

THE GLOBAL AND MUTUALLY BENEFICIAL HUB
&
BRAND EQUITY CASE STUDY

BY
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AOEC GAP ANALYSIS, 2023 -2025



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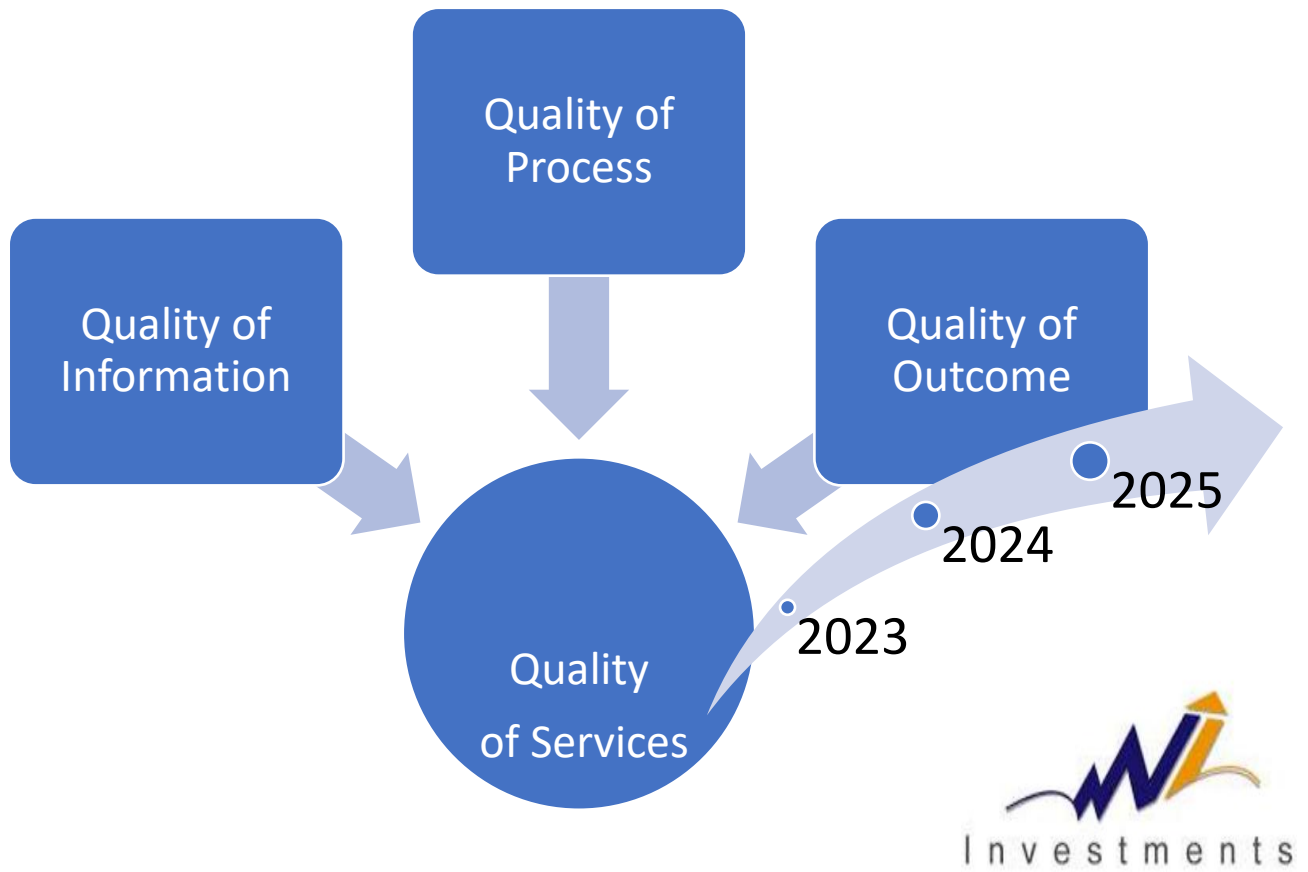
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TGMB Brand Equity Vision



3. EXECUTIVE SUMMARY

The Case Study focuses on Brand Equity Analytics
Via questionnaires and reviews such as

(1) 360-degree Analysis (refer APPENDIX I)

(2) Touch Point Analysis (refer APPENDIX II)

(3) More QoS Analysis (refer APPENDIX III)

Transformations or Ripple effect



We at AOEC find that Brand Choice is a solution finding to design synergetic performance in automotive businesses. The first steps to this solution finding are to question aspects such as the brand and its network's ...

- ☐ Differentiation strategy
- ☐ Customer Engagement strategy
- ☐ Vision to address dynamics in service management
- ☐ Demand and Supply planning strategy
- ☐ Sourcing strategy
- ☐ Surplus resources or stock handling strategy
- ☐ Nature of ownership for Sustainable development and growth (SD & G)
- ☐ Nature of ownership for climate change mitigation
- ☐ Product/Service strategy
- ☐ Environmental, Social and National health goals (ERNHG) specific products/services
- ☐ Transfer of Learning products/services based on the “**Empower to Enable to Engage**” 3E-Analytics strategy for being Global and Mutually Beneficial

Note: Our (The) Global and Mutually Beneficial (TGMB) Hub framework has been developed with suitable-fit data so we can showcase this Brand Choice solution without additional data gathering, but for more agile data analytics a case study needs to be done specifically

4. A NOTE FOR THE COMPANY ASSESSED

Name:

Nature of business:



Porter's 5 forces

The TGMB Hub Analysis finds that Porter's 5 forces influence organizations, where the business model for operations decides the impact of these forces. The 5 forces are:

1. Threat of new entrants

Response:

2. Bargaining power of suppliers

Response:

3. Bargaining power of buyers

Response:

4. Level of competitive rivalry

Response:

5. Threat of substitutes

Response:

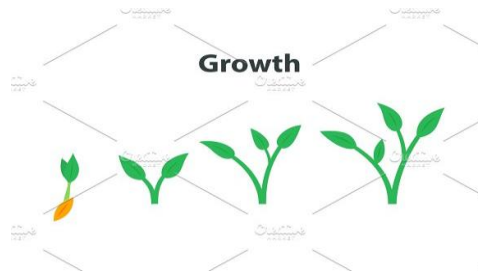
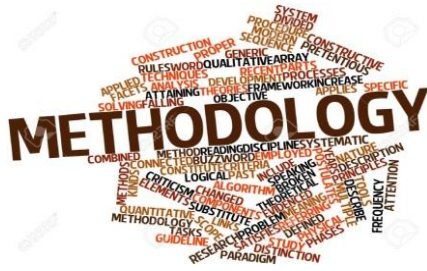
What does your company adopt as a sustainable approach for the 5 objectives of brand equity, such as

- ✓ Reliability
- ✓ Safety
- ✓ Quality
- ✓ Mobility as a life-supportive proposition
- ✓ Customer satisfaction

Responses:

Resolution for Porter's 5 forces: Start a TGMB Hub Analysis programme to help nurture the company's tagline and develop "**Key Opinion Leadership (KOL)**". Refer to the website for your Automobile brand for more details.

5. OBJECTIVES OF THE CASE STUDY



Analyze and support the important management methodologies being used for

- (a) Dealership/Showroom Management,
- (b) Service Centre/Workshop Operations Management, and
- (c) Business Analytics for different or accompanying focus areas like QCD Management specifically, Customer Experience Improvement, Future Prospects for Brand Development, Demand and Supply Planning etc
- (d) Plan, improve and manage operations for capacity, availability and costs

Steps followed to evaluate these pain points and present recommendations

1. Understand the impact on market position and business objective of the organization via the help of assigned members of the organization
2. Collect case study data by dealership/showroom & service centre analysis, department level interactions, and interviews to develop evaluation methodologies for the pain points and associated focus areas
3. Complete Evaluations via Statistical Tools (and the use of Datasets, Tableau and Excel)
4. Present Results via a Case Study Report

Remarks about how this can help:

6. THE CASE STUDY REPORT

The Case Study report will include **Key Opinion focus** for Brand Equity such as

1. Growth areas for the business
2. Pain points for the dealership/showroom
3. Pain points for the Service Centre/Workshop
4. Brand Choice specific Responsiveness
5. CRM Scorecard Dashboards
6. Management methodology furtherance
7. Process Improvement steps and PDCA cycles
8. Management Accounting Planner
9. Cost Control Profiles
10. Transaction Hub Analytics
11. Vehicle system and sub-system Analytics
12. Optimal Maintenance Scheduling Analysis
13. Vehicle Maintenance System Trend Analysis
14. Automotive Parts and Lean Waste Analysis
15. Dataset Creation

7. KEY OPINION LEADERSHIP (KOL) FOR BRAND EQUITY

We at AOEC envision that developing KOL methodologies for demand/supply networks, operating climate engineering solutions and management systems are involvements of conviction that help our tomorrow.

