INCREASE XYZ' MARKET SHARE OF PROTECTION RELAYS IN ABC APPLICATIONS FOR THE NORTH AMERICAN AND BRAZILIAN OIL & GAS, INDUSTRIAL AND UTILITY MARKETS

by

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PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF BUSINESS ADMINISTRATION

In the Executive MBA Program
of the
Faculty
of
Business Administration

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SIMON FRASER UNIVERSITY

Spring 2013

Approval

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Degree: **Master of Business Administration**

Title of Project: **Increase XYZ'[1] Market Share of Protection Relays in ABC[2] Applications for the North American and Brazilian Oil & Gas, Industrial and Utility Markets**

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Executive Summary

PROJECT TEAM

This Global Capstone Strategy Project is a team project and all of works have been collectively done by the MSA team with six people from four business schools:

- Beedie School of Business, Simon Fraser University, Vancouver, Canada,

- Owen Graduate School of Management, Vanderbilt University, Nashville, Tennessee, USA,

- ITAM, Instituto Tecnológico Autónomo de México, Mexico City, Mexico,

- FIA Business School, Fundação Instituto De Administração, São Paulo, Brazil.

With great support from schools and client, and industrial know-how, local market knowledge, expertise in finance, marketing, strategy, operation, cross-cultural management, and project management from project team members, the eight-month-project has been completed on time.

PROJECT SCOPE

The following project scope is an excerpt from the Capstone project scoping document provided by the client XYZ:

XYZ specializes in energy management solutions designed for a wide variety of industries including data centers, electrical utilities, industrial sites, and commercial buildings, among many others. The company has been successfully expanding its product portfolio through an aggressive product development strategy as well as through acquisitions. Most recent and

notable acquisitions include power distribution business and well-known company specializing in supervisory control and data acquisition and distribution automation systems. Both acquisitions in particular aim at enhancing XYZ's business in the power distribution arena, which is being impacted by grid modernization efforts, and increasing emphasis on implementing energy efficiency strategies. Many of these efficiency strategies depend on electronic relays and automation schemes.

ABC power distribution equipment primarily covers switchgear, distribution transformers, re-closers, motor control centres, and capacitor banks. Complementary offerings such as supervisory control and data acquisition systems, distribution automation, and protection relays also provide companies with a competitive edge when bidding for turnkey projects.

As a global leader in ABC switchgear and electronic protection relays, XYZ holds a strong position in the US ABC switchgear market. However, its share of the US ABC protection relay market is poor.

Dominated by entrenched local players, the US electronic protection relay market is characterized by fierce customer loyalty built through having a strong focus on customer intimacy. Exceptional application support and relentless customer service are key attributes on which users have come to depend.

XYZ's ambition is to be a top three player in the market for ABC protection relays. XYZ is currently ranked eighth by market share in the US.

This project will deliver research, analysis, and recommendations for how XYZ can attain a top three market-share in XYZ's target markets of oil & gas, industrial and commercial buildings, and electrical utilities.

The project objectives are conducting market research, data analysis and then providing XYZ with recommendations on how to profitably improve the competitive position of XYZ's

ranges of protection relays for ABC switchgear in the four markets of Canada, US, Mexico, and Brazil.

The aim of this project is to provide XYZ with information and recommendations that will inform business decisions for its ranges of electronic protection relays, with emphasis on the following applications for relays:

- Transformer,

- Distribution,

- Transmission,

- Breaker Protection,

- Motor,

- Generator,

- Bus Differential.

PROJECT MANAGEMENT

MSA team followed the Standard Problem Solving Approach for Capstone Projects provided by the AmericasMBA Capstone Projects Program Management with five key steps:

- Frame

    Identify the key questions.

- Organize

    Determine data requirements,

    Organize approach, timing and resources.

- Collect

    Collect necessary data.

- Understand

  Execute analytical models.

- Synthesize and Present

  Present the facts/recommendations.

ANALYSIS

There are some available techniques to analyze industry, such as Structural Analysis, PESTEL, Strategic Group Analysis, Patterns of Trade, Value Chain Benchmarking, Cost Benchmarking, and Technology/Trend Forecasting. MSA team chose industry analysis, group analysis, and value chain analysis as the most relevant for the Capstone Project.

