velázquez & Miriam Arias Uribe

Summary- A case study that investigated the rearing of natural resources in territories owned by rural families in the communities of San Isidro and San Pablo, Sierra Occidental de Jalisco, Mexico. The objective was to determine and analyze the strategies generated by the domestic units on the breeding and use of natural resources, taking as a link the birds of the family of the parrots, parrots and macaws, for their popularity as pets, and ease to imitate sounds. We apply a mixed methodology; direct observation, participant and reflective observation, dialogue of knowledge, cultural circles, life stories and a participant rural diagnosis. Community raising of natural resources, a concept that opposes the concept of management, which denotes a colonialist language where natural resources are conceived only from the commercial logic with optimal profits or the intervention of ecosystems by external actors.

Keywords: *globalization, families, social upbringing, natural resources.*

GJMBR-G Classification: *LCC Code: HC133.Z9*

BREEDINGOFNATURALRESOURCESINSOCIALLYOWNEDTERRITORIESSIERRAOCCIDENTALJALISCOMEXICO

Strictly as per the compliance and regulations of:

Breeding of Natural Resources in Socially owned Territories, Sierra Occidental, Jalisco, Mexico

Crianza De Recursos Naturales En Territorios De Propiedad Social, Sierra Occidental,Jalisco, México

Víctor Manuel Sánchez Bernal [α], Pedro Figueroa Bautista [σ], Gerardo Cruz Sandoval [ρ], Victor Manuel Villalvazo López [Ѡ], Marcela de Guadalupe Pelayo Velázquez [¥] & Miriam Arias Uribe [§]

Resumen- Estudio de caso que investigo la crianza de recursos naturales en territorios de propiedad social de familias rurales en las comunidades de San Isidro y San Pablo, Región Sierra Occidental de Jalisco, México. El objetivo fue determinar y analizar las estrategias generadas por las unidades domésticas sobre la crianza y uso de los recursos naturales, tomando como vinculo las aves de la familia de los psitácidos; pericos, loros y guacamayas, por su popularidad como mascotas, y facilidad para imitar sonidos. Aplicamos una metodología mixta; observación directa, observación participante y reflexiva, dialogo de saberes, círculos de cultura, historias de vida y un diagnóstico rural participante. La crianza comunitaria de recursos naturales, concepto que se opone al concepto de manejo, el cual denota un lenguaje colonialista donde los recursos naturales se conciben solo desde la lógica mercantil con óptimas ganancias o la intervención de los ecosistemas por actores externos. Sin embargo, la percepción de las familias, respecto al concepto de crianza social de recursos naturales a través de los dos estudios de caso muestra una diversidad de estrategias y estilos de crianza, primero con una lógica de subsistencia hasta una lógica de comercialización, pero con otros atributos; trueque, intercambio, rituales, solidaridad, confianza, arraigo al territorio, reciprocidad, tolerancia, respeto a sus costumbres, creencias, formas de organización social, y percepción.

Palabras clave: *globalización, familias, crianza social, recursos naturales.*

Summary- A case study that investigated the rearing of natural resources in territories owned by rural families in the communities of San Isidro and San Pablo, Sierra Occidental de Jalisco, Mexico. The objective was to determine and analyze the strategies generated by the domestic units onthe breeding and use of natural resources, taking as a link the birds of the family of the parrots, parrots and macaws, for their popularity as pets, and ease to imitate sounds. We apply a mixed methodology; direct observation, participant and reflective observation, dialogue of knowledge, cultural circles, life stories and a participant rural diagnosis. Community raising of natural resources, a concept that opposes the concept of management, which denotes a colonialist language where natural resources are conceived only from the commercial logic with optimal profits or the intervention of ecosystems by external actors. However, the perception of families regarding the concept of social upbringing of natural resources through the two case studies shows a diversity of parenting strategies and styles, first with a subsistence logic up to a marketing logic, but with other attributes; barter, exchange, rituals, solidarity, trust, roots in the territory, reciprocity, tolerance, respect for their customs, beliefs, forms of social organization, and perception.

Keywords: *globalization, families, social upbringing, natural resources.*

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I. Introducción

Estudio de caso que investigo sobre la crianza de recursos naturales en territorios de propiedad social de familias rurales en las comunidades de San Isidro y San Pablo, región Sierra Occidental de Jalisco. En esta caso, proponemos el termino de crianza social de recursos en oposición al constructo social de manejo, concepto colonialista que poco considera las acciones aprendidas en un proceso de construcción social por la población rural sobre determinaciones que apoyan la conservación del recurso, tomando en cuenta que las posibilidades de sobrevivir disminuyen en la medida que los recursos se agotan. La crianza de recursos naturales refiere a una serie de atributos que dan identidad, reconocimiento, espiritualidad, confianza, arraigo, en un proceso diacrónico y sincrónico a la unidad doméstica del territorio.

La teoría sociológica de cómo se reproduce la sociedad, la estructura y la cotidianidad, integra como unidad de análisis a la "familia" o "grupo doméstico". Las estrategias de reproducción son concebidas como las prácticas sociales que se realizan de manera consciente o no, para mantener o cambiar la posición de las y los sujetos que las realizan. Los grupos domésticos realizan distintas actividades económicas, fundadas en diversas relaciones de producción que les permite reproducirse socialmente. Éstas tienen un carácter muy dinámico, encontrando sus límites en las condiciones macro sociales pero, al mismo tiempo, éstas funcionan como elementos constituyentes de las estructuras (Hernández, 2010; De Oliveira y Salles, 1989; Comas y Assier, 1988).

Históricamente los grupos domésticos campesinos han enfrentado condiciones desventajosas en el mercado y han tenido que crear diferentes estrategias para poder reproducirse, demostrando capacidad para crear variados tipos de respuestas, entre las que se incluyen: intensificación del trabajo familiar, diversificación de labores, expulsión de fuerza de trabajoal exterior de sus localidades, especialización en ciertas actividades y abaratamiento de su fuerza de trabajo (Salles, 1991).

Las estrategias de reproducción campesina varían de acuerdo con las características de los grupos domésticos y de las formas de organización de la vida familiar, debido a la diversidad y conjunción específica de las reglas de matrimonio, conyugalidad y residencia, procreación y variabilidad en cuanto al número de hijas e hijos, además de las diferentes variables ambientales, económicas, políticas y culturales que intervienen en la producción de la subsistencia y los patrones de consumo (De Oliveira y Salles, 1989).

La Región Sierra Occidental conforma los municipios de: San Sebastián del Oeste, Mascota,Talpa de Allende, Cabo Corrientes y Puerto Vallarta, Jalisco. En 1988 se gestiona para decretarse Reserva de Biosfera, una de las más extensas del país con 350 mil hectáreas. Territorio con ecosistemas únicos, y un periodo de bonanza generado por sus betas de oro y plata. Observa severos rezagos en salud, educación, servicios, vías de comunicación, mineríaa cielo abierto, y en los últimos años la entrada de inmobiliarias que acaparan extensiones detierra modificando la dinámica social del municipio además de actividades ilícitas.

San Sebastián se ubica entre las coordenadas 20° 39' 45" y 21° 02' 30" de latitud norte y 104° 35' 00" y 105° 05' de longitud oeste, con una altura de 1,500 msnm. Limita al Norte con el Estado de Nayarit, al Sur con los municipios de Puerto Vallarta y Mascota. Al Este con Guachinango al Oeste con el Estado de Nayarit y Puerto Vallarta. La precipitación pluvial es moderada y estacional 850 a 1200 *mm* al año. De acuerdo a Gerhard 1996 la región quedó casi desierta hasta finales del siglo XVI, cuando se encontraron yacimientos mineros y para 1644 era en su totalidad una región realenga.

Municipio conformado por 84 comunidades, de acuerdo al Censo Nacional de Población Total INEGI, 2000, viven 6,577 seres humanos: 3,311 hombres y 3,266 mujeres. La tenencia de la tierra; propiedad privada 42,427, ejidal 42,789, y comunales 34.360 (Cuadro 1).

Cuadro 1: Comunidades Con Mayor Población Del Municipio De San Sebastián

Población	Número de habitantes
San Felipe de Hijar	1265
Santiago de Pinos	719
San Sebastián del Oeste (cabeceramunicipal)	568
La Tortuga	319
El Carrizo	306
Amatanejo	287
Cofradía de Camotlán	283
Pueblito San Pablo	255
Hacienda de San Isidro	*251*

Los ecosistemas bioculturales observan una larga historia de sobreexplotación por el fomento de la ganadería extensiva e intensiva y la agricultura convencional. La Reforma Agraria conformó núcleos ejidales concéntricos al casco de la Ex hacienda de San Isidro. En cambio en San Pablo el proceso de conformación agraria fue diferente, la comunidad se gesta por colonos españoles, la tenencia de la tierra propiedad privada, y más tarde ejidal. No obstante, existen fuertes conflictos sobre la crianza social de recursos naturales, debido a fuertes cacicazgos, rezago en la resolución agraria y deslinde entre ejidos, diferencias entre comuneros y paracaidistas que llegaron de otros estados de la República Mexicana invadiendo tierras de cultivo, agostaderos y recursos naturales en general.