India is stepping forward in its vision for sustainable development and growth. Today we have different types of demand/supply networks, and operating cycles all working to fulfil different objectives.

A KOL architect today does need to not only better today's planning, design, implementation and management of QCD (Quality, Cost, Delivery) relationships but also needs to look at making them SMART for Global and Mutually Beneficial Objectives / Assurance.

Does this mean new and added investments or complex re-engineering and paradigm shifts?

It does not, it needs architects & technologists to look beyond the need to build factories & facilities. It needs architects to think about making factories/facilities/business sites/business units (independent of their budget, size or nature of business) more affordable, accessible, innovative & collaborative, secure and intelligent.

It needs architects to plan, improve and manage a SMART World environment for their organizations.

It is possible through future enabling or SMART Do it yourself (DIY) frameworks that your brand and its network can deploy for making its product investments, operating resources and services global and mutually beneficial.



The TGMB Hub framework does help achieve SMART QCD inter-relationships in an environment that commonly involves:

(1) Factories/Facilities and *Futuristic Management Resource Centres*

Remarks about how this works for your brand:

(2) Buildings, Homes, and *Green Building Resources* for your employees and their families

Remarks about how this works for your brand:

(3) Mobility and *Safer commuting*

Remarks about how this works for your brand:

(4) Logistics and *Investitures*

Remarks about how this works for your brand:

(5) Business Webs and *Business Tableau (or Tab or Showcase)*

Remarks about how this works for your brand:

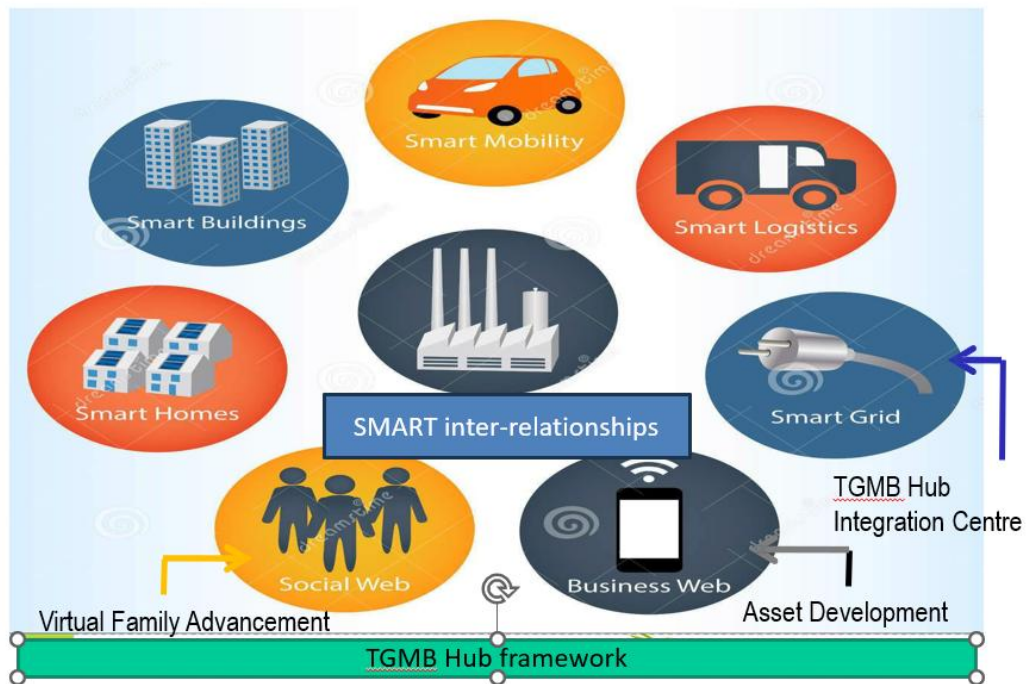
(6) Social Webs and *Lifewise networks* as Social responsibility

Remarks about how this works for your brand:

(7) And future enabling or SMART DIY frameworks

Remarks about how this works for your brand:

A SMART World



We find that automotive companies are leading players that can innovate for KOL in these inter-relationships.

We believe that dealerships are investments where the QCD inter-relationships in different priorities can be SMART for Global and Mutually Beneficial Objectives / Assurance.

We believe the insight can be designed/developed using what we call as TGMB Hub Integration Centres that implement TGMB Hub frameworks that in turn help SMART inter-relationships between Hub elements, ASSET development and Virtual Family Advancement for a SMART World.

Remarks about how this can help:

8. Sustainable approach for KOL objectives

We believe a sustainable approach for KOL objectives is possible through a SMART World Configuration that (inter) invests in Hubs of SMART assimilation, studies and analytics that help agility, innovation, efficiency and risk mitigation for for Global and Mutually Beneficial Objectives / Assurance.