Industry Analysis

MSA team chose industry analysis because it wanted to understand who has the bargaining power in the market and the level of competition. The competition in the Industry is medium. The power of buyers is high because there are many good companies to choose from. Threat of new entrants is medium. The new entrants are primarily coming from South Korea and China for the US market. There are really no alternatives to protective relays. Therefore, there are low expectations of substitutes. Another critical factor is regulations within countries. Each country regulation is unique and will create a barrier to entry.

Group Analysis

From the group analysis, there are two main groups. The first groups are the market leaders with SEL and GE leading with customer support and technology. The second groups are the followers in an unfavourable position. There is a technology barrier as well in the market

place. The second group competitors must overcome a technology barrier in order to get into the leadership position.

Value Chain

The Value Chain analysis was compared to SEL. Both XYZ and SEL have individual strengths. The clear advantage is with SEL's flexibility to deliver products. XYZ does have strengths in the logistic.

Strategic implication

- North America Protection Relays market is an oligopoly market, dominated by a two large suppliers, SEL and GE. The degree of market concentration is very high; SEL and GE take up 86% of the market,

- SEL and GE may play Dominant Strategy: use their lower price for high quality strategies for their products, and develop new product with new technology. It will be hard for other small players to challenge or for the newcomer to enter the market,

- XYZ is operating in a market with a few competitors and must take the potential reaction of SEL and GE into account when making its own decisions,

- A market with high barriers to entry:

  o Ownership or control of a key scarce resource: patents, licenses, trademarks,

  o Exclusive contracts: for example, SEL' multiyear substation automation contract valued at $71.5 million with the Los Angeles Department of Water and Power,

  o High set-up costs,

- High R&D costs: for example, SEL with 3,400 employees,

- Predatory pricing: Oligopolists may use predatory pricing to force rivals out of the market,

- Strong brand,

- Biggest players may even collude in some forms, or the Game Theory may predict that there is a tendency for cartels to form because co-operation is likely to be highly rewarding.

The strategic implication of the analysis indicates a very tough market. There are realistic only two competitors. The other competitors must take radical action in order to displace the market leaders. The overall value chain indicates that XYZ versus SEL is comparable. Competition in the market is relatively medium, but there are limited entrances into the market to get market share.

One opportunity is to decrease price in order to convince customers to switch products. By switching products, it could create an installed based that could expand into a long-term growth. However, the counter attack would be to lower the price as well. The initial MSA team study indicated there needs to be more than 10% to achieve any potential gains.

Another opportunity is to leverage the universal protocol IEC61850 to displace the competitors' products. XZY can turn its technology to an advantage for XYZ. However, other competitors could exploit the same advantage.

A third opportunity is to focus on a niche market segment. MSA team analysis indicated that in the Industrial/Commercial segment, XYZ could deploy remote configuration where XYZ can be competitive without creating a large infrastructure.

MSA team analysis indicated there are few opportunities that XYZ can take in order to be successful organically. XYZ must take bold steps in order to participate in the market.

Acquisition seems to be one of solutions for the problem; however, XYZ may prefer organic development solution.

ISSUE TREE

Based on each team member's experience, judgment, and limited information, MSA team formulated a potential solutions before it started its works. MSA team generated hypotheses which help guide data collection and analysis, and focus on relevant data to confirm the initial hypotheses. Four key issues were identified:

- Influence over Channels,

- Pre and Post Order Support,

- Brand Reputation,

- Lack of Growth Drivers.

FOCUS

In order to analyze the key issues of XYZ for this project, MSA team conducted researches and interviewed important XYZ's customers and key players in the ABC industry in four countries USA, Canada, Mexico, and Brazil. MSA team collected so called Voice of the Customer Interview Report with detailed comments, ideas, and suggestions from different sources in the market. MSA team focused on three following options:

- Option 1

    - Product enhancement that require less user knowledge to win against SEL superior customer support,

- Focus on smaller market with fewer protocols to focus on a beach head approach,

- Develop marketing/documentation to improve customer experience with integration and use.

- Option 2

    - Provide service support staff, pre and post sales, and tech support,

    - Develop marketing/documentation to improve customer experience with integration and use.

- Option 3

    - Acquisition of SEL,

    - Integration.