El objetivo de este trabajo fue determinar y analizar las estrategias generadas por las unidades domésticas sobre la crianza y uso de los recursos naturales, tomando como vinculo las aves de la familia de los psitácidos; pericos, loros y guacamayas, por su popularidad como mascotas, y facilidad para imitar sonidos. Se trabajó en San Isidro y San Pablo, comunidades que pertenecen al municipio de San Sebastián del Oeste, Jalisco.

La metodología se sustentó en la filosofía del constructivismo epistemológico, en donde el conocimiento se desarrolla a partir de conjeturas (Retamozo, 2012). Consideramos analizar la realidad bajo la perspectiva teórica de los autores. La información en campo se obtuvo aplicando el diálogo de saberes, método cualitativo que busca comprender, sintetizar, teorizar y contextualizar el conocimiento. El diálogo de saberes permite entender los problemas y necesidades que tiene la población; mediante la reflexión y discusión de los actores, basándoseen las palabras de la misma población (Hernández, *et al*, 2017). Los circulos de cultura se nutren de la educación popular latinoamericana, principalmente de Freire (1970). Considera que la emancipación no sólo es utopia pedagógica y política por seguir, sino la respuesta central al grito de los oprimidos. En esta perspectiva la emancipación sólo tiene sentido en cuanto liberación constante y colectiva de todo tipo de dominación.

Los datos fueron colectados y ordenados por técnicas de investigación cualitativa y cuantitativa que en su conjunto permitieron obtener información para el logro de los objetivos. Recorridos exploratorios de campo, entrevistas a informantes clave, observación directa y participante, entrevistas informales mínimamente estructuradas, entrevistas formales, historias de vida y un diagnóstico rural participante. Además, para identificar a las familias que se dedicaran a la recolección de aves, *psitácidos;* cotorras, pericos y guacamayas se utilizóun censo que permitió identificar y tipificar a 13 familias de San Isidro y 14 de San Pablo. Estas 27 familias identificaron 10 atributos que inciden para recolectar aves, así como otros recursos (Cuadro 2).

Los atributos que se relaciona con la crianza de recursos naturales y que las familias mencionae inciden para depender de recursos naturales son: tipo de tenencia de la tierra, edad y el género, número de integrantes por familia, tipo de agricultura, poseer ganado mayor o menor, migración, la estacionalidad y disponibilidad de obtener recursos, tipo de actividad o trabajo, medio de transporte, y cconocimiento del medio físico: veredas, caminos y parajes, fenológico y biológico de plantas, arboles, fauna silvestre, clima, tipos de suelo, entre otros.

II. Resultados

a) *Estudio De Caso San Isidro*

Se construyó la tipología con 59 familias que conforman la comunidad de San Isidro. De las 59 familias se hizo una subdivisión, tomando en cuenta la similitud entre sus actividades productivas, socio-económicas, tipo de tenencia, y actividades extra productivas, de la depuración obtuvimos un total de 22 familias con diferentes atributos que sirvió como modelo para integrar al resto de las familias (Cuadro 2).

Cuadro 2. Tipología De Familias De San Isidro Y Sus Atributos

Atributos	Número de Familias
1. Comuneros de edad madura del Pueblito San Pablo y a la vez ejidatarios de la comunidad de San Felipe de Hijar. Siembran en tierras de riego y detemporal de la Hacienda de San Isidro. Muy bien tienen animalitos	*4 familias*
2. Comuneros de edad adulta que siembran su labor. Tienen 7 hijos jóvenes, Pero ninguno en Estados Unidos.	*2 familias*
3. Comunero joven del Pueblito San Pablo, con dos hijos. Siembra a medias: maíz-frijol, y trabaja de raya. Su mujer se emplea lavando ajeno, macheteando y tumbando coamiles, ningún hijo en Estados Unidos.	*1 familia*
4. Comuneros jóvenes, ingresado en el Pueblito San Pablo. Siembra en tierras de la Exhacienda de San Isidro, tienen poco ganado. Su esposa procesa y vede derivados de la leche. Cuenta con una camioneta doble rodado. No tiene hijos en Estados Unidos.	*9 familias*
5. Familias integradas por mujeres y hombre viudos de edad madura y jóvenes.	*6 familias*
6. Familias de ejidatarios que cultivan maíz, frijol y guinea. Además su esposa vende cena, ningún hijo en Estado Unidos.	

7. Familias de avecindados de edad madura, ingresados en la comunidad de San Isidro Cultivan maíz, frijol y calabaza criolla para autoconsumo entierras prestadas. Tienen dos hijos en Estados Unidos.	*1 familia*
8. Familias de comuneros del Pueblito San Pablo de edad madura, concuatro hijos Siembran maíz de secas en tierras de riego que disputa un militar retirado apodado e "Mayor". Tienen hijos en Estados Unidos.	*2 familias*
9. Ejidatario adulto mayor que vive con su esposa. Siembra solo maíz detemporal en coamil. Cuenta con casa propia y no tiene hijos en Estados Unidos	*7 familias*
10. Familia joven que pertenece al grupo de la ampliación, con dos hijosjóvenes. Siembran maíz y frijol en terrenos prestados. Posee 15 cabezas de ganado bovino, crían puercos. Casa propia, y no tienen hijos en EstadosUnidos.	*3 familias*
11. Familia joven que heredó las tierras de su papá, tienen 3 hijos. La familia vive en la cabecera municipal. Cuenta con casa propia en San Isidro, pero la renta al maestro de la primaria. No tiene hijos en Estados Unidos.	*1 familia*
12. Familia conformada por adultos mayores. Posee terreno Federal y pequeña propiedad. Renta sus tierras porque está enfermo y sus hijos vivenfuera. Su esposa asiste a personas que llegan de fuera, elaboran pan para vender y para autoconsumo. Siembran en pequeños bajíos: pepino, rábano,calabaza criolla para autoconsumo consumo familiar y regalo.	*4 familias*
13. Familia de edad madura que pertenece al grupo de la ampliación, concinco hijos jóvenes. Tiene un cargo político. Siembra maíz de temporal en terrenos prestados. Cuenta con 40 cabezas deganado bovino. Tiene 3 hijosen Estados Unidos.	*2 familias*
14. Familia de avecindados e ingresados jóvenes, con cuatro hijos. Siembran de temporal en terrenos prestados. Poseen 4 cabezas de ganado. En ocasiones recibe apoyo económico de sus hermanos que viven y trabajan en E.U.	*1 familia*
15. Familia joven de ejidatarios, con 6 hijos. Encargado de las tierras de dos ejidatarios en donde siembran de aguas y de secas. Posee una vaca y tres bestias de carga. Recolectan pescado, chacales de río y pollos de guacamaya. Viven en una casa de costeras de madera con techo de cartón. No tienen hijos en Estados Unidos.	*1 familia*
16. Familia de avecindados jóvenes, con una niña. Casi no siembra y no tiene ganado. Muele el maíz con olote y lo vende como pastura. Recolectanchacales, pescado, pollos de guacamaya y pericos.	*2 familias*
17. Familia de ejidatarios jóvenes, con un hijo. Siembran maíz de temporal. Cuenta con 35 cabezas de ganado bovino y no tiene hijos en Estados Unidos.	*3 familias*
18. Familia de adultos mayores que viven en ranchos aledaños al poblado de San Isidro Llegaron de otro municipio. Cultivan maíz y guinea. Poseen diez cabezas de ganado bovino y no tienen hijos en Estados Unidos.	*3 familias*
19. Familia de comuneros jóvenes con un hijo. Viven y se emplean en la única tienda fija que existe en el poblado. Siembra con su padre y además se hace cargo del ganado. Él y sus hermanos muy bien tienen ganado. No tienen hijos en Estados Unidos.	*1 familia*
20. Familia de comuneros medieros del Pueblito San Pablo de edad madura. Tiene cuatro hijos jóvenes. Dueño de la única tienda establecida.	*1 familia*
Siembra maíz, frijol y guinea. Cuenta con algo de ganado. Compra y vendeganado. Tiene una camioneta de tres toneladas y dos vehículos más de pequeño rodado. Hace el servicio de transporte público en una camioneta doble cabina, regularmente una o dos veces por semana. Cada semana mata y vende carne de res y de puerco y sus derivados. Un hijo en EstadosUnidos.	
21. Familia de ejidatario maduro, dos hijas. Siembra maíz de temporal y guinea. Muy bien tiene ganado. Recolectan: chacales, pescado, camote decerro, pericos y pollos de guacamaya. Compra y vede chacales en la cabecera municipal y el municipio de Mascota, Jalisco.	*1 familia*
22. Familia de avecindados adultos. Siembra maíz de temporal. Cuenta con8 cabezas de ganado bovino. Casa propia y no tiene hijos en Estados Unidos.	*1 familia*
TOTAL	*59 FAMILIAS*

La crianza de recursos naturales entre las 59 familias obedece a diversos criterios, sin embargo, uno de los atributos que prevalecen es el acceso a tierra para cultivar, además de los beneficios del bosque, principalmente para obtener madera. En el caso de la captura de psitácidos las estrategias para la captura, crianza y comercialización difieren. Para las dos especies de mayor tamaño: guacamaya verde (*Ara* *militaris*), y perico guayabero (*Amazona finschi*) las familias se asocian con un productor de edad madura, que además de ser ejidatario debe poseer conocimiento sobre la biología de las especies y del medio físico: veredas, atajos, conocer e identificar los sitios o parajes, clima, sonidos, entre otros.