9. Remarks about how the TGMB insight can help:

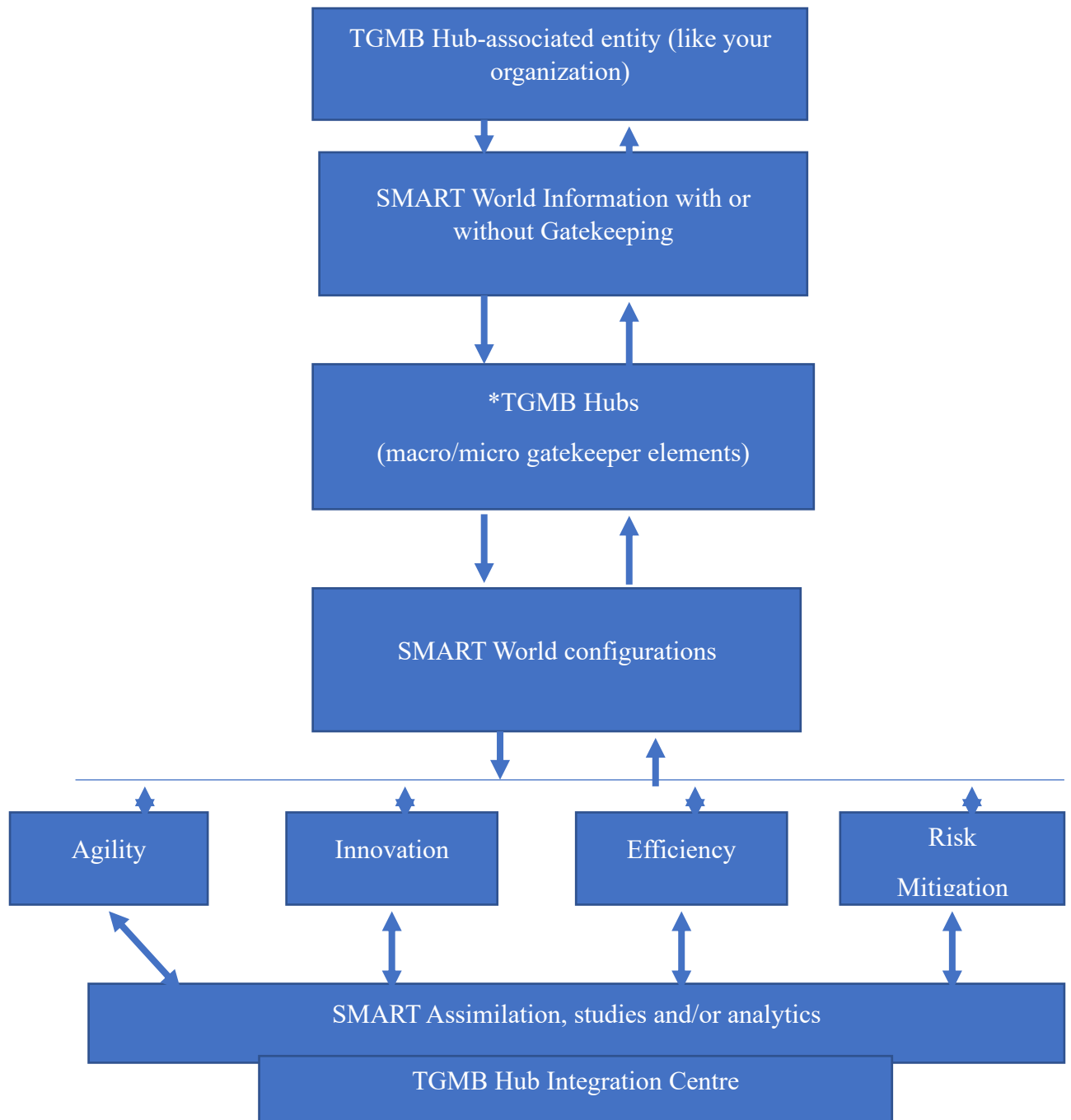
(a) Reduce organizational delays

(b) Increase Productivity

(c) Optimize Equipment/Resource utilization

(d) Leverage investments

10. Global and Mutually Beneficial Objectives, Assurance and Partnerships



Remarks about what a SMART World configuration and its SMART QCD interrelationships means to this brand:

8. Our Online References

Our TGMB Hub framework solution can also provide scope for Global and Mutually Beneficial research, competition, acclimatization, and progressive problem evaluations for sustainable development and growth.

Contents: Some previews of DIY frameworks to help nurture the brand or organization's unique tagline and accelerate towards a unique "Global and Mutually Beneficial" (TGMB) experience.

Work in progress

Proof of concept URL for *Business Tableau (or Tab or Showcase)*:

<https://aakkashkvautoengg.wixsite.com/businesstab>

Proof of concept URL: <https://aakkashkvautoengg.wixsite.com/transformviability>

Proof of concept URL for *Futuristic Management Resource Centres*:

<https://venkataoec.wixsite.com/resourcecentre>

Proof of concept URL for *Green Building Resource Centres*:

<https://venkataoec.wixsite.com/gbrc>

Proof of concept URL for *Safer Commuting*: <https://venkataoec.wixsite.com/safercommuting>

Proof of concept URL for *Lifewise networks*: <https://venkataoec.wixsite.com/lifewise>

Additionally

Please ask for the proof-of-concept URL(s) for automotive brands that we have identified

APPENDIX I

360-degree Analysis

A. SWOT Analysis

The TGMB Hub Analysis focuses on the following questions/interests

Strengths:

- Advantages the company has in the Product, Technology and Price model
- Responses:

- What is done better or SMARTER?
- Responses:

- What is unique?
- Responses:

- What is the important cost policy?
- Responses:

- What is the special expertise?
- Responses:

Weaknesses:

- What can be improved?
- Responses:

- What should be avoided?
- Responses:

- How can the TGMB Hub Analysis or Brand Experience Analysis help the brand development/growth?
- Responses:

- What are the factors causing loss of sales?
- Responses:

- What are the factors causing loss of services?
- Responses:

- What are the factors causing loss of business?
- Responses:

Opportunities:

- What are the future related business opportunities?
- Responses:

- What are the Sourcing related business opportunities?
- Responses:

- What are the trends seen or known?
- Responses:

- What are the trends forecasted?
- Responses:

- What are the model variants being planned?
- Responses:

- Whether there is any upcoming Governmental / Regulatory policy for taxation, benefits, consumer goods?
- Responses:

- What is the interest for mobility seen in the working class and/or targeted segments?
- Responses:

- What is the profiling possible for customer demand?
- Responses:

- What are the events planning that can be done?
- Responses:

Threats:

- What are the current obstacles?
- Responses:

- What are the future (next few years ____) related obstacles?
- Responses:

- Where does the company stand versus competition?
- Responses:

- What expected changes are seen in dealership management?
- Responses:

- What expected changes are seen in operations management?
- Responses:

- What expected changes are seen in service management?
- Responses:

- What expected changes are seen in tools and technology?
- Responses:

- What skill-up or reskilling is seen important?
- Responses:

- Whether there are bad debt or cash flow problems?
- Responses:

- Could any weakness seriously threaten the business?
- Responses:

- What are the key objectives that are not being met?
- Responses:

- What are the key objectives that need to be planned for and met?
- Responses:

- Whether there are any technical manpower issues?
- Responses:

B. The business and its quality control

1. Are customers happy with the business' commitment to quality?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

2. Does the business effectively use its tools and technology?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

3. Does the business assure the use of the right performance data for quality management?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

4. Does the business effectively use its quality-related training?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

5. Does the business effectively involve its quality department or management executives?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

6. Does the business effectively implement operational quality practices via SOPs?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

7. Does the business show social responsibility for quality and customer satisfaction (relevant norms to protect environmental health, and safety)?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

8. Does the business effectively delegate responsibility for quality management?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

9. Does the business effectively evaluate its suppliers for brand performance?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

10. Does the business effectively involve its suppliers for brand performance?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

11. Does the business effectively manage purchasing (depending upon the category of suppliers, that is OEM suppliers, Local suppliers, and as applicable On-call suppliers)?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

C. The business and its cost benefitting sales & enquiry

1. Are customers happy with the business' approach for trusted and reliable sales?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

2. Does the business help the customer get premium value on enquiry?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

3. Does the business help the customer get benefits?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

4. Are customers happy with the business' services for buying/owning/using/maintaining a vehicle?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

5. Does the business ensure customer satisfaction during AMC (based on the 5 objectives of KOL)?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

6. Does the business ensure customer satisfaction during end-of-vehicle life interactions (based on the 3 joys of buying a vehicle, owning it and creating brand value)?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

7. Does the business reduce impact to the customer during Breakdown Assistance?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

8. Does the business reduce costs and impact to the customer during Accidental repair via a relevant and sustainable approach (like an Insurance claim or documentation for the same)?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

9. Does the business help sensitization for the vision for Green Dealership roles, Green Supplier roles and the 'Global and Mutually Beneficial programme'?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

D. The business and its delivery system

The study focuses on understanding the effectiveness of the delivery system

1. Does the business ensure data sufficiency and data reliability in records & reports?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

2. Does the business ensure acceptable Customer Relationships?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

3. Does the business ensure acceptable services to customers?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

4. Does the business ensure acceptable interactions with partners (as relevant)?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

5. Does the business ensure acceptable interactions with suppliers (as relevant)?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

6. Does the business ensure acceptable Quality control with SOPs?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

7. Does the business ensure acceptable Cost control (to the permissible limit)?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

8. Does the business ensure acceptable Continual Improvement education/results?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

9. Does the business ensure acceptable control of non-conforming work?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

10. Does the business ensure acceptable Improvement, Corrective Actions and Preventive Actions?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

11. Does the business ensure acceptable Internal Audits/Reviews (as relevant)?

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

E. Is there any identification of Customer Satisfier Influencers (Tick as applicable)

- ☐ Determination of future customer expectations
- ☐ Determination of key factors for building and maintaining customer relationships
- ☐ Evaluation of the customer's ability to seek assistance
- ☐ Evaluation of formal and informal complaints
- ☐ Follow up with customers for quality or service feedback
- ☐ Interaction with customers to set reliability, responsiveness and other standards
- ☐ Measurement and evaluation of customer satisfiers for being global and mutually beneficial

Responses:

F. Brand Experience Analysis

1. Vehicle owner/Associated person:

☐ New customer ☐ Existing customer ☐ Referral

Type of vehicle (Tick as applicable): 2W/4W/EV/Hybrid

Vehicle details:

2. Address:

3.a Email

3.b Phone:

4. Nature of ownership of vehicle (Tick as applicable):

☐ Individual Owner ☐ User/Caretaker ☐ Via Financial Assistance ☐ Used in Business

Classify yourself or your association with us? (Yon can tick more than one option)