RECOMMENDATION

Overall MSA team recommended XYZ focusing on trend of ABC industry in specific markets:

- Value is in manufacturing

    - Best position is as a Manufacturer with high technology and service capabilities,

    - Market is oligopoly with few suppliers,

    - Country specific regulations ensure difficulties for new entrants.

- US/Canada

    - Customers care about service support,

    - Mature Market, but growing due to investment requirements for SmartGrid.

- Mexico

- Small market, but growing.

- Brazil

  - 2014 has huge opportunities due to regulations,

  - Government amendment about SmartGrid to add smart meters.

Each market is unique and has specific requirement for growth. XYZ's objective as the third largest player is possible with following recommendation with key focus on US/Canada market:

- Recommendation for the US/Canada market

US/Canada is a big and established market; however, XYZ has only less than 1% of market share. MSA team recommended XYZ having different strategies for different market segments.

- For Utility segment:

  o Strategy: Become "Fast Follower".

  o Action: Grow Sales & Support and Increase Marketing Collateral.

- For Industry segment:

  o Strategy: Simplify Product line.

  o Action: Focus on VAMP, Develop ROC, and Remote Configuration.

- Merger & Acquisition:

  o Strategy: Buy customer relationships.

  o Action: Review potential list.

- Disrupting SEL Key Strengths into Weakness: US Energy Business needs to focus on disrupting Support & Relationships Strengths.

  - Product Customization,

    - Strategy: Develop Simpler Products and enable easy migration (IEC61850),

    - Implementation Level: High.

  - Support,

    - Strategy: Provide remote configuration with regional support center,

    - Implementation Level: Medium.

  - Relationship,

    - Strategy: Build a community of support,

    - Implementation Level: High.

  - Product Focus.

    - Strategy: Focus on ability to service larger value chain,

    - Implementation Level: Medium.

- Recommendation for the Brazilian market:

Strategy for Brazil is already in place. MSA team provided recommendation to fill in gaps for Brazil market analysis. The client needs to have investments to enable customer acquisition and relationship building. Key areas to focus on:

- Customer Support,

- Relationship Building,

- Customer Acquisition,

- Utility Segment.

In term of product development, Innovative Utility would have a great future in Brazil for XYZ and the company should focus on:

- Integrating systems and equipments – Substations and grid automation,

- Investing on self healing systems and equipments,

- Reduce operational and maintenance costs for grid automation,

- Predictive maintenance and asset management.

- Recommendation for the Mexican market:

The biggest challenges for XYZ in the Mexican market are:

- Limited sales forces,

- Only one Utility in country,

- Product is license from Alstom.

In North America, XYZ should focus on US/Canadian market instead of Mexican market. In the short-term, XYZ could exclude Mexican market since there is not enough local support available. If market condition is improving, XYZ may consider investing to develop the Mexican market.

Glossary

ANSI	American National Standards Institute
DA	Distribution Automation
FERC	Federal Energy Regulatory Commission
GE	General Electric
IEC	International Electrotechnical Commission
IEC61850	A Standard for the Design of Electrical Substation Automation
IED	Intelligent Electrical Device
IEEE	Institute of Electrical and Electronics Engineers
MSA	Market Share Americas Team
NERC	North American Electric Reliability Corporation
NIST	National Institute of Standards and Technology
ROC	Remote Operations Controllers
SCADA	Supervisory Control and Data Acquisition
SE	Schneider Electric
SEL	Schweitzer Engineering Laboratories
SEPAM	Square D Electrical Protection and Monitoring

Appendices

Appendix 1:

Industry Analysis Overview

Industry Analysis – Overview

	Market Size[1,2]	Growth Rate[1,2]
USA	$350M	3%
Canada	$30M	3%
Brazil	$50M	4%
Mexico	$25M	3%

Relay Product Application Coverage:

- Transformer
- Distribution
- Transmission
- Breaker Protection
- Motor
- Generator
- Bus Differential

Geographical Coverage:

USA
Canada
Brazil
Mexico

Major Players:

ABB   SIEMENS

GE   SEL   Schneider Electric

Customers: Oil & Gas, Industrial/Commercial & Electric Utilities

1: PRNewswire Global Protective Relay Market (Medium & High Voltage)
2: Pike Research: Substation Automation Q2 2012