Para trepar o subir al árbol a capar un nido de guacamaya o perico guayabero es necesario escalar una altura de 15 a 20 metros por lo que se requiere una persona joven y delgada que generalmente son comuneros o avecindados que llegaron de otros estados y no poseen tierras para cultivar. La crianza de los pollos es una de las etapas de mayor importancia para adaptarse, principalmente porque es la fase de socialización y aprendizaje para comer e imitar sonidos humanos, actividad que solo realizan las mujeres con el apoyo de la familia nuclear y extensa. Si la familia no cuenta con suficiente mano de obra para llevar a cabo esta actividad, busca nodrizas que por lo regular son mujeres adultas. La fase de comercialización solo la realizan los hombres por encargo, posteriormente, después de haber recolectado la cantidad de aves solicitada y como mecanismo para no ser delatados, acuerdan un sitio o paraje fuera del ámbito de la comunidad para entregar el recurso.

Entre los atributos que observaron las familias con perfil alto para obtener recursos encontramos: tipo de tenencia de la tierra, número de integrantes por familia, recolección de no maderables y carencia de vehículo ya que esta región no cuenta con servicio de transporte público. No obstante, y aunque cada familia cuenta con atributos específicos, denota que no contar con algún familiar en Estados Unidos genera mayor dependencia hacia los recursos.

Las familias con perfil medio muestran los siguientes atributos: ser ejidatario, el género, el número de hijos por familia, y que además los hijos radiquen fuera de la región, la mayoría de familias son comuneros y avecindados y no tienen hijos en Estados Unidos. Con perfil bajo para aprovechar recursos naturales: propietario de tierras, comerciantes mayores de 60 años, tienen menos de 5 hijos, los hijos han emigrado, generalmente son mujeres y hombres que viven solos, por lo tanto, tienden a diversificar sus actividades productivas y viven dispersos en ranchos aledaños a la comunidad de San Isidro y San Pablo.

b) Estudio De Caso San Pablo

Tipología construida con 66 familias con sus características respectivas, modelo para tipificar a 28 familias, con atributos altos, medios y bajos para aprovechar recursos naturales. Se identificaron 6 familias con atributos altos para recolectar recursos naturales, sus particularidades, familias conformadas por parejas jóvenes que carecen de tierra para cultivar; familias que llegaron de otros estados del país y familias que por asuntos ilegales no pueden salir de la comunidad para emplearse fuera (Cuadro 3).

Cuadro 3: Tipología De Familias Y Sus Atributos En San Pablo

Atributos	Número de Familias
1. Familias de avecindados jóvenes que llegaron a vivir al Pueblito San Pablo de ranchos aledaños. Estas familias por vivir en ranchos próximos al río Ameca se dedican principalmente a la recolección de chacales y pescado además deotros productos.	*4 familias*
2. Grupo de mujeres y hombres viudos, madres solteras y hombres solos mayores de 80 años.	*15 familias*
3. Familias de avecindados jóvenes que no tienen tierras y no siembran.Llegaron de la población de Rincón de López, Colima, México. Sin embrago, pasan una temporada en la comunidad de San Pablo y otra en su comunidad deorigen.	*1 familia*
4. Familias de ejidatarios jóvenes que por su situación legal les impide salir a emplearse fuera de la región.	*2 familias*
5. Familias representadas por mujeres viudas, `pero que tienen un empleo remunerado.	1 *familia*
6. Familias de ejidatarios de edad madura que poseen mucho ganado y tierras. Además de ser las familias con más arraigo en la región.	*1 familia*
7. Familias de ejidatarios que emigraron a los Estados Unidos.	2 *familias*
8. Familias de ejidatarios que desempeñan un puesto político y que además siembran. Así mismo, sus esposas desempeñan una actividad retributiva.	*1 familia*
9. Avecindados adultos que viven en ranchos aledaños a la comunidad de San Pablo.	*2 familias*
10. Familias de ejidatarios jóvenes que poseen ganado y tierras para cultivar dentro del mismo ejido. Así mismo siembran en tierras del ejido de San Isidro. Desempeñan actividades extras a la agricultura y la ganadería. Cuentan con vehículo propio.	8 *familias*
11. Familias de ejidatarios maduros casados con mujeres jóvenes. En este caso la mujer percibe un salario por colaborar en una institución gubernamental.	*3 familias*
12. Familias representadas por mujeres ya que sus esposos emigraron a losEstados Unidos. Generalmente, viven en casa de sus suegros con de los cuales reciben apoyo económico y de otros familiares.	*4 familias*

Global Journal of Management and Business Research (G) Volume XXIII Issue II Version I Year 2023

13. Familias representadas por parejas jóvenes con poco ganado. Siembran maíz y frijol de aguas y de secas. Tienen hijos jóvenes.	*5 familias*
14. Familias de ejidatarios maduros que cuentan con tierras de riego y de siembran de secas, muy bien tienen ganado. No reciben apoyo económico de sus hijos que viene en Estados Unidos.	*2 familias*
15. Familia de ejidatarios de edad madura que siembran maíz y frijol con yunta.	*1 familia*
16. Familias de avecindados jóvenes no ingresados.	*1 familia*
17. Familias de ejidatarios que siembran maíz de aguas y de secas, no cuentan con ganado y trabajan ajeno.	*1 familias*
18. Familias que salieron a vivir a otros estados de la República Mexicana.	*2 familias*
19. Familias de avecindados maduros que siembran de temporal en terrenos prestados. Tienen poco ganado, y durante la temporada de secas se emp como jornaleros en San Juan de Abajo, Nayarit.	*1 familia*
20. Familias de ejidatarios que trabajan por temporadas en Estados Unidos. Sus esposas desempeñan una actividad que apoya a la economía familiar.	*1 familia*
21. Familias de avecindados de edad madura que no siembran. Desempeñan trabajos de albañilería y como sacristán de la iglesia.	*1 familia*
22. Familia de ejidatarios viejos que cuentan con bastante ganado, tierras y un estatus político. Además desempeñan actividades extras a la agricultura y la ganadería y son propietarios de un vehículo.	*2 familias*
23. Familias de ejidatarios que siembran maíz de temporal, poseen ganado y trabajan ajeno. Compran utensilios de barro y de plástico en Ixtlán del Río, Nayarit, los cuales venden en la región.	*1 familia*
24. Familias de ejidatarios que siembran maíz y frijol de temporal; tienen muchito ganado y cuentan con 7 hijos jóvenes.	*1 familia*
25. Familias de avecindados adultos mayores que no siembran, pero que cuentan con una buena solvencia económica.	*1 familia*
26. Familias de avecindados jóvenes que siembran en tierras de sus padres y que además trabajan ajeno en donde los llamen.	*1 familia*
27. Familias de avecindados que trabajan cuidando ganado, sembrando maíz, frijol y guinea a productores que por problemas legales tuvieron que emigrar a Hermosillo, Sonora. Sin embargo, ahora regresaron y están comprando terrenos del ejido.	*1 familia*
28. Familias de ejidatarios adultos que poseen muchas tierras y ganado. Siembran maíz de aguas y de secas y tienen hijos en Estados Unidos.	*1 familia*
TOTAL	*66 Familias*

Se identificaron 11 familias con probabilidad media para recolectar recursos naturales, sus principales características: familias de ejidatarios, no obstante que algunas de estas familias se encuentran en Estados Unidos. Los principales atributos de las familias con probabilidad baja para aprovechar recursos naturales: familias conformadas por adultos mayores, mujeres y hombres viudos que cuentan con solvencia económica.

La crianza social comunitaria y ejidal difiere entre las familias de San Isidro y San Pablo, debido a situaciones históricas y política, por lo tanto sus formas de crianza social que inciden en sus estrategias, por ejemplo San Isidro florece con la bonanza de la Hacienda de beneficio, la cual conformó una serie de rancherias en la cual vivían los trabajadores dedicadas a producción de ganado bovino, cultivos de arroz, trigo, y maíz. Más tarde la hacienda se desmantela con la Reforma Agraria, conformando nuevos asentamientos ejidales, por lo tanto, formas y estilos de crianza.

No obstante, la distribución de las tierras entre los trabajadores de la hacienda no se distribuyó legalmente, mucho menos equitativa. Más tarde, las tierras que legalmente fueron reconocidas por la Reforma Agraria como ejidales fueron invadidas por comuneros de la región y de otros estados de la República Mexicana. Motivo por el cual los ejidatarios dejaron de cultivar sus tierras, situación que generó serios conflictos que aún prevalecen. Aunado a ello, hace algunos años un militar retirado disputa el casco de la hacienda San Isidro y tierras de riego, argumentando ser nieto del último dueño de la finca (Cuadro 4).