- ☐ **Commercial Buyer** (uses vehicle for business)
- ☐ **Fleet Investor**
- ☐ **Individual Owner**
- ☐ **Caretaker**
- ☐ **Vehicle user**
- ☐ **TGMB Hub Stakeholder** who will evaluate, analyze and decide on best ways
- ☐ **TGMB Hub Stakeholder** who will help participate in surveys, provide feedback, rate and improve the “Global and Mutually Beneficial” experience of buying, selling and creating the brand

5. Need for a particular type of assistance/service (Tick as applicable):

☐ Services (Free and Paid)

☐ Breakdown Assistance

☐ Accidental Repair

☐ Insurance and Claims

☐ Emission and/or Fitness certificate

☐ Vehicle registration

☐ Vehicle inspection/evaluation/pricing

☐ Exchange facility

☐ **Health parameterization like** (Need to use different wear-ons that accentuate behavioral or stress vulnerability (Artificial limbs or prosthetics; Aids for hearing or speaking; Pacemaker for the heart, Impacted by injury/affliction)

6. Describe your TGMB experience: (Tick as applicable)

Review of the TGMB experience

☐ Reliability of the vehicle	☐ Satisfied	☐ Unsatisfied
☐ Safety of the vehicle	☐ Satisfied	☐ Unsatisfied
☐ Quality of the vehicle	☐ Satisfied	☐ Unsatisfied
☐ Mobility enabled by the vehicle	☐ Satisfied	☐ Unsatisfied
☐ Customer experience of [] owning/[] using/[] maintaining the vehicle	☐ Satisfied	☐ Unsatisfied
☐ Positive Health Parameterization in [] owing/[] using/[] maintaining the vehicle	☐ Satisfied	☐ Unsatisfied
☐ Exchange facility for the vehicle (as a future option)	☐ Satisfied	☐ Unsatisfied

Details for unsatisfied ratings:

7. Would like to record additional details of feedback for: (Tick as applicable)

☐ Reliability of the vehicle	☐ Positive Feedback	☐ Negative Feedback
☐ Safety of the vehicle	☐ Positive Feedback	☐ Negative Feedback
☐ Quality of the vehicle	☐ Positive Feedback	☐ Negative Feedback
☐ Mobility enabled by the vehicle	☐ Positive Feedback	☐ Negative Feedback
☐ Customer experience of [] owning/ [] using/ [] maintaining the vehicle	☐ Positive Feedback	☐ Negative Feedback
☐ Positive Health Parameterization in [] owing/[] using/ [] maintaining the vehicle	☐ Positive Feedback	☐ Negative Feedback
☐ Exchange facility for the vehicle (as a future option)	☐ Positive Feedback	☐ Negative Feedback

If there is Feedback, provide relevant details:

F. Globally Integral (GII Analysis for Brand) Scorecard

1. Vehicle owner/Associated person:

☐ New customer ☐ Existing customer ☐ Referral

Type of vehicle (Tick as applicable): 2W/4W/EV/Hybrid

Vehicle details:

2. Address:

3.a Email

3.b Phone:

4. Nature of ownership of vehicle (Tick as applicable):

☐ Individual Owner ☐ User/Caretaker ☐ Via Financial Assistance ☐ Used in Business

Classify yourself or your association with us? (Yon can tick more than one option)

- ☐ **Commercial Buyer** (uses vehicle for business)
- ☐ **Fleet Investor**
- ☐ **Individual Owner**
- ☐ **Caretaker**
- ☐ **Vehicle user**
- ☐ **TGMB Hub Stakeholder** who will evaluate, analyze and decide on best ways
- ☐ **TGMB Hub Stakeholder** who will help participate in surveys, provide feedback, rate and improve the “Global and Mutually Beneficial” experience of buying, selling and creating the brand

5. Describe your GII Analysis experience: (Tick as applicable)

5.a Review of the vehicle

▪ Exteriors of the vehicle/ Appearance (Facia)/ Accessories	☐ Satisfied	☐ Unsatisfied
▪ Interior design of the vehicle/fitting layout/storage for belongings	☐ Satisfied	☐ Unsatisfied
▪ Engine and performance (for ICE)	☐ Satisfied	☐ Unsatisfied
▪ Fuel consumption (for ICE)	☐ Satisfied	☐ Unsatisfied
▪ Petrol Tank (for ICE)	☐ Satisfied	☐ Unsatisfied
▪ Clutch system (for ICE)	☐ Satisfied	☐ Unsatisfied
▪ Exhaust system and Silencer (for ICE)	☐ Satisfied	☐ Unsatisfied
▪ Safety	☐ Satisfied	☐ Unsatisfied
▪ Comfort and Convenience	☐ Satisfied	☐ Unsatisfied
▪ Seats and Upholstery	☐ Satisfied	☐ Unsatisfied
▪ Accessories	☐ Satisfied	☐ Unsatisfied
▪ Battery ▪ Battery Management System (for EV/Hybrid)	☐ Satisfied	☐ Unsatisfied
▪ Electric Motor and performance (for EV/Hybrid)	☐ Satisfied	☐ Unsatisfied
▪ Vehicle model/variant	☐ Satisfied	☐ Unsatisfied

Details for unsatisfied ratings:

5.b Did you face any of the following problems with your vehicle: (Tick as applicable, also tag the entry with multiple instances of the problem if so)

☐ Engine life (after which engine work is needed for good performance)	☐ Multiple times
☐ Fork oil leaks (2W)	☐ Multiple times
☐ Engine oil leaks (for ICE)	☐ Multiple times
☐ Fuel Tank Rust (for ICE)	☐ Multiple times
☐ Carburettor and performance (for ICE)	☐ Multiple times
☐ Clutch / Clutch cable (for ICE)	☐ Multiple times
☐ Exhaust system and Silencer (for ICE)	☐ Multiple times
☐ Oil seal / Vacuum leaks / lubricants	☐ Multiple times
☐ Rubbing brakes	☐ Multiple times
☐ Brake pads/discs/cable	☐ Multiple times
☐ Jumping gears	☐ Multiple times
☐ Snapped chain (2W)	☐ Multiple times
☐ Suspension	☐ Multiple times
☐ Broken cleat / pedals (2W)	☐ Multiple times
☐ Electrical starter/starter	☐ Multiple times
☐ Electrical spark	☐ Multiple times
☐ Battery	☐ Multiple times
☐ Tyre burst / aging	☐ Multiple times
☐ Air filter	☐ Multiple times
☐ Water splash on engine/motor	☐ Multiple times
☐ Water-resistant covers	☐ Multiple times
☐ IP rating (Ingress protection code that indicates how well a vehicle is protected from water and dust)	☐ Multiple times

Details of problems faced:

5.c. Would like to record additional details or feedback for: (Tick as applicable)

▪ Exteriors of the vehicle/ Appearance (Facia)/ Accessories	☐ Positive Feedback	☐ Negative Feedback
▪ Interior design of the vehicle/fitting layout/ storage for belongings	☐ Positive Feedback	☐ Negative Feedback
▪ Engine and performance (for ICE)	☐ Positive Feedback	☐ Negative Feedback
▪ Fuel consumption (for ICE)	☐ Positive Feedback	☐ Negative Feedback
▪ Petrol Tank (for ICE)	☐ Positive Feedback	☐ Negative Feedback
▪ Clutch system (for ICE)	☐ Positive Feedback	☐ Negative Feedback
▪ Exhaust system and Silencer (for ICE)	☐ Positive Feedback	☐ Negative Feedback
▪ Safety	☐ Positive Feedback	☐ Negative Feedback
▪ Comfort and Convenience	☐ Positive Feedback	☐ Negative Feedback
▪ Seats and Upholstery	☐ Positive Feedback	☐ Negative Feedback
▪ Accessories	☐ Positive Feedback	☐ Negative Feedback
▪ Battery ▪ Battery Management System (for EV/Hybrid)	☐ Positive Feedback	☐ Negative Feedback
▪ Electric Motor and performance (for EV/Hybrid)	☐ Positive Feedback	☐ Negative Feedback
▪ Overall perception of Brand ▪ (Work in progress for brands like Honda/Hyundai/Kia/Porsche/Toyota/ Maruti Suzuki/....)	☐ Positive Feedback	☐ Negative Feedback