Appendix 2:

Porter's Five Forces Analysis

Power of state & institutions
- Each countries have their regulation organizations (FERC, NERC)
- Industry Standards (ANSI, IEC, IEEE, NIST)

Threat of new entrants
- South Korea
- China

Power of suppliers
- Consolidated market
- Few Manufacturers

Competition rivalry

Power of buyers
- Distributers enjoy partnership situation
- End Users have only bundle buying opportunities

Threat of substitutes
- Limited technological substitution
- Distributed generation (less complex equipment required)

Appendix 3:

Industry Analysis by Market Share

Industry Analysis – Market Share

USA & Canada

Brazil

%Market Share in Mexico: <1%

1: Company Websites   2: Newton-Evans Research Company, Inc
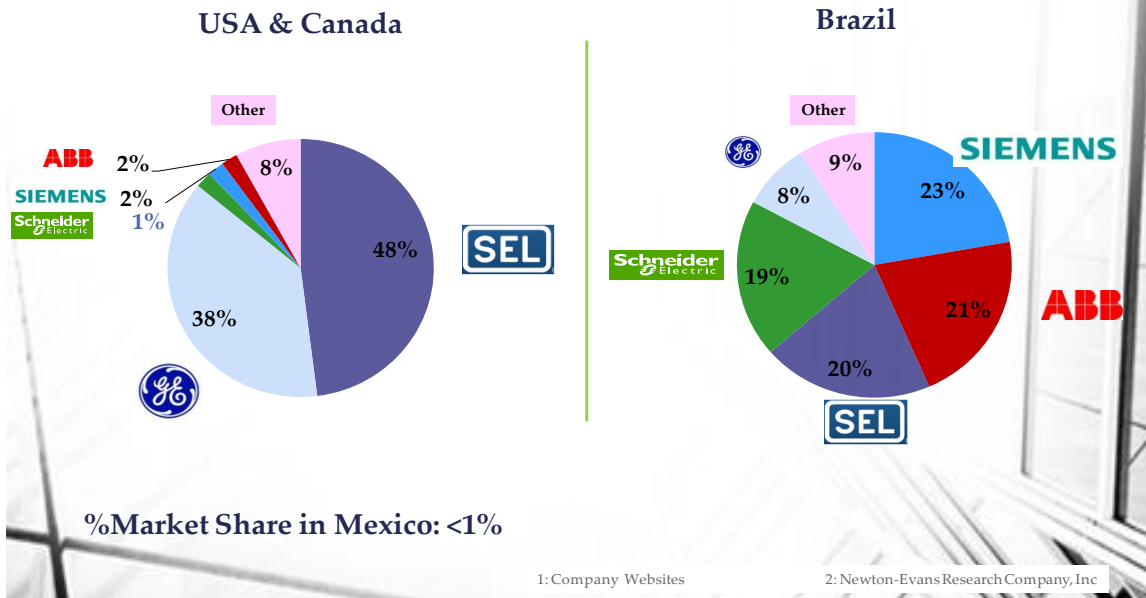
Appendix 4:

Industry Analysis by Segments

Industry Analysis – Segment View

Market Segments

Infrastructure, Building 5%
Energy-Power Generation 7%
Energy-Transmission 19%
Industry 22%
Oil&Gas 16%
Energy-Distribution 31%

Applications

Bus Differential, 6%
Generator, 2%
Transmission Line Current Differential, 4%
Transmission Line Distance, 15%
Breaker Protection, 6%
Transformer, 9%
Capacitor Bank, 6%
Motor, 10%
Distribution Feeder, 42%
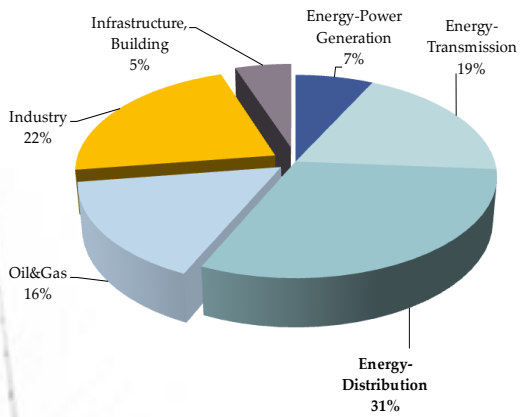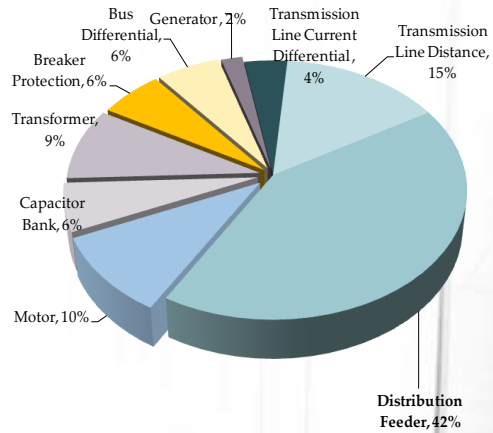
Source: Newton-Evans Research Company, Inc.