Cuadro 4: Estrategias Implementadas Por Las Familias De San Isidro

Características	Capital Social Y Cultural	Estrategias Implementadas
Casas de adobe y madera, con un solo cuarto. Techos de láminade asbesto. Alta incidencia defamilias que llegaron a vivir de otros ranchos de la región y de otros estados.	Las generaciones pasadas no cuentan con primaria concluida y alguno no saben leer ni escribir.	Rentan tierras para poder cultivar y trabajan de raya. Siembran en tierras prestadas; maíz, frijol y calabaza criolla para autoconsumo.
Las familias en su mayoría cocinan con leña y pocos congas. Algunas familias tienen huertos de traspatio, donde hay plantas medicinales y para alimento. Solo algunas familias crían animales de traspatio.	Recientemente egresó la primerageneración de Telesecundaria. Sin embargo, muy pocos continúan estudiando.	Renta de tierras por dinero, en especie a bajo costo, con el propósito de que otros las trabajen y los dueños reciban el apoyode PROCAMPO y Crédito a la Palabra.
No todas las casas tienen WC, aquellas familias que cuentan	Para continuar estudiando elbachillerato o una carrera técnica, es necesario salir a la	Productores que se quedan comoencargados de las tierras de ejidatarios
con este servicio tienen fosaséptica.	cabecera municipal, el municipiode Mascota, Puerto Vallarta, Jalisco o al Estado de Nayarit.	que pasan temporadas en Estados Unidos.
La mayoría de las familias que fundaron el ejido San Isidro llegaron del rancho la Cuesta, lamayoría de estas familias fuerontrabajadores de la hacienda.	Una clínica que pertenece a la Secretaría de Salubridad, la cualatiende un médico residente que viene mensualmente de la cabecera municipal dar consultay es apoyado por una enfermera tradicional de la localidad.	Siembran en tierras que son disputadas por comuneros de San Pablo y por un familiar del último dueño de la hacienda. Cultivan en coamil maíz de temporal y algunos en tierras de riego. Venden frijol de la temporada.
Las casas de los ranchos son de costeras de madera y piedra. Nocuentan con letrina y defecan al aire libre.	Poca participación de la población para asistir a los actosciviles y religiosos.	Productores que siembran donde lesrenten, presten o vallan a medias.
Cuentan con una tienda DICONSA., y una semifija que seinstala diariamente. No tienenuna plaza principal, por lo que el centro de reunión de los productores se hace debajo de un árbol de mango.	Existe poca disponibilidad de lasautoridades del ejido para gestionar y solucionar los problemas operativos y administrativos.	Muelen maíz con olote el cual venden como pastura o forraje. Siembran en yuntas y terrenos prestados solo agricultura de temporal.
Solo la calle principal esta empedrada, el resto de la población son veredas de tierra.	Una alta incidencia en ladesintegración familiar debido al alcoholismo, y cultivo deenervantes.	Algunas mujeres se empleanmacheteando y tumbando coamiles.Lavan ajeno, son responsables del molinode nixtamal, encargadas de la clínica de salud, venden botanas y paletas de hielo, de igual manera crían animales detraspatio.
La mayoría de las casas cuentancon luz eléctrica, no así las rancherías. La comunicación entre estas rancherías con San Isidro y San Pablo es a través de brechas y veredas por medio de caballos.	San Isidro no logra la cohesión de sus habitantes con la comunidad de San Pablo debidoa las diferencias en la tenencia de la tierra. Principalmente por la disputa del casco de la hacienda y sus tierras de riego.	Las mujeres venden comida, construyen hornos de abobe, preparan y venden pan,así como dulces de leche. Los propietarios de vehículos hacen viajes especiales a donde les solicite la población.
Legalmente la comunidad de SanIsidro cuenta con 5 hectáreas deriego. Estas tierras de riego son acaparadas por 5 ejidatarios.	Dentro del ejido de San Isidro existen comuneros ingresados alejido de San Pablo que siembranlas tierras de riego y de yunta aligual que algunos ejidatarios. Estos viven en la comunidad de San Pablo.	Venden carne de res y puerco cada 8 días. Compra venta de ganado al interior yexterior de la comunidad.
Las mujeres reciben apoyo de OPORTUNIDADES. En cambiolos hombres de PROCAMPO y Crédito a la Palabra.		Algunas familias se dedican a la pesca con atarraya. Además, recolectanchacales que vendenentre la población dela región. También recolectan pollos de aves de psitácidos y otros recursosnaturales.
Solo cuentan con una brecha incipiente que comunica con la cabecera municipal y otra con poblaciones pertenecientes alestado de Nayarit. Sin embargo,durante el temporal de lluvias quedan incomunicados.		Existe trueque o intercambio de recursos entre las familias de la región.

Global Journal of Management and Business Research (G) Volume XXIII Issue II Version I Year 2023

En cambio, la conformación de la comunidad de San Pablo fue construida por colonos de españoles, de propiedad privada. La Misión de Aguamilpa impulsa el narcotráfico y sus tierras que fueron invadidas por el ejército y comuneros de otros estados, expulsando a sus dueños. No solo se invaden las tierras del ejido San Pablo, sino además las tierras de riego del ejido San Isidro, y tierras que se encuentran en proceso de ampliación de ambos ejidos, además de ingresar a 23 poblaciones de la región. Las familias de la comunidad de San Isidro tienden a diversificar e intensificar la crianza de recursos, además de intensificar su aprovechamiento, observado mayor expulsión de familias. San Pablo ha centralizado el poder para decidir sobre la crianza social del bosque, las tierras de temporal y de riego, así como su explotación.

La recolección de recursos no maderables ha quedado para aquellas familias que viven en rancherías próximas al rio Ameca, o aledañas a San Isidro y San Pablo. A diferencia de San Isidro, la comunidad de San Pablo funge como centro de acopio de recursos no maderables. Se observa menos emigración de las familias, pero una mayor desintegración de familias por conflictos agrarios y por involucrarse en asuntos ilícitos (Cuadro 5).

Cuadro 5: Acciones Implementadas Por Las Familias De San Pablo

Características	Capital social y cultural	Estrategias implementadas
Casas de adobe y madera, con un solo cuarto. Techos de teja, asbesto y carton.	Las generaciones posadas no cuentan con primaria concluida y la mayoría no saben leer.	Rentan tierras de riego y detemporal, retribuido con dinero o en especie.
Las familias en su mayoría cocinan con leña y pocos con gas. Algunas familias tienen huertos con árboles frutales y crían animales de traspatio.	Recientemente egresó la primera generación de Telesecundaria. Sin embargo, muy pocos cuentan con un mayor nivel de estudio.	Siembran de temporal en yuntas y terrenos prestados.
La mayoría de las familias cuentan con WC. No obstante que el drenaje descarga un una laguna de oxidación, próxima al poblado despidiendo olores fétidos.	Para continuar estudiando el bachillerato o una carreratécnica, es necesario salir a la cabecera municipal, el municipio de Mascota, PuertoVallarta, Jalisco o al Estado de Nayarit.	Cultivan frijol de temporal y de riego. En el temporal de lluvias siembran maíz, calabaza criolla, guinea y jamaica.
	La población cuenta con una clínica de la Secretaria de Salubridad la cual atiende un médico residente que viene de lacabecera municipal, apoyadoporuna enfermera, mensualmente asiste a darconsulta a la población.	Siembran pastura, cuidan ganado ydan mantenimiento a los ranchos. Temporalmente emigran apoblaciones del Estado de Nayarit o Puerto Vallarta para emplearse como jornaleros.
Las casas de los ranchos son de costeras de madera y piedra. No cuentan con letrina y defecan al aire libre.	Poca participación de lapoblación para asistir a los actos civiles y religiosos.	Productores que siembran dondeles renten, presten o vallan amedias.
Las familias que viven en las rancherías próximas a los principales ríos o arroyos tienden a diversificar sus actividades productivas.	Cuentan con una enfermera y partera tradicional además deser lideresa nata. Atiende a enfermos y parturientas de las dos comunidades de estudio.	Durante la temporada de pizca, algunas familias se emplean trasladando el maíz en vehículos delas parcelas a las casas, recibiendo pago en especie.
Cuentan con una tienda DICONSA, además de dos tiendas particulares.	Poca participación de lapoblación en actividades cívicasreligiosas.	Las familias que viven en losranchos crían: borregos, chivos, caballos, ganado bovino, y puercos.De igual manera recolectan; chacales, fauna silvestre, y pollos de aves d psitácidos.
La mayoría de las casas cuentan conluz eléctrica, no así las rancherías. La comunicación entre estas rancherías es por medio de caballos por brechas o veredas.	Existe poca disponibilidad y empoderamiento de lasautoridades para solucionar los problemas operativos yadministrativos.	Compra venta de ganado. Además de sacrificar cerdos y ganado bovino para vender su carne, chicharrones y mantecalocalmente.