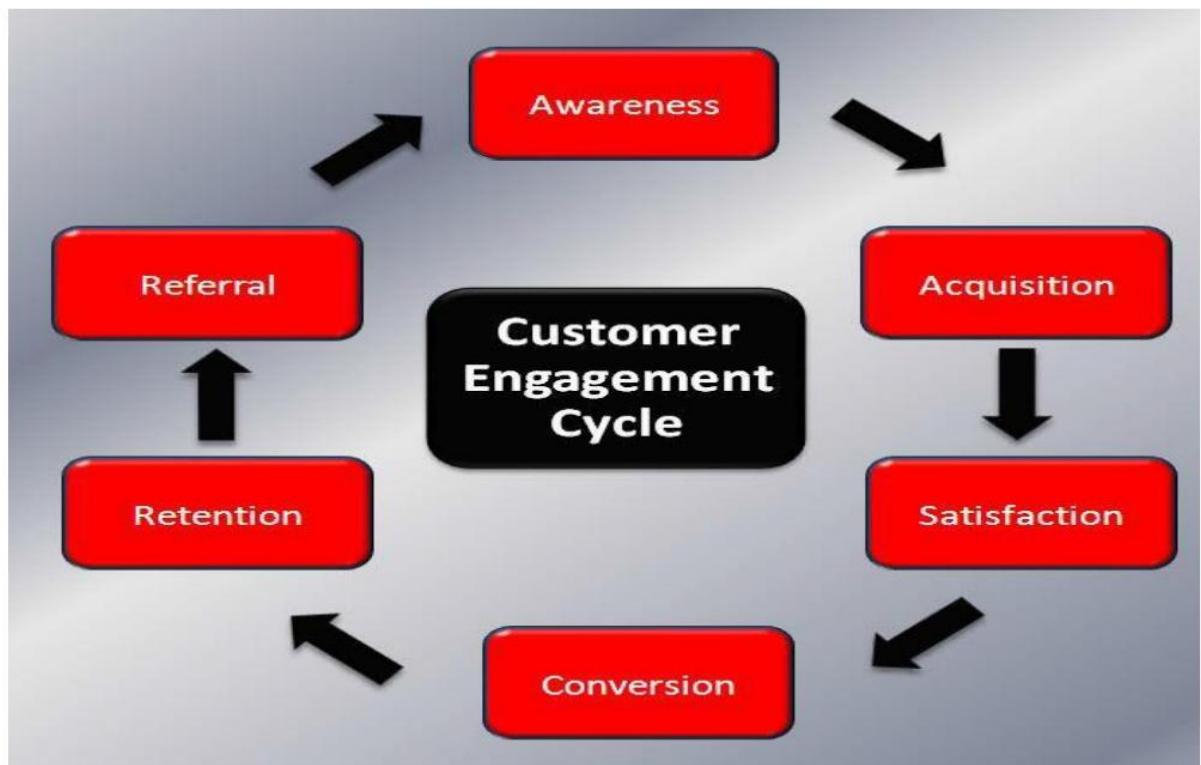
If there is Feedback, provide relevant details:

APPENDIX II

Touch Point Analysis

This study focuses on whether the current QCD methodologies help position you as a premium value dealer and service centre. Here QCD stands for Quality, Cost and Delivery

A. Customer Engagement



1. Name of person/business investor:

2. Address:

3. an Email

3.b Phone:

4. Customer Interests Assessment

4.a Type of vehicle (Tick as applicable): 2W/4W/EV/Hybrid

4.b Evaluation of Vehicle Interest (Tick as applicable and include details):

☐ Brand viewpoint

Details:

☐ **Interest in a Model**

Details:

☐ **Choice of a colour**

Details:

☐ **Expectation or need for a Variant**

Details:

☐ **Need for the comparison of the model or variant**

Details:

☐ **Need for an offer to help SMART purchase or fleet investment**

Details:

☐ **Evaluation of the need from the manufacturer's dealer or dealer network (Tick as applicable)**

☐ Showroom

☐ Service Centre/ Workshop

☐ Showroom

☐ Road-side Assistance

☐ **Location or Codified Location Availability for**

- ☐ Access to Associated Dealers/Service Centres/Mechanics Networks
- ☐ Easy Service/ Repair fulfillment
- ☐ Appropriate Spares with the right costs and availability

☐ **SMART / Green Dealer-parameters**

- ☐ Delivery at specific Locations or Codified Locations
- ☐ Awareness of Emission norms
- ☐ Awareness of Fitness certificate regulations
- ☐ Financial Assistance / Convenience or Costs confinement
- ☐ Sense of confidence and trust for choices

Codified locations

Locations that are known to highlight or expect

- ❖ Improvement in Air Quality to be a factor
- ❖ Reduction in automobile parts/components/materials wastage
- ❖ Reduction in automobile lifecycle costs
- ❖ Focus for improving ensuing or prevalent commuting experiences as required by CCMA authorities, environmentalists, and people
- ❖ Positive involvement by public and private transportation systems
- ❖ Positive involvement by automobile-businesses
- ❖ Positive perception by the 2W/4W/EV customer segment
- ❖ Positive interests for improved Technology Awareness rather than a plain Quality of commute interest

Improved Technology Awareness via a new Vehicle Analytic report that involves

☐ **Periodic Inspection/ Assessment of**

- ✓ Vehicle for a location's Green parameters
- ✓ Vehicle Performance for a location's Green parameters

☐ **Service Evaluation via**

- o Checklisted analysis of vehicle and parts
 - o Checklisted analysis of crash safety (FMVSS) standard compliance
 - o Critical path management of works for the drawn Vehicle Sheet
- including

- ❖ Recording of change requests / spares management
- ❖ Conducting of Root cause analysis of problems
- ❖ Performing of Continual Evaluation
- ❖ Ensuring timely End-of-life Evaluation

GoI RTO 2023, Emission level checks for 2W/4W/~~EV~~/Hybrid include assessment of

Levels of	Prescribed Standard (Petrol test)
CO	< 3.5 (2W) < 3.0 (4W)
HC	< 4500 (2W) < 1500 (4W)
CO2	As permitted
O2	As expected

GoI RTO 2023, Vehicle Fitness checks include assessment of

Details	Type of assessment
Vehicle Body	Inspection and Clearance
Vehicle Engine System	Inspection and Clearance
Wheels & Tyres (and Luggage/Storage area)	Inspection and Clearance
Lighting and indicators	Inspection and Clearance
Emission certificate	Inspection and Clearance
Vehicle Insurance	Inspection and Clearance

B. First Contact

1. Vehicle owner/Associated person:

Optional

1.b Type of vehicle (Tick as applicable): 2W/4W/EV/Hybrid

1.c Vehicle details:

2. Address:

3.a Email

3.b Phone:

4. Nature of ownership of vehicle (Tick as applicable):

☐ Individual Owner ☐ User/Caretaker ☐ With Financial Assistance ☐ Used in Business

5. Need for a particular type of assistance/service (Tick as applicable):

☐ Services (Free and Paid)

☐ Breakdown Assistance

☐ Accidental Repair

☐ Insurance and Claims

☐ Emission and/or Fitness certificate

☐ Vehicle registration / Transfer of ownership

☐ Vehicle inspection/evaluation/pricing

☐ Exchange facility

☐ **Health parameterization like** (Need to use different wear-ons that accentuate behavioral or stress vulnerability (Artificial limbs or prosthetics; Aids for hearing or speaking; Pacemaker for the heart, Impacted by injury/affliction)

6. Need for a particular nature of consultation (Tick as applicable)?

☐ Drive-in

☐ On Appointment basis

☐ Scheduled services

☐ Breakdown Assistance

☐ Accidental Repair

☐ Registration and paperwork

7.a Have you the experience of owning or using a 2W/4W/EV/Hybrid?

☐ Yes ☐ No ☐ Not applicable

7.b Do you need added advisory/instructor services?

☐ Yes ☐ No ☐ Not applicable

If No for 7.a and Yes for 7.b, what are the possible reasons why advisory/instructor services are needed?