Appendix 5:

Strategic Implications

Strategic Implications

GDP Growth

(in %)	2012	2013	2014	2015
US	2.1	2.5	3.3	3.2
Canada	2.1	2.4	2.6	2.6
Brazil	1.9	4.9	4.9	4.2
Mexico	3.5	3.7	5.0	4.6

Source: Oxford Economics

Energy Consumption on Rise

- Continual **dependence on oil is expected to result in higher price increases** compared to alternatives such as natural gas, coal, and ethanol
- Energy consumption in target countries on the rise
- Consumer Demands indicated by GDP on the rise

Implications to MV Market:

- GDP for all target countries growing
- With Brazil & Mexico requiring more energy, these countries will need to build out their infrastructure
- Canada is experiencing increase in mining opportunities
- US is need of upgrading its aging infrastructure

Invest in MV markets in US, Canada, Brazil, & Mexico

Appendix 6:

Focus Options

	Option 1	Option 2	Option 3
Products	★		
Sales		★	
Service		★	
Support	★	★	
Marketing	★	★	★
Integration			★
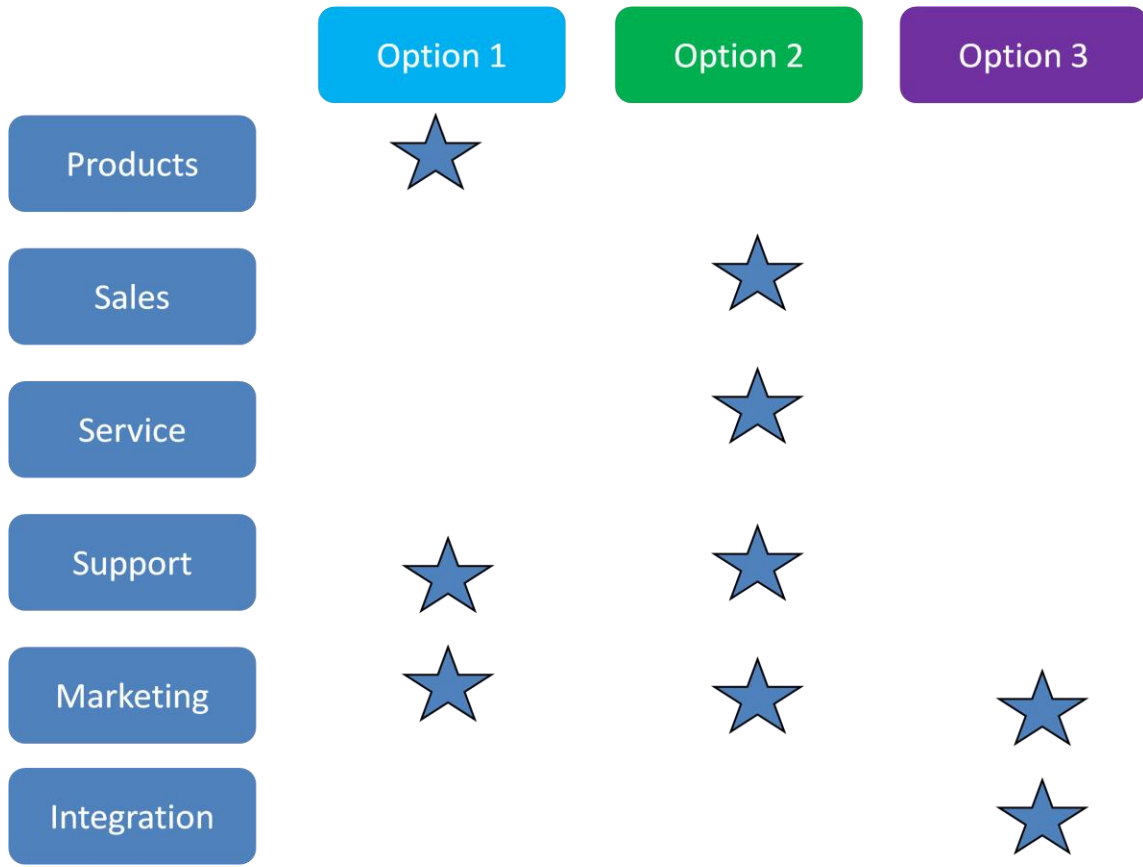
Appendix 7:

Value Chain/Supply Chain

Value Chain /Supply Chain

Manufacturer	
Margin	50%

↓

OEM	
Margin	20-25%

↓

Distributor	
Margin	1-5%

↓

End –User (e.g. Utility)

Manufacturer	
Margin	75%

↓

Distributor	
Margin	1-5%

↓

End –User (e.g. Utility)

Manufacturer	
Margin	80%

↓

End -User

Consultants
(Influence)
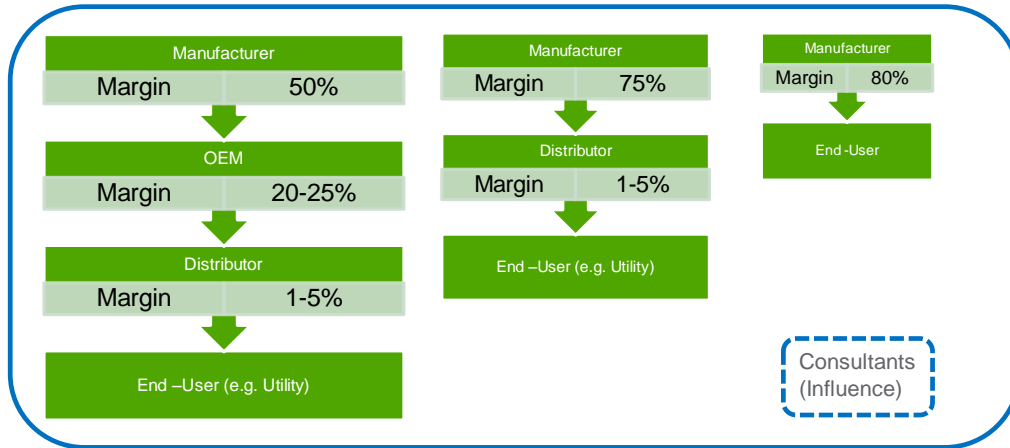
Average Protective Relay
$400(Parts)+$1500(Manufacturer) + $100(Distribution) = $2,000

Largest Value is in Manufacturing

Source: MSA

Appendix 8:

Recommendation US Market

RECOMMENDATION

	Strategy	Actions
1 US Industry	• Simplify Product line	• Focus on VAMP • Develop ROC • Remote Configuration
2 US Utilities	• Become "Fast Follower"	• Grow Sales & Support • Increase Marketing Collateral
3 M&A	• Buy customer relationships	• Review potential list