Las mujeres reciben apoyo del programa OPORTUNIDADES. En cambio los hombres de PROCAMPOy Crédito a la Palabra.	Las mujeres en la comunidad de San Pablo tienen mayor disposición para organizarse y dar solución a los problemas operativos y administrativos.	Algunas familias realizan viajes especiales en sus vehículos. Compra y venta de utensilios de barro, de plástico, y prensas para elaborar tortillas.
La toma de agua potable no está cercada y con frecuencia la tubería que distribuye el agua a las casas habitación se tapa debido a la caída de hojas de los árboles. Así mismo, elganado y los cerdos utilizan la toma como abrevadero.	Alta desintegración de las familias por el alcoholismo, ycultivo de enervantes. Alta incidencia de familias que han emigrado a otros estadosdel país y a Estados Unidos.	Las mujeres asisten a trabajadoresde la región, así como a trabajadores externos. Cosen ropa ajena, elaboran pan, queso,requesón para venta, y huevo de lasgallinas. Preparan y venden cena. Distribuyen y veden medicamentos,productos fuller, y omnilife. Lavan y tortean ajeno, fabrican adobe, teja y macetas de barro.
Solo cuentan con una brechaincipiente que comunica con la cabecera municipal y otra con poblaciones pertenecientes al estadode Nayarit. Durante el temporal de lluvias quedan incomunicados.	Los productores no ingresadosni registrados al ejido San Pablo carecen de apoyo además de pagar una cuota al ejido.	Compra venta de recursos no maderables dentro de la región. Recolecciones de recurso maderables y no maderables para vender a intermediarios internos y externos.

III. Conclusiones

La crianza comunitaria de recursos naturales, concepto que se opone al concepto de manejo, el cual denota un lenguaje colonialista donde los recursos naturales se conciben solo desde la lógicamercantil con óptimas ganancias o la intervención de los ecosistemas por actores externos. Sin embargo, la percepción de las familias, respecto al concepto de crianza social de recursos naturalesa través de los dos estudios de caso muestra una diversidad de estrategias y estilos de crianza, primero con una lógica de subsistencia hasta una lógica de comercialización, pero con otros atributos; trueque, intercambio, rituales, solidaridad, confianza, arraigo al territorio, reciprocidad, tolerancia, respeto a sus costumbres y creencias, formas de organización social, percepción, claro sin dejar de lado sus diferencias.

Históricamente, las comunidades de San Isidro y San Pablo observan una serie de conflictos que de alguna manera han podido afrontar de acuerdo idiosincrasia. No obstante el traslape en las formas para acceder a los recursos naturales se ha impuesto por una serie de actores e institucionesexternos, por ejemplo, el desmantelamiento de las Haciendas trae consigo nuevas formas de organización social, sin embargo la Reforma Agraria fue maquillada, ya que no todos los trabajadores de las haciendas fueron beneficiados de igual forma al obtener condiciones de tierrasdiferentes, supeditadas al temporal de lluvia, mucho menos apoyo para trabajarlas, por lo tanto nila propiedad privada, ni comunal, ni ejidal fueron políticas que tomaron en cuenta a las necesidades genuinas de familias de los diversos territorios, mucho menos las condiciones bioculturales, económicas, y políticas.

La comunidad San Pablo ha centralizado el poder para decidir sobre la crianza social del bosque, tierras de temporal, de riego y agostaderos. La recolección de recursos no maderables ha quedado para las familias que viven en rancherías próximas al rio Ameca, o aledañas a San Isidro y San Pablo. A diferencia de San Isidro, la población de San Pablo funge como centro de acopio de recursos no maderables y maderables. Además de una menor emigración de las familias, pero una mayor desintegración de las misma por conflictos agrarios e ilícitos.

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Supply Chain Network Design: A Strategic Centralization of Hazardous Commodity

By Mustafa Hashem M. Al-Naser

Abstract- Supply Chain Management field presents its management, consultants, and professionals with a set of various decisions to be made at the strategic, tactical and operational phases. One critical component of these decisions is the supply chain network design. Each firm, during the establishment phase, is required to properly design its network by strategically positioning its distribution facilities to optimize the overall cost of its supply chain. This paper illustrates the importance of such decision; specifically, in relation to the storage of hazardous commodity while covering strengths, weaknesses, opportunities, and threats associated with this decision. Furthermore, the paper presents a potential model for managing hazardous materials that can lead to a significant reduction in the warehousing cost; if executed properly.

Keywords: strategic decision, distribution, network design, hazardous materials, environmental impact.

GJMBR-G Classification: LCC Code: HD38.5-54.5

SUPPLYCHAINNETWORKDESIGNASTRATEGICCENTRALIZATIONOFHAZARDOUSCOMMODITY

Strictly as per the compliance and regulations of:

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Abstract- Supply Chain Management field presents its management, consultants, and professionals with a set of various decisions to be made at the strategic, tactical and operational phases. One critical component of these decisions is the supply chain network design. Each firm, during the establishment phase, is required to properly design its network by strategically positioning its distribution facilities to optimize the overall cost of its supply chain. This paper illustrates the importance of such decision; specifically, in relation to the storage of hazardous commodity while covering strengths, weaknesses, opportunities, and threats associated with this decision. Furthermore, the paper presents a potential model for managing hazardous materials that can lead to a significant reduction in the warehousing cost; if executed properly.

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I. Introduction

Within every organization, supply chain management plays an essential role to the success of its core functions; whether that organization is in the manufacturing or services industries. To gain a better understanding of this, a common definition classifies supply chain management as the design, planning, execution, control, and monitoring of supply chain activities with the ultimate goal of creating net value, establishing a competitive infrastructure, leveraging worldwide logistics, alignment of supply and demand, and measuring performance globally [1]. Supply chain management requires multiple sets of decisions to be made across the different phases. Such decisions can be looked at as strategic, tactical, or operational; depending on the area of concern they are set to address. One crucial strategic decision pertains to the design of the organization's supply chain network. This refers to the geographical positioning of its inventory to better support the core functions through the allocation of storage facilities. The site selection for a storage facility is dependent on several factors; such as the suppliers' locations, the production sites, and the types of materials to be stored.

When considering such a significant decision, the type of materials plays a major role; especially with the decision to centralize the hazardous commodity. Occupational Safety and Health Administration defines the hazardous materials as any substance or chemical, which is hazardous to people's health or is physically hazardous [2]. Health hazards include skin irritation and damage to the breathing system, while physical hazards include flammability and reactivity with other materials. Despite the hazards associated with such materials, chemicals and gases are crucial for organizations in the energy, manufacturing, and health industries. Therefore, it is important to carefully mange such materials in order maintain safe and reliable supply chain. This paper will address insights required to make such strategic decision of central storage for hazardous materials.

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II. Hazard Identification

The first step in developing a central storage strategy for hazardous commodity is to identify the specific types of materials that are considered for storage as inventory. National Fire Protection Association (NFPA) underlines the challenge of determining and classifying hazardous materials due to the lack of consistent definition and classification approach [3]. However, these are some of the commonly classified hazardous materials that are being used globally:

- Chemicals
- Gases
- Radioactive materials
- Explosives

Each class of hazardous material poses unique risks and dangers. For instance, chemicals can lead to fires, explosions or chemical reactions if mishandled, while radioactive materials require a special handling using appropriate personal protective equipment to avoid exposure to radiations.

III. Regulatory Framework

The storage of hazardous materials is subject to a complex set of regulations at the local, national, and international levels. These regulations aim to safeguard human health, protect the environment, and ensure public safety. Examples of such regulations include OSHA (Occupational Safety and Health Administration) regulations in the United States, the European Union's REACH (Registration, Evaluation, Authorization, and Restriction of Chemicals) legislation, and international agreements like the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal [4].

Compliance with these regulations is not optional, but rather mandatory. Failure to adhere to regulatory requirements can result in severe penalties, legal liabilities, and reputational damage for organizations. In fact, compliance incorporates storage facility design, safety protocols, record-keeping, as well as other reporting requirements.

IV. Centralized Storage Strategy

Central storage refers to the consolidation of hazardous commodity storage in a single, strategically located facility. This approach contrasts with decentralized storage, where materials are stored at multiple sites, such as individual production facilities or regional warehouses. This means that all customers that utilize such hazardous materials will be served from a single storage point. The centralized storage strategy offers several compelling benefits including:

- Cost Savings, where economies of scale can lead a significant reduction in the storage cost, allow for bulk purchasing, and ensure optimized resource utilization
- Logistics Optimization as centralization streamlines transportation, making it more efficient and environmentally friendly
- Enhanced Safety since a single, well-designed facility can implement advanced safety measures; thus, reducing the risk of accidents
- Full compliance to internal and external regulations, since it is easier to monitor and audit the compliance level of one facility rather than multiple facilities.

V. Site Selection

Choosing the right location for a central storage facility is critical and these factors shall be considered and addressed [5]:

- *Proximity:* The site should be close to production facilities to minimize the cost of transportation and the required time for delivery
- *Transportation Networks:* accessibility to highways, railways, and ports is essential for efficient inbound and outbound logistics flows
- *Emergency Response:* The site must have access to emergency response resources, such as fire departments and medical facilities
- *Environmental Impact:* Assess the environmental impact of the site, including potential effects on ecosystems and nearby communities

Performing an environmental impact assessment is a crucial step prior to the site selection, as it evaluates the potential environmental effects of a project, helping to mitigate negative impacts and ensure full compliance with environmental regulations.

VI. Facility Design

The design of the central storage facility should prioritize safety and efficiency. Key elements of consideration include:

- *Layout:* Efficient material flow and segregation of hazardous materials
- Infrastructure: Adequate storage capacity, containment systems, and ventilation
- *Fire Suppression:* Vigorous fire suppression systems, including water and foam sprinklers and alarm systems
- *Security:* Access restrictions and controls, surveillance, and intrusion detection systems

Containment systems, such as secondary containment structures and bunds, are vital to prevent leaks and spills from escaping the storage area [6]. In addition, effective ventilation systems help manage air quality within the facility, particularly when dealing with volatile or toxic materials.