7.1 Need to use vehicle 24x7 or most regularly

☐ Yes ☐ No ☐ Not applicable

7.2 Need to use vehicle in different road conditions

☐ Yes ☐ No ☐ Not applicable

7.3 Need to receive advisories/reminders about vehicle / service options

☐ Yes ☐ No ☐ Not applicable

7.4 Need to let others use the vehicle

☐ Yes ☐ No ☐ Not applicable

8. Do you need a Globally Integral (GII Analysis) scorecard for your vehicle?

☐ Yes ☐ No ☐ Not applicable

If yes, then do you wish to rate?

☐ The consumer/customer experience of owning/using the vehicle

☐ The dealership/sales/services/advice/guidance/assistance

☐ The brand excellence

☐ The convenience of getting the vehicle serviced by the dealer network's service centres

☐ Other risks in owning/using/repairing or servicing the vehicle

☐ **Health parameterization**

9. Do you know other authorized dealers/service centres who deliver expected services/?

☐ Yes ☐ No ☐ Not applicable

10. Did you face any difficulty in owning or using a 2W/4W/EV/Hybrid during COVID-19?

☐ Yes ☐ No ☐ Not applicable

If so, what was the difficulty that you faced?

☐ Unable to reach an authorized service centre

☐ Did not have information about a right sales and service network

☐ Did not have access to authorized breakdown assistance or accident repair services

About owning or using a 2W/4W/EV/Hybrid

11. Do you know how to use the vehicle's toolkit and dashboard?

☐ Yes ☐ No ☐ Not applicable

If No (never): Select the reason for not knowing how to use the toolkit/dashboard using criteria of agreement/disagreement

11.1 There are no tools known to me or the vehicle user

☐ Yes ☐ No ☐ Not applicable

11.2 The available tools are not easy to use

☐ Yes ☐ No ☐ Not applicable

11.3 It is difficult to trust the accuracy of the vehicle dashboard

☐ Yes ☐ No ☐ Not applicable

11.4 I do not have much knowledge about the vehicle dashboard

☐ Yes ☐ No ☐ Not applicable

12. Do you or the vehicle's user use online sites to know more about your vehicle condition/toolkit/dashboard?

☐ Yes ☐ No ☐ Not applicable

11.3 It is difficult to trust the performance of the battery/battery management system

☐ Yes ☐ No ☐ Not applicable

11.4 I do not have much knowledge about the battery/battery management system

☐ Yes ☐ No ☐ Not applicable

12. Do you or the vehicle's user use online sites to know more about your vehicle condition/battery/battery management system?

☐ Yes ☐ No ☐ Not applicable

If No (never): Select the reason for not using online apps using criteria of agreement / disagreement

12.1 There are no online sites/forums known to me or the user

☐ Yes ☐ No ☐ Not applicable

12.2 The available sites/forums are not easy to relate to/understand

☐ Yes ☐ No ☐ Not applicable

12.3 It is difficult to trust the accuracy of the online sites/forum

☐ Yes ☐ No ☐ Not applicable

12.4 The vehicle's user and I do not have much knowledge about online sites/forum

☐ Yes ☐ No ☐ Not applicable

13. Would you like to fill in the Responsive CRM details?

☐ Yes ☐ No ☐ Not applicable

14. Would you like to fill in the TGMB Hub Analysis or Brand Experience details?

☐ Yes ☐ No ☐ Not applicable

15. Would you like to receive updates about future products and services?

☐ Yes ☐ No ☐ Not applicable

16. Would you like to answer or receive recommendations about the crash safety of the 2W/4W/EV(s)/Hybrids in general?

☐ Yes ☐ No ☐ Not applicable

17. How would you like to classify yourself or your association with us? (You can tick more than one option)

- ☐ **Commercial Buyer** (use vehicle for business)
- ☐ **Fleet Investor**
- ☐ **Individual Owner**
- ☐ **Caretaker**
- ☐ **Vehicle user**
- ☐ **TGMB Hub Stakeholder** who will evaluate, analyze and decide on best ways
- ☐ **TGMB Hub Stakeholder** who will help participate in surveys, provide feedback, rate and improve the “Global and Mutually Beneficial” experience of buying, selling and creating the brand

C. Responsive CRM

1. Vehicle owner/Associated person:

☐ New customer ☐ Existing customer ☐ Referral

Optional

1.b Type of vehicle (Tick as applicable): 2W/4W/EV/Hybrid

1.c Vehicle details:

2. Address:

3.a Email

3.b Phone:

4. Nature of ownership of vehicle (Tick as applicable):

☐ Individual Owner ☐ User/Caretaker ☐ Via Financial Assistance ☐ Used in Business

5. Need for a particular type of assistance/service (Tick as applicable):

☐ Services (Free and Paid)

☐ Breakdown Assistance

☐ Accidental Repair

☐ Insurance and Claims

☐ Emission and/or Fitness certificate

☐ Vehicle registration

☐ Vehicle inspection/evaluation/pricing

☐ Exchange facility

☐ **Health parameterization like** (Need to use different wear-ons that accentuate behavioral or stress vulnerability (Artificial limbs or prosthetics; Aids for hearing or speaking; Pacemaker for the heart, Impacted by injury/affliction))

6. Describe your customer experience: (Tick as applicable)

Review of the

▪ Showroom	☐ Satisfied	☐ Unsatisfied
▪ Sales	☐ Satisfied	☐ Unsatisfied
▪ Workshop process (overall)	☐ Satisfied	☐ Unsatisfied
▪ Job card process (overall)	☐ Satisfied	☐ Unsatisfied
▪ Service Advisor performance (overall)	☐ Satisfied	☐ Unsatisfied
▪ Workshop Facilities (overall)	☐ Satisfied	☐ Unsatisfied
▪ Service Delivery (overall)	☐ Satisfied	☐ Unsatisfied
▪ CRM	☐ Satisfied	☐ Unsatisfied
▪ HR involvement and Reception	☐ Satisfied	☐ Unsatisfied
▪ Admin, Housekeeping, Inspection	☐ Satisfied	☐ Unsatisfied
▪ Accounts	☐ Satisfied	☐ Unsatisfied
▪ Billing	☐ Satisfied	☐ Unsatisfied
▪ Stores and Spares management	☐ Satisfied	☐ Unsatisfied
▪ Warehouse management	☐ Satisfied	☐ Unsatisfied
▪ Registration and legal paperwork	☐ Satisfied	☐ Unsatisfied
▪ Other interactions	☐ Satisfied	☐ Unsatisfied

Details for unsatisfied ratings:

7. Would like to record additional details or feedback for: (Tick as applicable)

▪ Showroom	☐ Positive Feedback	☐ Negative Feedback
▪ Sales	☐ Positive Feedback	☐ Negative Feedback
▪ Workshop	☐ Positive Feedback	☐ Negative Feedback
▪ Inspection / Identification of service requisites	☐ Positive Feedback	☐ Negative Feedback
▪ Services	☐ Positive Feedback	☐ Negative Feedback
▪ CRM	☐ Positive Feedback	☐ Negative Feedback
▪ HR involvement and Reception	☐ Positive Feedback	☐ Negative Feedback
▪ Admin, Housekeeping, Inspection	☐ Positive Feedback	☐ Negative Feedback
▪ Accounts	☐ Positive Feedback	☐ Negative Feedback
▪ Billing	☐ Positive Feedback	☐ Negative Feedback
▪ Nature of repair and/or replacements	☐ Positive Feedback	☐ Negative Feedback
▪ Stores and Spares management	☐ Positive Feedback	☐ Negative Feedback
▪ Warehouse management	☐ Positive Feedback	☐ Negative Feedback
▪ Registration and legal paperwork	☐ Positive Feedback	☐ Negative Feedback
▪ Other interactions	☐ Positive Feedback	☐ Negative Feedback

If there is Feedback, provide relevant details:

8. Would like to participate in these surveys of interest: (Tick as applicable)

- ☐ TGMB experience of a global brand
- ☐ TGMB experience of EV products/Hybrids
- ☐ TGMB experience of Dealership
- ☐ TGMB experience of Services
- ☐ TGMB experience of Vehicle's dashboard, toolkit and systems
- ☐ TGMB experience of Vehicle's battery, battery management system
- ☐ TGMB experience of Health parameterization

9. Complaints and Redressal:

9.a Complaints

Details:

9.b Redressal or Actions taken:

Details:

10. Management intervention:

Details:

11. Dealer level Escalation:

Details:

APPENDIX III

More QoS Analysis

1. Spares Parts Inventory Management

GII Analysis expects to help make the organization's inventory systems more responsive

Though a dealership competes with other same brand dealerships this function of spare parts inventory management must be measured, monitored and managed from an individual dealership point of view.