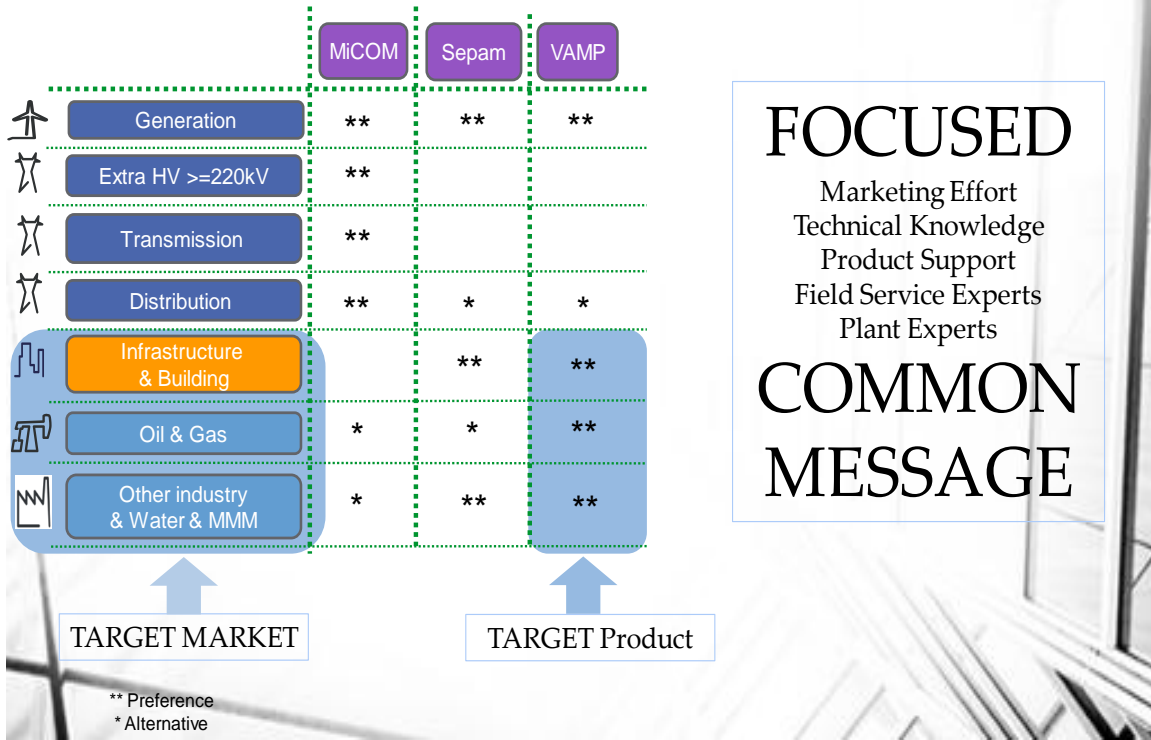*XYZ's objective as a 3rd Largest Player is possible with the recommendations*

Appendix 9:

Recommendation US Market: Products and Markets

XYZ needs to focus on single product approach for US

	MiCOM	Sepam	VAMP
Generation	**	**	**
Extra HV >=220kV	**		
Transmission	**		
Distribution	**	*	*
Infrastructure & Building		**	**
Oil & Gas	*	*	**
Other industry & Water & MMM	*	**	**

TARGET MARKET

TARGET Product

FOCUSED

Marketing Effort
Technical Knowledge
Product Support
Field Service Experts
Plant Experts

COMMON

MESSAGE

** Preference
* Alternative

Appendix 10:

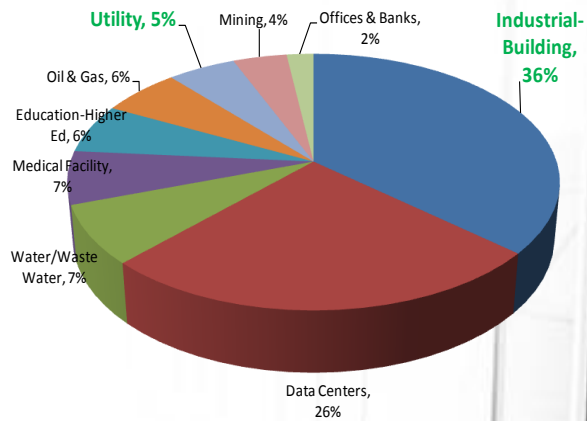**Recommendation US Market by Segments**

XYZ should focus on its strengths which is in the non-utility segments

Strengths:
- Complimentary Offers
  - OEM offering: circuit breakers, power monitoring, switches etc
- Value Chain to Industry End-Users

Weaknesses:
- No Utility Presence in traditional grey box market
- Lack of brand awareness for IEDs
- Lack of Marketing, Training and Service presence in USA

Utility, 5% — Mining, 4% — Offices & Banks, 2% — Industrial-Building, 36%
Oil & Gas, 6% — Education-Higher Ed, 6% — Medical Facility, 7% — Water/Waste Water, 7% — Data Centers, 26%

XYZ Metal Clad Segments

Have a FOCUSED approach on 45% of market (160M) rather than entire market