VII. Inventory Management

Inventory control is essential for the efficient management of hazardous materials. The longer hazardous materials are stored, the higher chance that their physical properties change over time; resulting in waste and additional expenses. Key strategies to overcome this include:

- *First-In-First-Out (FIFO):* Helps ensure older materials are used or disposed of first in order to minimize waste
- *Just-In-Time (JIT):* An approach of maintaining minimal on-site inventory to reduce storage costs
- *Regular Audits:* Conducting frequent audits to track inventory levels, expirations dates, and overall compliance

In addition to the above strategies, advanced technologies, such as RFID (Radio-Frequency Identification) and barcode systems, can improve inventory tracking accuracy. Real-time monitoring systems help prevent unauthorized access and monitor environmental conditions. With the evolution of Artificial Intelligence, several technologies have emerged, such as smart sensors measuring the temperature and humidity of a certain point within a warehouse to help maintain appropriate storage environment.

VIII. Safety Measures

Establishing comprehensive safety protocols is a paramount when handling hazardous materials. These protocols should cover, at minimum:

- *Material Handling:* Providing guidelines for safe handling, loading, and unloading of hazardous materials

- *Emergency Response:* A set of procedures for responding to accidents, including spills, fires, and chemical exposures
- *Personal Protective Equipment (PPE):* Listing all requirements for personnel to minimize exposure risks

Moreover, ensuring that the assigned personnel are well-trained in safety procedures is critical. It is essential to develop and regularly update emergency response plans, conduct emergency drills, and provide ongoing safety training to all employees

IX. Risk Assessment and Mitigation

Risk assessment involves identifying potential hazards, evaluating their likelihood and consequences, and prioritizing them based on their risk levels [7]. This step helps in determining the critical risks that must addressed. As a result, risk mitigation strategies need to be implemented to reduce the likelihood and impact of identified risks. This may include:

- Installation of safety barriers to separate hazardous materials.
- Implementing strict safety protocols and monitoring.
- Creating backup systems to prevent critical failures.

Furthermore, it is crucial to develop contingency plans for responding to accidents or incidents. These plans should include immediate actions to contain and mitigate the incident, as well as long-term recovery efforts.

X. SWOT Analysis

SWOT (Strength, Weakness, Opportunities, Threats) analysis is a key tool utilized in supply chain management for making strategic decisions while considering all the internal and external factors. For the optimum centralization of hazardous materials, below are major areas of interest to keep in mind:

a) Strengths

- Advanced safety measures and protocols; thus, reducing the risk of accidents and incidents involving hazardous materials.
- Cost savings resulting from economies of scale through bulk purchasing and inventory management.
- Efficient logistics by streamlining transportation logistics, making it more environmentally friendly and cost-effective.
- Higher compliance rate to local, national, and international regulations governing the storage of hazardous materials.

b) Weaknesse

- Initial Capital Investment for the construction or retrofitting of existing facility
- Higher operational cost for personnel, maintenance, and utilities
- Greater environmental impact in case of accidents and incidents

c) Opportunities

- Technological advancements, such as advanced inventory tracking systems and environmental sustainability measures
- Sustainability focus for making the storage facility more environmentally friendly by reducing waste and energy consumption

d) Threats

- Severe consequences of storage related incidents for hazardous materials
- Continuous changes of regulations and compliance requirements in case of failure to adapt to these changes
- Competitive pressures to reduce costs; thus, impacting the feasibility of centralized storage
- Impact of economic uncertainties and fluctuations on the cost-effectiveness of central storage

XI. Conclusion

In conclusion, a well-planned central storage strategy for hazardous materials is a critical component of supply chain management across various industries. However, it is important to consider key aspects associated with central storage, including hazard identification, facility design, and safety measures.

Centralized storage of hazardous materials offers substantial benefits, including cost savings, enhanced safety, logistics optimization, and higher compliance rate.

However, as industries continue to evolve and regulations become more stringent, organizations must adapt their storage strategies to ensure the safe and efficient handling of hazardous materials. Furthermore, sustainability considerations are increasingly important, urging businesses to find ways to reduce their environmental impact.

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Alternatively, you can download our basic template from https://globaljournals.org/Template.zip

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Acknowledgments

Contributors to the research other than authors credited should be mentioned in Acknowledgments. The source of funding for the research can be included. Suppliers of resources may be mentioned along with their addresses.

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The following is the official style and template developed for publication of a research paper. Authors are not required to follow this style during the submission of the paper. It is just for reference purposes.

Manuscript Style Instruction (Optional)

- Microsoft Word Document Setting Instructions.
- Font type of all text should be Swis721 Lt BT.
- Page size: 8.27" x 11'", left margin: 0.65, right margin: 0.65, bottom margin: 0.75.
- Paper title should be in one column of font size 24.
- Author name in font size of 11 in one column.
- Abstract: font size 9 with the word "Abstract" in bold italics.
- Main text: font size 10 with two justified columns.
- Two columns with equal column width of 3.38 and spacing of 0.2.
- First character must be three lines drop-capped.
- The paragraph before spacing of 1 pt and after of 0 pt.
- Line spacing of 1 pt.
- Large images must be in one column.
- The names of first main headings (Heading 1) must be in Roman font, capital letters, and font size of 10.
- The names of second main headings (Heading 2) must not include numbers and must be in italics with a font size of 10.

Structure and Format of Manuscript

The recommended size of an original research paper is under 15,000 words and review papers under 7,000 words. Research articles should be less than 10,000 words. Research papers are usually longer than review papers. Review papers are reports of significant research (typically less than 7,000 words, including tables, figures, and references)

A research paper must include:

a) A title which should be relevant to the theme of the paper.
b) A summary, known as an abstract (less than 150 words), containing the major results and conclusions.
c) Up to 10 keywords that precisely identify the paper's subject, purpose, and focus.
d) An introduction, giving fundamental background objectives.
e) Resources and techniques with sufficient complete experimental details (wherever possible by reference) to permit repetition, sources of information must be given, and numerical methods must be specified by reference.
f) Results which should be presented concisely by well-designed tables and figures.
g) Suitable statistical data should also be given.
h) All data must have been gathered with attention to numerical detail in the planning stage.

Design has been recognized to be essential to experiments for a considerable time, and the editor has decided that any paper that appears not to have adequate numerical treatments of the data will be returned unrefereed.

i) Discussion should cover implications and consequences and not just recapitulate the results; conclusions should also be summarized.
j) There should be brief acknowledgments.
k) There ought to be references in the conventional format. Global Journals recommends APA format.

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The Editorial Board reserves the right to make literary corrections and suggestions to improve brevity.

Format Structure

It is necessary that authors take care in submitting a manuscript that is written in simple language and adheres to published guidelines.

All manuscripts submitted to Global Journals should include:

Title

The title page must carry an informative title that reflects the content, a running title (less than 45 characters together with spaces), names of the authors and co-authors, and the place(s) where the work was carried out.

Author details

The full postal address of any related author(s) must be specified.

Abstract

The abstract is the foundation of the research paper. It should be clear and concise and must contain the objective of the paper and inferences drawn. It is advised to not include big mathematical equations or complicated jargon.

Many researchers searching for information online will use search engines such as Google, Yahoo or others. By optimizing your paper for search engines, you will amplify the chance of someone finding it. In turn, this will make it more likely to be viewed and cited in further works. Global Journals has compiled these guidelines to facilitate you to maximize the web-friendliness of the most public part of your paper.

Keywords

A major lynchpin of research work for the writing of research papers is the keyword search, which one will employ to find both library and internet resources. Up to eleven keywords or very brief phrases have to be given to help data retrieval, mining, and indexing.

One must be persistent and creative in using keywords. An effective keyword search requires a strategy: planning of a list of possible keywords and phrases to try.

Choice of the main keywords is the first tool of writing a research paper. Research paper writing is an art. Keyword search should be as strategic as possible.

One should start brainstorming lists of potential keywords before even beginning searching. Think about the most important concepts related to research work. Ask, "What words would a source have to include to be truly valuable in a research paper?" Then consider synonyms for the important words.

It may take the discovery of only one important paper to steer in the right keyword direction because, in most databases, the keywords under which a research paper is abstracted are listed with the paper.

Numerical Methods

Numerical methods used should be transparent and, where appropriate, supported by references.

Abbreviations

Authors must list all the abbreviations used in the paper at the end of the paper or in a separate table before using them.

Formulas and equations

Authors are advised to submit any mathematical equation using either MathJax, KaTeX, or LaTeX, or in a very high-quality image.

Tables, Figures, and Figure Legends

Tables: Tables should be cautiously designed, uncrowned, and include only essential data. Each must have an Arabic number, e.g., Table 4, a self-explanatory caption, and be on a separate sheet. Authors must submit tables in an editable format and not as images. References to these tables (if any) must be mentioned accurately.

Figures

Figures are supposed to be submitted as separate files. Always include a citation in the text for each figure using Arabic numbers, e.g., Fig. 4. Artwork must be submitted online in vector electronic form or by emailing it.