This point of view depends upon the current automobile market, its economics and the responsiveness needed from the business's vision and operational practices

Managing the spare parts inventory is a complex system of processes and responsibilities for driving RoI, profitability, performance and customer retention

The spare parts department deals with challenges such as

1. Vehicle maintenance & repair intervals and requirements
2. Increased dynamics or competition from the after-market, the grey market and non-OEM parts suppliers
3. Increasing technology and replacements costs of parts
4. Impact of parts inventory on workshop productivity, and digitally-connected service centres & shop floors etc
5. Impact of eCommerce or online selling on automobile spare parts supply or sourcing

Q & A for the Spare Parts Inventory System (SPIS)

1. How is the performance of the SPIS analyzed?

Answer:

2. What are the key performance metrics for the SPIS?

Answer:

3. What are the current problems in the SPIS?

Answer:

4. Can you rank the problems? Is there any root cause analysis available for the problems?

Answer:

5. Are there "lost customer numbers" issues?

Answer:

6. How has the Management dealt with these issues?

Answer:

7. How is the SPIS safe from data inconsistency?

Answer:

Observations

For sustainable development and growth, the spare parts management systems must focus on 3 areas

1. Service levels
2. Profitability
3. Dealership sales

Here these service levels help a dealership improve overall customer retention and in time increase market penetration via vehicles sales or repeat purchases from the dealership

Some key metrics for improved inventory management and profitability of business are

1. Days supply
2. Fill rate
3. Obsolescence
4. Non-stock investment
5. Non-stock parts usage in service or repairs
6. Emergency purchases
7. Lost customer numbers

Days supply

2 factors that constrain inventory are

(1) High cost of net working capital (or borrowing rate)

(2) Levels of obsolescence in parts inventory

(3) Levels of non stock investment

Calculations should be generally based on 15-day, 30-day, 90-day, 180-day, 360-day averages for services, gross profit and cost of operations compared against total parts inventory investment, where there can be variances due to

- (a) Seasonal demands
- (b) Service campaigns
- (c) Ancillary product or part supply for free services, charged services, AMC and accidental repairs

Step 1

- (a) Total parts and accessories inventory usage in INR
- (b) Gross profit from usage in INR
- (c) Cost of parts usage in vehicle maintenance and repair specific to intervals and requirements, in INR

Step 2

- (a) Current inventory total in INR
- (b) Cost of parts usage from Step 1 in INR
- (c) Days supply $\times 30.47 =$
- (d) Gross turn rate $= 360 \div (c)$

Here 30.47 is the average number of days in an accounting month

An optimal turn rate needs more related comparisons between inventory specific RoI and cost of net working capital

Fill rate

In a dealership with multiple models and variants, transactional fill rate is important as it indicates whether the inventory investment is appropriately planned or controlled

Transactional fill rate (as applicable)

- (1) Maintain a tracking sheet at the counter
- (2) In the tracking sheet make a notation whether service order/repair/replacement is not filled from on-hand shelf stock
- (3) Establish a non part number related method of posting a lost sale or lost customer satisfaction rating whenever a service order/repair order/replacement order is not filled from on-hand stock
- (4) Then use this method to calculate the transactional fill rate, that is as total number of lost sales or lost customer satisfaction ratings $\div$ total number of service orders/repair orders/replacement orders
- (5) While establishing the non-part number it may be simple to append the 'non-part' with FS, or S, or AMC, or AR to indicate Free service transactional fill rate, or Charged service transactional fill rate, or AMC service transactional fill rate, or Accidental repair transactional fill rate

Obsolescence

The causes for this are

- (a) unused special order parts and accessories
- (b) significantly high number of parts returned by the Service centre/workshop/service order personnel
- (c) parts ordered either by error or as a result of improper analysis of vehicles in service

To maintain the levels of obsolescence, a dealership can use the method of calculating the working capital to maintain obsolete parts (termed as suspended working capital)

Steps for calculating obsolescence aspects

- (a) Total INR value of obsolescence
- (b) Cost of working capital (borrowing rate X annual cost of suspended working capital)

Annual cost of suspended working capital represents a negative RoI to the dealership and should be balanced against the profitability that the part may be used to therein generate a profit for the dealership

As a Management insight, a part that has not been used in service/repair/replacement for the brand/model/variant in a service order schedule for the last 12 months has an increased chance of obsolescence

In these scenarios any definition or redefinition of parts obsolescence must concern itself with associated issues such as

- (1) Repair delays
- (2) Additional handling
- (3) Emergency purchases
- (4) (Loaned) Vehicle policy expenses
- (5) Costs to productivity
- (6) Reduction in customer satisfaction and retention leading to reduced overall profitability

Non stock as a % of investment:

The metric gives a comparison of total investment volume, part number count and part number piece count

As this metric reflects non-stocked inventory, the factors that affect this metric are

- (1) Large volume service orders
- (2) Dealership collision (in terms of sourcing/supply from OEMs and manufacturers)
- (3) Volume of eCommerce parts orders

Testing a part for demand may mean calculating it as a % of non-stock investment, where higher levels of non-stock investment indicate special orders, emergency purchases, cases of dealership collision etc

Non-stock as a % of usage or sales:

One method of calculating this metric is by comparing the % of non-stock investment in INR versus the % of non-stock usage or sales in INR

This ratio will indicate the volume of special orders, emergency purchases that are being processed to fulfil service orders or service demands

The factors that affect this metric are

- (1) Maintaining excessively low Days supply
- (2) Premature returning of parts by Service centre/workshop/ Service order personnel due to OEM/manufacture/factory obsolescence returns
- (3) Inconsistent recording or no recording of lost sale or lost usage requirement or lost customer satisfaction rating
- (4) Excessive stock/ order editing, tweaking or revisiting to show no issues in profitability
- (5) Forecasting for parts related sourcing mechanism parameters or setup considerations

Emergency Purchases

These are decisions taken to promote higher level of customer service.

Increase in emergency purchases lower net profitability of the parts department and thereon the dealership.

Emergency purchases include the following

- (1) Markup factor as a small %
- (2) Administrative costs of issuing and reconciling purchase orders
- (3) Time associated with contacting another supplier and placing the order
- (4) Costs related to delivery or picking up of a part including the vehicle, driver and fuel costs

(5) Lost productivity in the workshop and/or parts department or supply staff

Commonly the overall acquisition cost for Emergency purchases multiplies exponentially causing the purchase costs to be many times higher than the cost of sourcing a part from the regular supply chain

It is important to analyze the "dealer to supplier" trends or cycles of purchases to monitor or validate systems, or methodologies and/or their associated relationships while purchasing parts

Lost customer numbers

If the lost customer numbers recording is not consistent then information may not be available about whether the issue was due to

- (1) unfulfilled demand
- (2) service order or service workload complexity
- (3) parts inventory stock keeping problems
- (4) after the lost... incidence ordering issues

The delays in consistent recordings or notifications can cause

- (1) Duplicate or incorrect demand reporting
- (2) a vehicle being held up in the workshop
- (3) issues in service order or repair order or replacement order fulfilment

Lost customer numbers issues are important components of the overall inventory demand structure, where the management of which can mitigate issues in levels of customer retention and overall profitability

Evaluating the inventory systems and model

The main aspects of a spare parts inventory system is to help the dealership, the service centre or workshop, and the parts department relate to issues like

- (1) Demand management avoiding over stocking and under stocking
- (2) Losses due to spoilage, pilferage and obsolescence
- (3) Minimizing of inventory carrying costs while increasing the efficiency of the order point of the parts inventory system
- (4) Categorizing of parts as
 - (a) Regular parts that are not costly or costly
 - (b) On-demand parts that are not costly or costly
 - (c) Non stock parts that are not costly or costly
 - (d) Emergency purchase parts that are not costly or costly