Preparation of Eletronic Figures for Publication

Although low-quality images are sufficient for review purposes, print publication requires high-quality images to prevent the final product being blurred or fuzzy. Submit (possibly by e-mail) EPS (line art) or TIFF (halftone/ photographs) files only. MS PowerPoint and Word Graphics are unsuitable for printed pictures. Avoid using pixel-oriented software. Scans (TIFF only) should have a resolution of at least 350 dpi (halftone) or 700 to 1100 dpi (line drawings). Please give the data for figures in black and white or submit a Color Work Agreement form. EPS files must be saved with fonts embedded (and with a TIFF preview, if possible).

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Tips for writing a good quality Management Research Paper

Techniques for writing a good quality management and business research paper:

1. Choosing the topic: In most cases, the topic is selected by the interests of the author, but it can also be suggested by the guides. You can have several topics, and then judge which you are most comfortable with. This may be done by asking several questions of yourself, like "Will I be able to carry out a search in this area? Will I find all necessary resources to accomplish the search? Will I be able to find all information in this field area?" If the answer to this type of question is "yes," then you ought to choose that topic. In most cases, you may have to conduct surveys and visit several places. Also, you might have to do a lot of work to find all the rises and falls of the various data on that subject. Sometimes, detailed information plays a vital role, instead of short information. Evaluators are human: The first thing to remember is that evaluators are also human beings. They are not only meant for rejecting a paper. They are here to evaluate your paper. So present your best aspect.

2. Think like evaluators: If you are in confusion or getting demotivated because your paper may not be accepted by the evaluators, then think, and try to evaluate your paper like an evaluator. Try to understand what an evaluator wants in your research paper, and you will automatically have your answer. Make blueprints of paper: The outline is the plan or framework that will help you to arrange your thoughts. It will make your paper logical. But remember that all points of your outline must be related to the topic you have chosen.

3. Ask your guides: If you are having any difficulty with your research, then do not hesitate to share your difficulty with your guide (if you have one). They will surely help you out and resolve your doubts. If you can't clarify what exactly you require for your work, then ask your supervisor to help you with an alternative. He or she might also provide you with a list of essential readings.

4. Use of computer is recommended: As you are doing research in the field of management and business then this point is quite obvious. Use right software: Always use good quality software packages. If you are not capable of judging good software, then you can lose the quality of your paper unknowingly. There are various programs available to help you which you can get through the internet.

5. Use the internet for help: An excellent start for your paper is using Google. It is a wondrous search engine, where you can have your doubts resolved. You may also read some answers for the frequent question of how to write your research paper or find a model research paper. You can download books from the internet. If you have all the required books, place importance on reading, selecting, and analyzing the specified information. Then sketch out your research paper. Use big pictures: You may use encyclopedias like Wikipedia to get pictures with the best resolution. At Global Journals, you should strictly follow here.

6. Bookmarks are useful: When you read any book or magazine, you generally use bookmarks, right? It is a good habit which helps to not lose your continuity. You should always use bookmarks while searching on the internet also, which will make your search easier.

7. Revise what you wrote: When you write anything, always read it, summarize it, and then finalize it.

8. Make every effort: Make every effort to mention what you are going to write in your paper. That means always have a good start. Try to mention everything in the introduction—what is the need for a particular research paper. Polish your work with good writing skills and always give an evaluator what he wants. Make backups: When you are going to do any important thing like making a research paper, you should always have backup copies of it either on your computer or on paper. This protects you from losing any portion of your important data.

9. Produce good diagrams of your own: Always try to include good charts or diagrams in your paper to improve quality. Using several unnecessary diagrams will degrade the quality of your paper by creating a hodgepodge. So always try to include diagrams which were made by you to improve the readability of your paper. Use of direct quotes: When you do research relevant to literature, history, or current affairs, then use of quotes becomes essential, but if the study is relevant to science, use of quotes is not preferable.

10. Use proper verb tense: Use proper verb tenses in your paper. Use past tense to present those events that have happened. Use present tense to indicate events that are going on. Use future tense to indicate events that will happen in the future. Use of wrong tenses will confuse the evaluator. Avoid sentences that are incomplete.

11. Pick a good study spot: Always try to pick a spot for your research which is quiet. Not every spot is good for studying.

12. Know what you know: Always try to know what you know by making objectives, otherwise you will be confused and unable to achieve your target.

13. Use good grammar: Always use good grammar and words that will have a positive impact on the evaluator; use of good vocabulary does not mean using tough words which the evaluator has to find in a dictionary. Do not fragment sentences. Eliminate one-word sentences. Do not ever use a big word when a smaller one would suffice.
Verbs have to be in agreement with their subjects. In a research paper, do not start sentences with conjunctions or finish them with prepositions. When writing formally, it is advisable to never split an infinitive because someone will (wrongly) complain. Avoid clichés like a disease. Always shun irritating alliteration. Use language which is simple and straightforward. Put together a neat summary.

14. Arrangement of information: Each section of the main body should start with an opening sentence, and there should be a changeover at the end of the section. Give only valid and powerful arguments for your topic. You may also maintain your arguments with records.

15. Never start at the last minute: Always allow enough time for research work. Leaving everything to the last minute will degrade your paper and spoil your work.

16. Multitasking in research is not good: Doing several things at the same time is a bad habit in the case of research activity. Research is an area where everything has a particular time slot. Divide your research work into parts, and do a particular part in a particular time slot.

17. Never copy others' work: Never copy others' work and give it your name because if the evaluator has seen it anywhere, you will be in trouble. Take proper rest and food: No matter how many hours you spend on your research activity, if you are not taking care of your health, then all your efforts will have been in vain. For quality research, take proper rest and food.

18. Go to seminars: Attend seminars if the topic is relevant to your research area. Utilize all your resources.

19. Refresh your mind after intervals: Try to give your mind a rest by listening to soft music or sleeping in intervals. This will also improve your memory. Acquire colleagues: Always try to acquire colleagues. No matter how sharp you are, if you acquire colleagues, they can give you ideas which will be helpful to your research.

20. Think technically: Always think technically. If anything happens, search for its reasons, benefits, and demerits. Think and then print: When you go to print your paper, check that tables are not split, headings are not detached from their descriptions, and page sequence is maintained.

21. Adding unnecessary information: Do not add unnecessary information like "I have used MS Excel to draw graphs." Irrelevant and inappropriate material is superfluous. Foreign terminology and phrases are not apropos. One should never take a broad view. Analogy is like feathers on a snake. Use words properly, regardless of how others use them. Remove quotations. Puns are for kids, not grunt readers. Never oversimplify: When adding material to your research paper, never go for oversimplification; this will definitely irritate the evaluator. Be specific. Never use rhythmic redundancies. Contractions shouldn't be used in a research paper. Comparisons are as terrible as clichés. Give up ampersands, abbreviations, and so on. Remove commas that are not necessary. Parenthetical words should be between brackets or commas. Understatement is always the best way to put forward earth-shaking thoughts. Give a detailed literary review.

22. Report concluded results: Use concluded results. From raw data, filter the results, and then conclude your studies based on measurements and observations taken. An appropriate number of decimal places should be used. Parenthetical remarks are prohibited here. Proofread carefully at the final stage. At the end, give an outline to your arguments. Spot perspectives of further study of the subject. Justify your conclusion at the bottom sufficiently, which will probably include examples.

23. Upon conclusion: Once you have concluded your research, the next most important step is to present your findings. Presentation is extremely important as it is the definite medium though which your research is going to be in print for the rest of the crowd. Care should be taken to categorize your thoughts well and present them in a logical and neat manner. A good quality research paper format is essential because it serves to highlight your research paper and bring to light all necessary aspects of your research.

Informal Guidelines of Research Paper Writing

Key points to remember:

- Submit all work in its final form.
- Write your paper in the form which is presented in the guidelines using the template.
- Please note the criteria peer reviewers will use for grading the final paper.

Final points:

One purpose of organizing a research paper is to let people interpret your efforts selectively. The journal requires the following sections, submitted in the order listed, with each section starting on a new page:

The introduction: This will be compiled from reference matter and reflect the design processes or outline of basis that directed you to make a study. As you carry out the process of study, the method and process section will be constructed like that. The results segment will show related statistics in nearly sequential order and direct reviewers to similar intellectual paths throughout the data that you gathered to carry out your study.

The discussion section:

This will provide understanding of the data and projections as to the implications of the results. The use of good quality references throughout the paper will give the effort trustworthiness by representing an alertness to prior workings.

Writing a research paper is not an easy job, no matter how trouble-free the actual research or concept. Practice, excellent preparation, and controlled record-keeping are the only means to make straightforward progression.

General style:

Specific editorial column necessities for compliance of a manuscript will always take over from directions in these general guidelines.

To make a paper clear: Adhere to recommended page limits.

Mistakes to avoid:

- Insertion of a title at the foot of a page with subsequent text on the next page.
- Separating a table, chart, or figure—confine each to a single page.
- Submitting a manuscript with pages out of sequence.
- In every section of your document, use standard writing style, including articles ("a" and "the").
- Keep paying attention to the topic of the paper.

- Use paragraphs to split each significant point (excluding the abstract).
- Align the primary line of each section.
- Present your points in sound order.
- Use present tense to report well-accepted matters.
- Use past tense to describe specific results.
- Do not use familiar wording; don't address the reviewer directly. Don't use slang or superlatives.
- Avoid use of extra pictures—include only those figures essential to presenting results.

Title page:

Choose a revealing title. It should be short and include the name(s) and address(es) of all authors. It should not have acronyms or abbreviations or exceed two printed lines.

Abstract: This summary should be two hundred words or less. It should clearly and briefly explain the key findings reported in the manuscript and must have precise statistics. It should not have acronyms or abbreviations. It should be logical in itself. Do not cite references at this point.

An abstract is a brief, distinct paragraph summary of finished work or work in development. In a minute or less, a reviewer can be taught the foundation behind the study, common approaches to the problem, relevant results, and significant conclusions or new questions.

Write your summary when your paper is completed because how can you write the summary of anything which is not yet written? Wealth of terminology is very essential in abstract. Use comprehensive sentences, and do not sacrifice readability for brevity; you can maintain it succinctly by phrasing sentences so that they provide more than a lone rationale. The author can at this moment go straight to shortening the outcome. Sum up the study with the subsequent elements in any summary. Try to limit the initial two items to no more than one line each.

Reason for writing the article—theory, overall issue, purpose.

- Fundamental goal.
- To-the-point depiction of the research.
- Consequences, including definite statistics—if the consequences are quantitative in nature, account for this; results of any numerical analysis should be reported. Significant conclusions or questions that emerge from the research.

Approach:

- o Single section and succinct.
- o An outline of the job done is always written in past tense.
- o Concentrate on shortening results—limit background information to a verdict or two.
- o Exact spelling, clarity of sentences and phrases, and appropriate reporting of quantities (proper units, important statistics) are just as significant in an abstract as they are anywhere else.

Introduction:

The introduction should "introduce" the manuscript. The reviewer should be presented with sufficient background information to be capable of comprehending and calculating the purpose of your study without having to refer to other works. The basis for the study should be offered. Give the most important references, but avoid making a comprehensive appraisal of the topic. Describe the problem visibly. If the problem is not acknowledged in a logical, reasonable way, the reviewer will give no attention to your results. Speak in common terms about techniques used to explain the problem, if needed, but do not present any particulars about the protocols here.

The following approach can create a valuable beginning:

- o Explain the value (significance) of the study.
- o Defend the model—why did you employ this particular system or method? What is its compensation? Remark upon its appropriateness from an abstract point of view as well as pointing out sensible reasons for using it.
- o Present a justification. State your particular theory(-ies) or aim(s), and describe the logic that led you to choose them.
- o Briefly explain the study's tentative purpose and how it meets the declared objectives.

Approach:

Use past tense except for when referring to recognized facts. After all, the manuscript will be submitted after the entire job is done. Sort out your thoughts; manufacture one key point for every section. If you make the four points listed above, you will need at least four paragraphs. Present surrounding information only when it is necessary to support a situation. The reviewer does not desire to read everything you know about a topic. Shape the theory specifically—do not take a broad view.

As always, give awareness to spelling, simplicity, and correctness of sentences and phrases.

Procedures (methods and materials):

This part is supposed to be the easiest to carve if you have good skills. A soundly written procedures segment allows a capable scientist to replicate your results. Present precise information about your supplies. The suppliers and clarity of reagents can be helpful bits of information. Present methods in sequential order, but linked methodologies can be grouped as a segment. Be concise when relating the protocols. Attempt to give the least amount of information that would permit another capable scientist to replicate your outcome, but be cautious that vital information is integrated. The use of subheadings is suggested and ought to be synchronized with the results section.

When a technique is used that has been well-described in another section, mention the specific item describing the way, but draw the basic principle while stating the situation. The purpose is to show all particular resources and broad procedures so that another person may use some or all of the methods in one more study or referee the scientific value of your work. It is not to be a step-by-step report of the whole thing you did, nor is a methods section a set of orders.

Materials:

Materials may be reported in part of a section or else they may be recognized along with your measures.

Methods:

- Report the method and not the particulars of each process that engaged the same methodology.
- Describe the method entirely.
- To be succinct, present methods under headings dedicated to specific dealings or groups of measures.
- Simplify—detail how procedures were completed, not how they were performed on a particular day.
- If well-known procedures were used, account for the procedure by name, possibly with a reference, and that's all.

Approach:

It is embarrassing to use vigorous voice when documenting methods without using first person, which would focus the reviewer's interest on the researcher rather than the job. As a result, when writing up the methods, most authors use third person passive voice.

Use standard style in this and every other part of the paper—avoid familiar lists, and use full sentences.

What to keep away from:

- Resources and methods are not a set of information.
- Skip all descriptive information and surroundings—save it for the argument.
- Leave out information that is immaterial to a third party.

Results:

The principle of a results segment is to present and demonstrate your conclusion. Create this part as entirely objective details of the outcome, and save all understanding for the discussion.

The page length of this segment is set by the sum and types of data to be reported. Use statistics and tables, if suitable, to present consequences most efficiently.

You must clearly differentiate material which would usually be incorporated in a study editorial from any unprocessed data or additional appendix matter that would not be available. In fact, such matters should not be submitted at all except if requested by the instructor.

Content:

- Sum up your conclusions in text and demonstrate them, if suitable, with figures and tables.
- In the manuscript, explain each of your consequences, and point the reader to remarks that are most appropriate.
- Present a background, such as by describing the question that was addressed by creation of an exacting study.
- Explain results of control experiments and give remarks that are not accessible in a prescribed figure or table, if appropriate.
- Examine your data, then prepare the analyzed (transformed) data in the form of a figure (graph), table, or manuscript.

What to stay away from:

- Do not discuss or infer your outcome, report surrounding information, or try to explain anything.
- Do not include raw data or intermediate calculations in a research manuscript.
- Do not present similar data more than once.
- A manuscript should complement any figures or tables, not duplicate information.
- Never confuse figures with tables—there is a difference.

Approach:

As always, use past tense when you submit your results, and put the whole thing in a reasonable order.

Put figures and tables, appropriately numbered, in order at the end of the report.

If you desire, you may place your figures and tables properly within the text of your results section.

Figures and tables:

If you put figures and tables at the end of some details, make certain that they are visibly distinguished from any attached appendix materials, such as raw facts. Whatever the position, each table must be titled, numbered one after the other, and include a heading. All figures and tables must be divided from the text.

Discussion:

The discussion is expected to be the trickiest segment to write. A lot of papers submitted to the journal are discarded based on problems with the discussion. There is no rule for how long an argument should be.

Position your understanding of the outcome visibly to lead the reviewer through your conclusions, and then finish the paper with a summing up of the implications of the study. The purpose here is to offer an understanding of your results and support all of your conclusions, using facts from your research and generally accepted information, if suitable. The implication of results should be fully described.

Infer your data in the conversation in suitable depth. This means that when you clarify an observable fact, you must explain mechanisms that may account for the observation. If your results vary from your prospect, make clear why that may have happened. If your results agree, then explain the theory that the proof supported. It is never suitable to just state that the data approved the prospect, and let it drop at that. Make a decision as to whether each premise is supported or discarded or if you cannot make a conclusion with assurance. Do not just dismiss a study or part of a study as "uncertain."

Research papers are not acknowledged if the work is imperfect. Draw what conclusions you can based upon the results that you have, and take care of the study as a finished work.

- You may propose future guidelines, such as how an experiment might be personalized to accomplish a new idea.
- Give details of all of your remarks as much as possible, focusing on mechanisms.
- Make a decision as to whether the tentative design sufficiently addressed the theory and whether or not it was correctly restricted. Try to present substitute explanations if they are sensible alternatives.
- One piece of research will not counter an overall question, so maintain the large picture in mind. Where do you go next? The best studies unlock new avenues of study. What questions remain?
- Recommendations for detailed papers will offer supplementary suggestions.

Approach:

When you refer to information, differentiate data generated by your own studies from other available information. Present work done by specific persons (including you) in past tense.

Describe generally acknowledged facts and main beliefs in present tense.

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	A-B	**C-D**	**E-F**
Abstract	Clear and concise with appropriate content, Correct format. 200 words or below	Unclear summary and no specific data, Incorrect form Above 200 words	No specific data with ambiguous information Above 250 words
Introduction	Containing all background details with clear goal and appropriate details, flow specification, no grammar and spelling mistake, well organized sentence and paragraph, reference cited	Unclear and confusing data, appropriate format, grammar and spelling errors with unorganized matter	Out of place depth and content, hazy format
Methods and Procedures	Clear and to the point with well arranged paragraph, precision and accuracy of facts and figures, well organized subheads	Difficult to comprehend with embarrassed text, too much explanation but completed	Incorrect and unorganized structure with hazy meaning
Result	Well organized, Clear and specific, Correct units with precision, correct data, well structuring of paragraph, no grammar and spelling mistake	Complete and embarrassed text, difficult to comprehend	Irregular format with wrong facts and figures
Discussion	Well organized, meaningful specification, sound conclusion, logical and concise explanation, highly structured paragraph reference cited	Wordy, unclear conclusion, spurious	Conclusion is not cited, unorganized, difficult to comprehend
References	Complete and correct format, well organized	Beside the point, Incomplete	Wrong format and structuring

INDEX

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