The Theoretical model for the order point is as follows

$TMOP = (LT + SS + BP) \times \text{unit sales per day}$

Here

LT: LEAD TIME

SS: SAFETY STOCK

BS: BUFFER STOCK

Responsive model for order point is as follows

$$\text{RMOP} = (\text{Fta} \times \text{LT}) + (\text{Fta} \times \text{LT}) (\% \text{Costsl} + \% \text{Costcpfr} + \% \text{Fta-deviation} + \% \text{Fill rate-deviation} + \% \text{LT-deviation})$$

LT: Lead time

Fta: Forecast - trends adjusted

sl: Service level

cpfr: Productivity or Profitability via Collaborative Planning Forecasting Replacement

Note:

(I) RMOP will need to be calculated separately for parts categorizations (A), (B), (C) and (D) for not costly parts and then for costly parts

(II) Collaborative Planning Forecasting Replacement (CPFR) strategies will need to address issues like (1) unregulated costs, (2) unmanaged demand, (3) inventory turnover and (4) Part criticality

(III) Orders placed can be classified as

(1) Regular orders

(2) Breakdown traction orders

(3) Emergency purchase orders and

(4) Non-stock orders, where variations due to data inconsistency, discount terms and order validity affect the responsiveness of the spare parts inventory system

Data inconsistency: issues like

(1) Data redundancy in parts codification

(2) Inadequate documentation of inventory, and parts, or their codification

(3) Demand data

(4) Forecast data

(5) Lead time data

(6) Order point data

(7) Selling price data and Cost price data

(8) Lost customer satisfaction rating data and if relevant Lost sales data

(9) Base stock data and safety stock data

(10) Inventory carrying costs data

Deciding on the model or approach:

The decision for the order point approach and percentage deviation can be taken by

(1) Comparison of Conventional theory order point (CTOP) with Actual base stock

(2) Comparison of Responsive model order point (RMOP) with Actual base stock

(3) Comparison of CTOP with RMOP

(4) Comparison of inventory costs with inventory carrying costs

The objective for decision making should be to decrease inventory costs and inventory carrying costs

The order point strategy for the organization must be based in a combination of the push approach and pull approach, where responsiveness is a main factor

Push approach: Manufacturer or the manufacturer's network drives demand or order point

Pull approach: The dealer drives demand for spare parts

Responsive approach: Trends adjusted forecasting drives demand

2. Crash safety (FMVSS) highlights (2W/4W/EV/Hybrid)

What are the three stages of a vehicle crash?

There are three stages that take place: the vehicle collision, human collision, and internal (crash model specific combined) collision.

What is crashworthiness of a vehicle?

Vehicle crashworthiness is the science of focusing on protecting occupants involved in frontal, side, rear and rollover accident events through the utilization of various safety systems and safety principles. It is mainly important for 4 wheelers but has requirements in the 2 wheeler segment also.

How is crashworthiness determined?

Crashworthiness is measured after the fact by looking at injury risk in real-world crashes. Often, regression or other statistical methods are used to account for the many other factors that can affect the outcome of a crash.

What are the failure modes in crashworthiness?

When the failure is involved, complex failure modes, such as fiber kinking, fiber breakage, matrix cracking, matrix buckling, and delamination, etc., always occur.

What is the goal of crashworthiness?

The goal of crashworthiness research is to reduce the risk of death or severe injury in the event of an accident by designing vehicles that can better protect their occupants.

What are the parameters of crashworthiness?

Parameters include energy absorption, mean crush force, specific energy absorption, and crush force efficiencies.

What are the different types of crash analysis?

There are different types of crash simulations like full frontal, side, rear, rollover at vehicle level and like Crash Management System (CMS), seating, chassis or frame-component crash at system level.

How do you calculate crash impact?

The impact to your body in a crash is called crash force. Crash force is equal to your body weight multiplied by the speed of the vehicle.

What is the crash severity prediction model?

Crash severity prediction models enable various agencies to predict the severity of a crash to gain insights into the factors that affect or are associated with crash severity.

What is crash protection?

Crash protection (aka frame sliders/crash guards/bumpers) is a generic term for components that safeguard various areas of a vehicle in the case of an incident.

A. Parameters that need to be considered (2W/4W/EV/Hybrid)

Type of collision (as applicable)	Considerations (as applicable)	Type of assessment (as applicable)
☐ Frontal ☐ Rear ☐ Side ☐ Rollover	Front Crash Guard Or Bumper	☐ Crash severity ☐ Grade of injury ☐ Connected hazard
☐ Frontal ☐ Rear ☐ Side ☐ Rollover	Rear Crash Guard Or Bumper	☐ Crash severity ☐ Grade of injury ☐ Connected hazard
☐ Frontal ☐ Rear ☐ Side ☐ Rollover	Saree or Dupatta Guard (2W)	☐ Crash severity ☐ Grade of injury ☐ Connected hazard
☐ Frontal ☐ Rear ☐ Side ☐ Rollover	Frame / Vehicle Body	☐ Crash severity ☐ Grade of injury ☐ Connected hazard
☐ Frontal ☐ Rear ☐ Side ☐ Rollover	Vehicle Engine System	☐ Crash severity ☐ Grade of injury ☐ Connected hazard
☐ Frontal ☐ Rear ☐ Side ☐ Rollover	Wheels & Tyres	☐ Crash severity ☐ Grade of injury ☐ Connected hazard
☐ Frontal ☐ Rear ☐ Side ☐ Rollover	Injury to the driver	☐ Crash severity ☐ Grade of injury ☐ Connected hazard
☐ Frontal ☐ Rear ☐ Side ☐ Rollover	Injury to the pillion rider (2W) Injury to the front seat occupant (4W)	☐ Crash severity ☐ Grade of injury ☐ Connected hazard
☐ Frontal ☐ Rear ☐ Side ☐ Rollover	Injury to co-passengers or occupants	☐ Crash severity ☐ Grade of injury ☐ Connected hazard

B. Assessment proposed

Crash Safety Assessment

(Part:)

1. Vehicle owner/associated person:

1.a Type of customer

☐ New customer ☐ Existing customer ☐ Referral

1.b Type of vehicle (Tick as applicable): (2W/4W/EV/Hybrid)

1.c Vehicle details:

2. Incident details:

Date:

Time:

2.a Reason (foremost):

☐ Rider/Driver factors ☐ Vehicle system ☐ Other factors

2.b Summary:

2.c Injury to:

☐ Rider/Driver ☐ Pillion/Co-passengers ☐ Others

2.d Nature of injury:

☐ Death

☐ Grade of injury

Details:

☐ Connected hazard

Details:

3. Nature of interest in Crash Safety Assessment

☐ Crash analysis ☐ Crash worthiness ☐ Crash protection

Details:

4. Type of collision:

☐ Frontal ☐ Rear ☐ Side ☐ Rollover

Details:

5. Crash protection mechanism (as part of the vehicle manual):

- ☐ Front Crash Guard/Bumper ☐ Rear Crash Guard/Bumper ☐ Other Guards
- ☐ Crash Management System (CMS) Accessories
- ☐ Chassis/Frame/Vehicle Body
- ☐ Vehicle Engine System
- ☐ Wheels and Tyres (ABS, anti-skid proof, puncture proof)
- ☐ Seating
- ☐ Special Crash Management System (CMS) Accessories

6. Helpful Crash Protection features (as part of the vehicle manual):

- ☐ Reliable crash worthiness mechanisms
- ☐ Safe mitigation of Crash impact / severity
- ☐ Effective (Design led) Crash Prediction Model
- ☐ Inadequate protection / crash worthiness

7. Contributing Rider/Driver factors for incidence:

- ☐ Vehicle malfunction
- ☐ Poor vehicle condition
- ☐ Human error
- ☐ Driver negligence
- ☐ Unfit to drive
- ☐ Over speeding
- ☐ Wrong side entry/driving
- ☐ Poor road condition
- ☐ Poor road systems/infrastructure
- ☐ RTO / GoI Rule violations
- ☐ No proper helmet
- ☐ No proper mirrors
- ☐ No proper lights
- ☐ No proper indicators
- ☐ No proper horn

8. Requirements for crash management / crash worthiness

9. Simulations available:

10. Recommendations for crash management / crash worthiness

11. Complaints/Grievances for crash management / crash worthiness

12. Feedback for crash management / crash worthiness

13. Comments: