

AMERICAN UNIVERSITY OF BEIRUT

A RECOMMENDATION FOR A GROWTH STRATEGY AND
ITS EFFECTIVE IMPLEMENTATION IN A LOCAL FAMILY
BUSINESS

by
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AN ABSTRACT OF THE PROJECT OF

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Title: A Recommendation for a Growth Strategy and its Effective Implementation in a Local Family Business

Air-Tech is a local family business in a turbulent economy that was able to establish a strong position in the industry segment it operates in. Its vision is to become a leader across the industry and is seeking several options for this growth. This project covers an external analysis for the market and internal analysis for the company, and then analyzes each strategic alternative in order to assess its feasibility. A consolidated analysis is performed to provide the company with the best-fit strategy to be implemented at this point in time. After which an implementation and follow-up plan are provided to assist this company in the realistic and effective implementation of the best-fit strategy. Finally, the firm is provided with a recommendation to assist it in achieving its vision and goals in a realistic manner.

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CHAPTER I

INTRODUCTION

Most companies in Lebanon are family businesses operating in a volatile and competitive market. Such family businesses face tremendous challenges when it comes to succession planning, growth and sustainability. Air-Tech is a local first-generation family business founded in 1996. The firm currently holds contracts in implementing mechanical services to buildings (mainly air-conditioning and ventilation) contracts operating in the HVAC industry (Heating, ventilation, and air-conditioning). As a small firm in a competitive and unstable Lebanese market, Air-Tech faces several challenges in this industry. This is why Air-Tech is recently considering several growth strategies to better sustain its existence, prepare succession plans and capitalize on existing opportunities.

This project aims to assess the firm's strategic potential, evaluate its potential strategies and finally provide a practical plan to implement the recommended strategy. This study is devised to help Air-Tech understand its core, list and analyze its options, and develop a plan for it to grow in an effective manner. Thorough internal analysis of the firm needs to be done, in addition to external analysis to understand the industry it operates in and where it currently positions itself. Then, based on the company's vision and goals and its capabilities, assessment is done as to which growth strategy is best to be followed. After which an implementation plan is devised for this strategy. Noting that some of the information included in this report has been disguised for confidentiality purposes.

A. Project Organization

This paper will cover the following topics: chapter I will include an introduction to the project and a generic overview of the family firm, its history, organizational structure and growth strategies. Chapter II will cover literature review with respect to strategy analysis and family businesses. Chapter III includes the methodology at which the project was analyzed and data was collected. In addition, it includes limitations of the study and suggestions for further research. Chapter IV covers the company analysis including the internal analysis and the external analysis of factors influencing the company. Chapter IV also consolidates the analysis for every growth strategy and identifies the best-fit growth strategy and the implementation follow-up plan for the strategies. Finally, chapter V describes the recommendations and conclusion deduced.

B. Company Overview

Air-Tech is an engineering contracting company in the HVAC industry (Heating, Ventilation and Air-Conditioning systems). It is a local first generation family business founded by M.S. in 1996 in Beirut, Lebanon. Over the years, Air-Tech has developed itself in the HVAC industry and enjoys a strong reputation covering its skills in cost estimation, designing installations, manufacturing the ducting systems and executing them and project management. Air-Tech's purpose is to provide high quality ventilation systems and thermal comfort for its customers. With its highly skilled team of engineers, Air-Tech aims to provide superior HVAC solutions for both the private and the public sectors. Air-Tech has successfully implemented projects for major hospitals, restaurants, banks, commercial and residential buildings.

Air-Tech's main services provided are:

- Installing HVAC systems
 - Designing, manufacturing and installing ducting systems
 - HVAC system sale and distribution
 - HVAC systems design and installation
- Maintenance services for HVAC systems
- Repairs and after sales services for HVAC systems

Air-Tech has been the authorized dealer for the below products:

- 1996 – Carrier Authorized Dealer
- 2005 – LG Authorized Dealer
- 2009 – Samsung Authorized Dealer

In addition to its dealerships, Air-Tech currently works with more than 10 different brands in the HVAC market (Fujitsu, Hitachi, LG, Samsung, MDV, etc...).

1. Organizational Structure

Air-Tech is a small family firm comprised of a team of 30 professionals working together in a family-like environment sharing intertwined cultural values and beliefs. The following are key roles that impact the underlying core functionality of the firm:

The CEO is responsible for managing the company stakes at a high level. Currently, he is also the sole owner of the company and he is responsible for:

- Devising strategies and growth plans for the organization.

- Approving and preparing cost estimations for bidding on projects to help the organization acquire new projects
- Meeting with clients to identify and analyze new projects to be tackled
- Following-up on major projects
- Resolving escalated issues

The General Manager is responsible for managing the firm's daily operations, including:

- Allocating projects to the responsible teams
- Monitoring and building project plans
- Following up with team's performance
- Handling issues upon occurrence
- Escalating issues when necessary
- Following-up with the project team and with the clients
- Preparing first-level cost estimations

The Maintenance Engineer is responsible primarily for:

- Handling maintenance scheduled visits and repair requests
- Scheduling the visits
- Assigning AC technicians for the visits
- Preparing a schedule for AC technicians
- Providing technical solutions when necessary
- Following-up with the status of maintenance requests and repairs

The Technical Mechanical Engineer is the main engineer responsible for:

- Providing technical support and on-site follow-up on new installation projects
- Implementing project plans and ensuring that they are on-track
- Managing on-site professionals handling the installations (Duct-Man & AC-Technicians)

The Maintenance AC-Technician is a professional technician responsible for handling on-site visits and repairs. Currently Air-Tech operates with two skilled AC-Technicians. Each maintenance AC-Technician requires an assistant to help him on site for maintenance scheduled visits, requests, or repairs.

The Installation AC-Technician is a highly skilled technician responsible for on-hands installation of the ducts, brass, and AC products. Due to the difficulty of the tasks at hand and hard labor hours, each installation AC-Technician is assigned with at least two assistants to help him on-site with the installation, ducting, and deployment projects. Currently, Air-Tech operates with two skilled Installation AC-Technicians.

Also Air-Tech operates with a team of six skilled Installation Duct-Men technicians responsible for deploying HVAC pre-installments on-site for projects. Each duct-man requires an assistant working with him on-site.

The Fabricator Duct-Men are professionals responsible for manufacturing the ducts to be installed for the projects; currently Air-Tech has two such professionals.

The Accountant is responsible for all accounting activities in the firm, including:

- Employee salaries
- Client billing

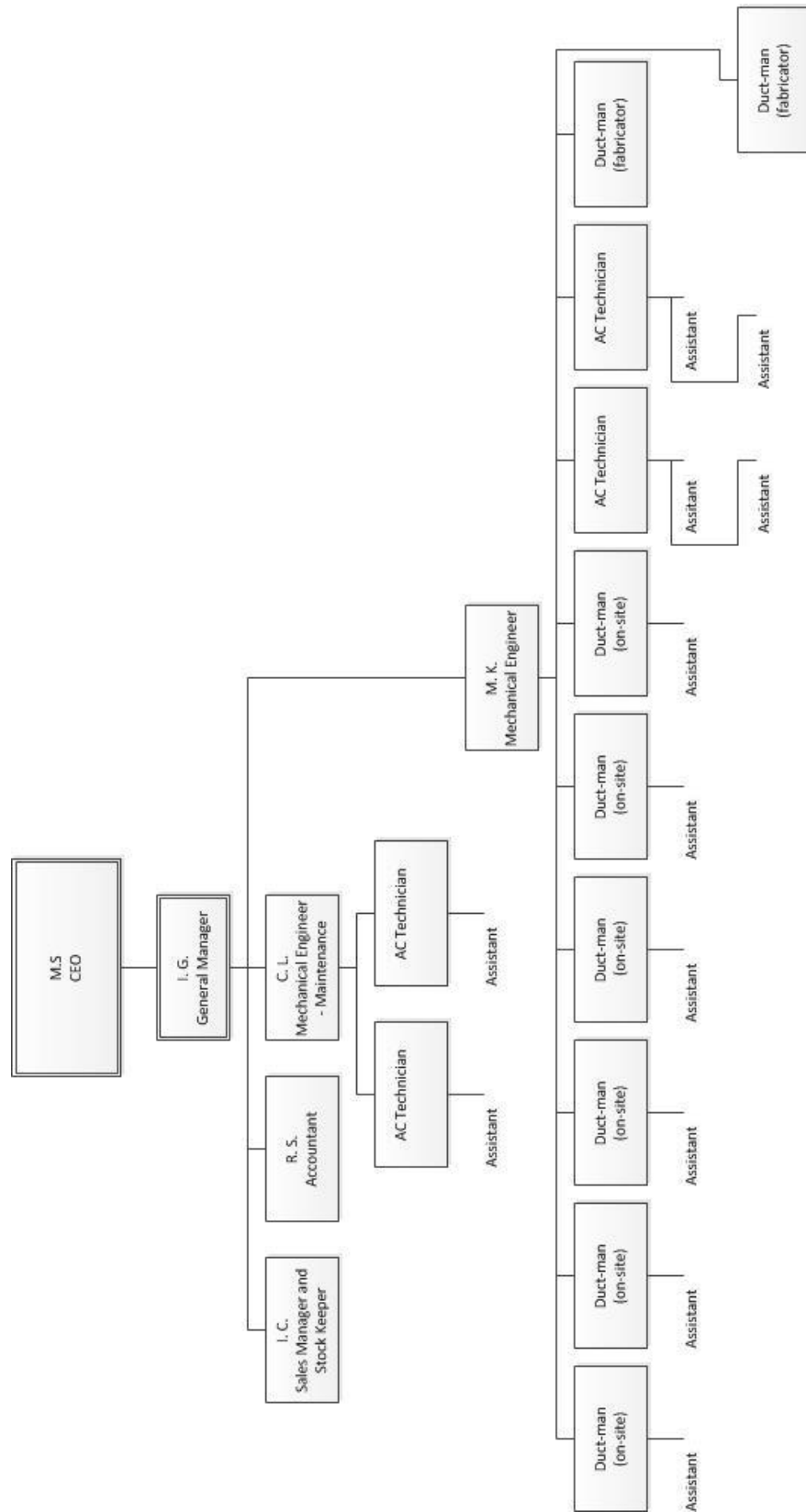
- Following up with accounts receivables and payables
- Budget allocation

The Stock Keeper is mainly responsible for all activities related to the firm's inventory management and project inventory coordination and delivery, including:

- Following up with new technology and negotiating deals with HVAC product supplier companies (such as Samsung, LG, etc...)
- Managing and keeping track of company stock of brass, aluminum for duct-manufacturing, and AC products
- Ordering new products or material
- Handling logistics to transfer products to the company stock

There are around 12 Assistants working with Air-Tech. These employees need to have a minimum level of technical skill but do not need to be very experienced or have a high level of education. They are mainly responsible for handling labor work on-site and helping the technicians, engineers, and duct-men with their on-site responsibilities.

Figure 1: Air-Tech Organizational Structure



2. Growth Strategies under Study

Air-Tech is able to specialize in the HVAC industry segment; however, is now handling the most projects it can and is missing out on many opportunities due to being a wider variety of industry services. Therefore, it is thinking of several alternative options of growth strategies in order to sustain its existence and develop itself in an ever growing competitive market. These strategies will be developed to help it sustain its position, generate higher profits and prepare succession plans. These strategies include the following:

a. Expanding the Product Line to include full Mechanical-Electrical-Plumbing (MEP) products

Having already established a good leading position with respect to HVAC systems, Air-Tech is ready to expand its product line to provide further services as there is an impending trend in this industry where customers prefer to sign contracts with the least possible number of contractors. Therefore, the company is venturing into this strategy not only to provide a larger variety of services; however, its main target is to acquire more customers who usually prefer to sign-off all the mechanical services as a package rather than contract with several different contractors. In this case, the burden of coordinating activities and ensuring proper scheduling between the mechanical services for the project are the responsibility of the contracted company. The company's reputation and its relationship with such customers are very important as they usually have recurring projects. By providing these services, the company would be able to capture a larger portion of the market and handle larger projects (in terms of scalability) which would result in high profits for the company. Air-Tech is also aware that it has lost recently several recurring projects with some of its existing clients due its inability

to provide the full mechanical packages. In the long-run, Air-Tech targets to provide full MEP services which also includes providing complete packages for electro-mechanical contracting. This remains essential for Air-Tech since it would be able to position itself properly in the market for providing a complete set of services.

b. Expanding into Regional Countries

The Lebanese market has continually been an unstable environment to operate in with a high risk of sectarian clashes or even external wars from neighboring countries. Accordingly, Air-Tech is considering expanding abroad into the Gulf region where it is relatively a more stable and growing market. The first country to expand into would be Dubai due to several reasons. On one hand, Dubai is currently growing especially with respect to the mechanical contracting domain due to the large number of towers, buildings and compounds under development. Also due to the fact that Air-Tech has strong connections with some developers who are also taking up projects in Dubai with whom it can start-up its work there. However, this strategy requires strong financial resources, large investments, and a venture into a new market. Air-Tech has not yet established a strong position or brand name and it would have to face the existing competitors and different government regulations that could affect its work.

c. Creating an Extension Maintenance Company

Maintenance contracts are viewed as annual streams of recurrent cash flows from clients and as such can be a good source of annual profit if managed properly. Due to Air-Tech's recent activity with maintenance services and contracts, the CEO is considering creating an extension maintenance firm that would handle only maintenance services for the company. In this sense, the company can focus its specializations in

mechanical installations while switching all existing and new maintenance contracts to the extension firm. In addition, by creating a separate firm to handle these maintenance contracts, the firm can then handle the existing maintenance contracts, maintenance contracts for any new projects for Air-Tech, and maintenance contracts for projects done by other contractors. This strategy also faces lots of challenges since there are many companies in this industry that have already established a strong position, while other companies have long existed specialized in providing only this kind of service.

CHAPTER II

LITERATURE REVIEW

The literature review will be divided into two parts, one focusing on the strategic tools to analyze and understand business strategies and their environments and the other pertaining to understanding the specific challenges that are faced in small family businesses and what special considerations need to be abided by for such companies.

A. Strategy

Strategy consists of a set of plans and decisions that set the external and internal alignment of an organization (Hambrick, 1983). Thorough research has gone into the study of strategy, competitive advantage, sustainability, etc... and many debates have emerged amongst scholars regarding strategy. While some scholars like Porter have suggested that a company's strategy should go in one of two directions, either to lower its costs or to differentiate itself in the market (Porter M. , 1980). Other scholars on the other hand have suggested that instead a company can devise a strategy that can both lower costs and differentiate the company in the market; this strategy is what scholars often called a blue ocean strategy (Kim & Mauborgne, 2014).

Strategic management was greatly influenced with Porter's research and tools. There are two main schools when it comes to strategic management and those include market-based strategies from the perspective of Porter (1985), or product-based strategies (based on internal core competencies of the company) from the perspective of Hamel and Prahalad (1994) (Isoherranen, 2012). According to Johnson & Scholes

(1993), strategic management is composed of three main components: (1) strategic analysis, which analyzes the internal and external factors that impact a company's positions in the market; (2) strategic choice, which includes listing and evaluating scenarios and choosing the company's alternatives; (3) strategic implementation, which includes the means of putting the strategy into action and managing any required changes (Isoherranen, 2012).

Scholars have derived several strategy analysis frameworks that have been proven effective to help companies analyze their strategies. One of these tools is the SWOT analysis that focuses on four main aspects; two internal aspects which are the company's strengths and weaknesses, and two external aspects which are the existing opportunities and threats for the company (Luffman, Lea, Sanderson, & Kenny, 1996). A good strategy is one that maintains a balance between the external circumstances of a company and its internal capabilities (Isoherranen, 2012). Another tool is the PEST (or PESTEL) analysis which considers the political, economic, socio-cultural, technological, environmental and legal and regulatory aspects of a market. PESTEL analysis is mainly used to understand the drivers of long-term change in a market (Isoherranen, 2012). In such, it helps a company understand its market and what impact could changes in the market have on it. Additionally, there is also a need to assess the competitiveness of a certain market, which is why Michael Porter's five forces framework is used. Porter's framework (1980) enlists that a firm's competitive position in the market is based on the influences of the five key forces in the market which are the bargaining power of the buyers, the bargaining power of the suppliers, threat of new entrants, threat of substitutes and industry rivalry (Porter M. E., 2008). The stronger

these forces are, the more difficult it is for a company to properly position itself in the market and reap profits (Porter M. , 1980).

B. Strategic Planning (An Overview)

Strategic planning has matured significantly over the past decades to become a science in itself. Many scholars have gone deep into analyzing strategic planning methodologies and tools to help management devise and implement strategies. Strategic planning explicitly defines an operational plan for a company's strategy.

Strategic planning is much more important for companies facing high turbulence environments, similar to the environment in Lebanon, since in this case, large amounts of flexibility in planning are needed to cope with the changing, unstable and unpredictable conditions (Miller & Cardinal, 1994).

But at the same time, several researchers have come about to counter these arguments such as Mintzberg in his book "The Rise and Fall of Strategic Planning". Mintzberg and other researchers have claimed that the extensive use of these analytical tools for strategic thinking have limited creativity and intuitiveness in strategy development (Mintzberg, 1994). This made strategic planning become a rigid process that does not adapt and dynamically adjust to the continually changing and developing environments that we live in.

In a study performed on strategic planning for small businesses, it was noticed that many small firms think about strategies and strategic planning, however, they do not dwell into the effectiveness or the implementation of these strategies (Sexton & Van Auken, 1982). It is important for small firms to focus on adaptive thinking when

developing strategies in order to allow them to overcome vulnerabilities and to avoid any missteps (Aram & Cowen, 1990).

Studies show a strong positive relationship between a small business's performance and the extent of strategic planning it performs (Lyles, Baird, Orris, & Kuratko, 1993). A study done by Bracker and Pearson (1986) emphasized that strategic analysis for small businesses comprises of eight major planning components which include: (1) setting objectives, (2) studying the environment, (3) SWOT analysis (strengths, weaknesses, opportunities and threats), (4) formulating strategies, (5) understanding financials, (6) analyzing budgets, (7) measuring performance, and finally (8) control procedures (Bracker & Pearson, 1986).

C. Growth Strategies and Challenges for Family Businesses

Strategic planning for family businesses is considered to be the most critical factor that is associated with the continuity of the business, especially succession strategic planning (Singer & Donoho, 1992). The most challenging process for a family business is developing a long-term plan for succession, leadership and management where fewer than one in three family businesses survive from first-generation to second-generation and only half of those would continue to the next succession (Singer & Donoho, 1992). One of its biggest challenges is sustaining itself and growing through different generations, which is why planning for growth and succession remain one of the most critical tasks that a family business should do.

D. Dynamics of Family Businesses in Lebanon

In a war-torn country, the family unit was often the only socioeconomic unit that remained intact after the heavy turmoil that Lebanon has gone through throughout the civil war (Pistrui, Fahed-Sreih, Huang, & Welsch, 2008). This is why the majority of private companies in Lebanon are family business often emerging SMEs within their first or second generation (Fahed-Sreih D. J., 2012). Michel Pharaon, a parliamentarian and owner of family business Pharaon Homelines, explained that despite this turmoil, many family businesses were able to sustain their existence due to their dynamic nature and their ability to adapt to changes in their external environment (Tavoukjian, 2004). This is interlinked with how family businesses are seen as a mere extension of the family; whereby employment for family members is viewed as an obligation in Lebanon implicating a strong relationship between the Lebanese families and their enterprises (Fahed-Sreih & Pistrui, 2012).

1. Importance of Family Businesses in Lebanese Market

It is critical to note the vital socio-economic role that family businesses play in the Lebanese market. The private sector in Lebanon employs 85% of the entire workforce constituting of 1.05 million out of 1.24 million jobs (Fahed-Sreih J. , 2006). The private sector is mainly composed of SMEs, whereby over 90% of these SMEs are individual or family-owned businesses (Saidi, 2004). In SMEs, families are usually the main source of funding, start-up capital, and low-cost labor and know-how (Fahed-Sreih D. J., 2012). Families comprise the heart of the Lebanese society through playing a major role in entrepreneurial firm formation and development within a transitional economy (Fahed-Sreih & Pistrui, 2012). As such, family businesses are considered to be “the mortar for building the Lebanese economy” (Tavoukjian, 2004). Due to this impact

of family businesses, Lebanon has one of the highest GDP per capita amongst the “non-oil based Arab countries” (Tavoukjian, 2004).

2. Challenges Facing Family Businesses in Lebanon

Family businesses operating in Lebanon face the same set of challenges as they do elsewhere, but in Lebanon they face a turmoil environment, political instabilities and lack of government support. This is why many family businesses face additional hurdles when thinking about growth, expansion or even succession. The existing instability pushes family owners away from proper strategic planning since as they usually say “no one knows what is coming next”. In order to ensure sustainable performance in such an environment, family firms need to focus on having low debt ratios and strong social networks (El-Chaarani, 2014).

Michel Pharaon further explained that the complexity of running a family business increases as it transfers from one generation to another (Tavoukjian, 2004). Pharaon then added "If a family-owned business achieves planning for ownership continuity and management succession, it will be able to overcome all global developments and expand successfully" (Tavoukjian, 2004). Herein lies the utmost challenge that all family firms have to face with time – succession planning. 30 percent of family businesses succeed in the second generation, while only half of these make it to the third generation (Tavoukjian, 2004). Given the succession challenges in addition to the socio-economic challenges that family businesses have to face in Lebanon, these firms need to be able to develop targeted strategies that would help them expand, grow and sustain their existence throughout the generations.

CHAPTER III

METHODOLOGY

A. Scope of Study

This study focuses on a case study of analyzing several growth strategies for a local family business in Lebanon, and then recommending the best-fit strategy and methods for its implementation.

B. Research Methodology

Several interviews were conducted with the CEO, the company employees and industry experts. These interviews include:

- Strategy related interviews with CEO
- Industry and technical related interviews with
 - General Manager
 - Engineers
 - Industry experts outside the company
 - M.M. is a mechanical engineer with over 20 years of industry experience. He has worked in Lebanon for over 15 years in a leading HVAC supplier (Carrier) and currently works in Saudi Arabia as an HVAC contractor.
 - E.S. is an architect with over 25 years of experience in the construction industry in Lebanon. He is the general manager of his own firm and his focus is on commercial and residential luxury buildings in Lebanon.

- Company related interviews with a sample of the company's employees

After which, financial analysis was performed on the company's financial statements from 2008 until 2014. These financials were analyzed to identify the company's compounded growth rate, profitability, strength and growth potential.

C. Analysis Method

The strategic potential analysis for the company will be done through internal and external analysis of the company's business and market. Assessment of the external environment will be done through PESTEL, industry analysis, Porter's Five Forces, competitor analysis, customer analysis, key success factors, threats and opportunities, etc... While Internal analysis would be done through analyzing the firm's financial performance in the past years, its strengths and weaknesses, its organizational structure, and its resources, and through interviews with the existing employees (seniors and managers) at the firm in order to assess the firm's strengths and weaknesses.

Also, the key elements in the business strategy will be analyzed including the scope of the strategy, the source of capital, the level of risk, and the leadership type required through interviews with the firm's owner and assessing advantages and disadvantages of each (Ward, 2011).

The best-fit strategy will be identified based on professor Bill Liabotis who sets a methodology for determining the best strategy for achieving and sustaining growth (Liabotis, 2007). Upon identifying the best-fit strategy, research will be done on what would be the most effective implementation method for it, while taking into

consideration the existing limitations for a family business including re-investment decisions, succession plans, etc...

D. Limitations

Limitations in project writing:

- Not enough financial data available about competitors due to lack of enough market data and secretive culture that is closed in on itself and does not like sharing information
- Lack of well-documented historical data about the company
- Lack of transparency and sufficient data about the industry (no trade market, no official documents that can be collected about any of the competitors, no access to industry statistics)

E. Further Research

Additional resources for market statistical data regarding the industry would help provide the company with quantitative insight into its strategies and would further enrich the strategy analysis. Detailed financial projections based on the company and market growth can be studied to analyze the possible financial impact of each strategy. In-depth revenue analysis needs to be performed to provide the company with accurate figures regarding the realistic profit margins that they can set. The company can proceed with performing a complete feasibility study for the maintenance firm to further validate the expected net profit.

CHAPTER IV

ANALYSIS

A. Industry Definition

Air-Tech currently operates in the HVAC industry (heating, ventilation and air-conditioning) contracting for projects covering schools, restaurants, offices, buildings, banks, etc... This industry is heavily linked to the construction industry in Lebanon which remains one of the most stable industries to operate in. This industry mainly comprises of installation of HVAC systems in new projects under construction, replacement of existing HVAC systems with newer or updated systems for existing structures, in addition to maintenance and repair services for already installed HVAC systems (IBISWorld, 2014).

As Air-Tech is studying growth opportunities in this market, the current industry boundaries are expanded from segmented industry of HVAC to consider full mechanical and electrical contracting as the industry under study where the same competitors are providing services to the four industry segments (MEP). These services would include mechanical services (air-conditioning, heating, solar system heating for domestic water usage and ventilation), plumbing services, and electrical services. MEP services comprise a core necessity for the construction industry and are crucial to any new project. Also, more recently, developers in this industry prefer to sign one contract with a single company rather than having to prepare contracts with several companies for each different service needed and to manage the activities between them themselves.

1. Industry Segments

Industry experts and initial market study shows that approximately 40% of the companies that are providing HVAC services are also providing all mechanical and plumbing services including solar heating for domestic water usage (Appendix A). 20% of the companies are able to provide electrical services as well with which they would be offering a full MEP contract to the construction companies (Appendix A). As construction companies recently prefer to sign-up to one MEP contract, Air-Tech needs to expand its product line to cover all the necessary industry segments to be able to position itself well against its competitors. Most of the companies in this industry providing mechanical services also tend to provide maintenance services for the products that they have installed. However, the maintenance segment for this industry is not yet clearly developed whereby only few companies have a structured and organized maintenance firm or department that performs scheduled visits and ensures service repair within a pre-defined deadline.

The segments defined for this industry would apply to the MEP industry across regional countries as well to which Air-Tech also aims to expand to. The industry will be segmented as follows:

Table 1: Industry Segments

Big-Scope Industry	Current Industries	Industry Segments
Electro-Mechanical Contracting	Mechanical Contracting	Air-conditioning and ventilation services: currently provided by Air-Tech
		Plumbing systems installation services
		Heating systems installation services
		Solar systems heating for domestic water usage services
	Electrical Contracting	Electrical systems installation services (long-term)

2. Industry Products

Table 2: Industry Products

Industry Segments	Industry Products
HVAC Systems Contracting	New construction HVAC systems installation
	Existing structure HVAC replacements
	HVAC maintenance and repairs (very important)
Sanitary Plumbing Systems and Heating Systems Contracting	New installations
	Maintenance and repairs (not necessity)
Solar Systems Contracting	New installations
	Maintenance and repairs (important)
Electrical Systems	Installation of new systems
	Maintenance and repairs (depending on the size of the project, but overall “not necessity”)

Different products in this industry are the different services that could be provided within each industry segment. The basic services provided are usually installation, maintenance and repair; however, the criticality of each kind of service differs from one segment to another.

B. Internal Analysis

1. Company Vision

Air-Tech aims to become one of the top providers of HVAC services in the near future, by 2020. Its vision is to become a leading provider of all MEP services in the Gulf region by 2030.

Alternative Strategic Objectives

1. Provide plumbing and heating services in addition to HVAC services
2. Provide full mechanical, electrical and plumbing (MEP) services

3. Create a separate maintenance firm to provide maintenance services to any HVAC project in the industry
4. Penetrate new market in the MENA region, mainly Dubai or Iraq, to widen the companies activities

Or any possible combination of the strategies mentioned.

2. *Mission and Values*

a. Mission

“Our mission is to provide high quality contracting services to create strategic value for our clients through our commitment to our customers to provide exemplary high quality engineering services, on-time, and exceeding customer expectations”.

b. Core Values

Family business representing family values especially:

- Trust
- Integrity
- Dedication
- Customer service and strong relationships with our clients
- Reliable services provider
- High quality services and products that are properly maintained
- Always follow through innovative products and latest technologies
- Environmentally and socially responsible

3. *Core Competencies*

a. Customer Service

Being a family firm with family values, focused on integrity and honesty, has helped Air-Tech gain its customers' trust. Moreover, since it is a small company with flexible operations, i.e. no strict regulations and policies, Air-Tech is able to dynamically cater to the customer's needs and provide maintenance services when necessary.

b. Quality

Air-Tech ensures only installing the highest quality products that provide reliability and performance. Moreover, Air-Tech follows up to ensure that these products are installed in an exceptionally detail oriented manner.

c. People

The company is keen on hiring the best engineering talent and ensures that they are trained thoroughly to excel at what they do. The company invests in coaching and training its employees to keep pushing them forward and developing their skills. Moreover, several trainings and internships are provided for university students at the company.

d. Engineering

With 20 years of industry experience, Air-Tech excels and specializes with HVAC contracting services. It provides the highest level of engineering skills tackling difficult projects that few other competitors are able to support in the market.

e. Cost Estimating

Air-Tech is able to provide accurate and cost-competitive bids in order to win a higher percentage of contracts. It is able to analyze best-fit products, system design and quality in an efficient manner.

Air-Tech is a leading firm in the HVAC industry for the commercial and residential sector due to its ability to manage projects properly, provide high level of technical skills and effectively maintain its products after installation. One of Air-Tech's most important core competencies is its ability to manufacture the required ducts in-house depending on the project requirements. This has reduced costs for Air-Tech since it wouldn't have to sub-contract this job to outside companies; in addition to making use of its raw material in an efficient manner to supply its projects. Many of Air-Tech's competitors sub-contract such jobs which results in reducing their profit margins.

4. Financial Analysis

Financial analysis of the company over the past 7 years was performed in order to assess how the company has been performing in the market and what are its strengths and weaknesses when it comes to growth.

Financial ratios were analyzed as follows:

Table 3: Air-Tech Financial Ratio Analysis

	2008	2009	2010	2011	2012	2013	2014
ROA = (NI/TA)	12.08%	21.14%	16.73%	16.49%	10.70%	8.73%	9.29%
ROE = (NI/TE)	24.85%	38.64%	30.81%	23.80%	16.16%	13.12%	13.96%
TATO =	35.23%	30.70%	42.44%	39.70%	59.90%	66.84%	62.24%

	2008	2009	2010	2011	2012	2013	2014
(TA/Sales)							
Profit Margin = (NI/Sales)	4.25%	6.49%	7.10%	6.55%	6.41%	5.84%	5.78%
Debt to Equity = (TL/TE)	105.73%	82.76%	84.15%	44.36%	50.93%	50.24%	50.24%
Total Debt Ratio = (TL/TA)	51.39%	45.28%	45.70%	30.73%	33.74%	33.44%	33.44%

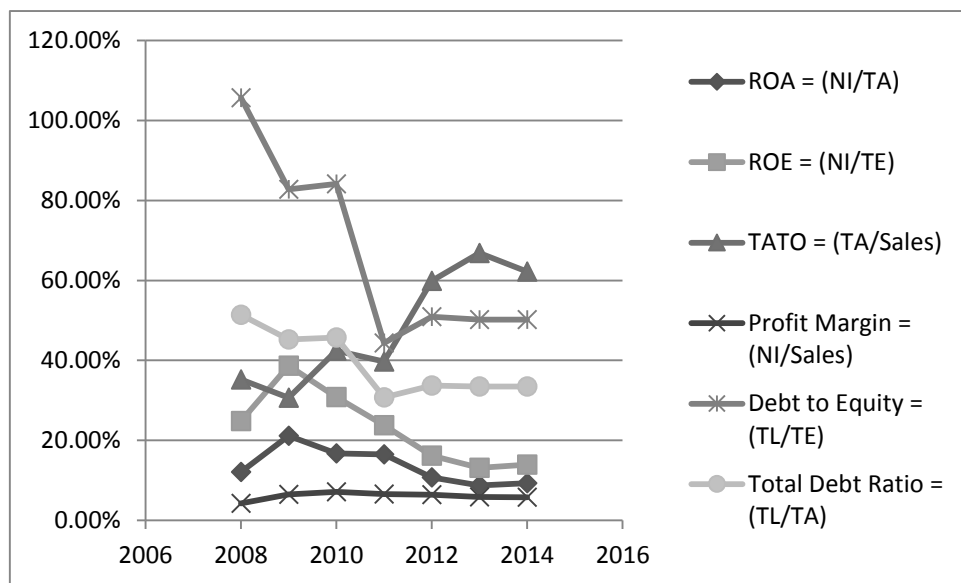


Figure 2: Financial Ratios

The calculated ratios give us an indicator of the company's performance in the market over the years from 2008 until 2014. Starting with the debt to equity ratio, the high debt-equity ratio in the earlier years shows aggressiveness in the company's behavior with respect to acquiring debt for financing. However, Air-Tech has reached a point of maturity by 2010 and has lowered its debt-equity ratio and as a result its aggressiveness in the market. Similarly, for the debt-ratio, it was high at first implicating higher financial risk but more aggressive growth. Later on, it is noticed that Air-Tech has been lowering its debt ratios significantly. The CEO has explained this behavior by saying that even though the company aspires to grow it intends to do so

incrementally with minimal required debt due to the volatile political and economic situations in Lebanon. Being a family business with family culture and values instilled in it, Air-Tech tends to opt away from debt-financing as much as possible. This is consistent with analyzing the GDP growth in Lebanon whereby it is assumed that the construction sector is influenced in accordance with the GDP growth in Lebanon. Analyzing the figures, GDP in Lebanon has decreased from being 9% in 2008 to almost 1.4% in 2012 (elaborated under PESTEL). This indicates slower growth in the Lebanese market and would implicate the lowered debt ratios due to the country situation.

Moreover, analyzing its debts, most of them are short-term debt in the form of payables to the suppliers, where the bank debt and long-term debts are extremely low. Currently, with banks, Air-Tech has as little as a short-term car loan and a long-term loan on an asset not worth more than \$40,000.

Looking at the ROA and ROE ratios, it can be noticed that the company was performing better in the previous years and has been generating less return on its asset and equity in the last two years. Still, it is able to increase its total asset turnover throughout the years, indicating that it is able to generate more sales per dollar value of its assets. This analysis would show that even though the company is able to generate more revenue from its assets, it is still struggling with its return on assets which could be due to the higher costs incurred on the company or due to less aggressive bidding in the market to increase its project's turnover. Then, analyzing the profit margin, it can be noticed that Air-Tech was able to maintain a good and consistent profit margin throughout the years (~5%). Even though higher profit margins are noticed in the years when the company was aggressively growing and taking on more debt.

Finally, to assess the overall performance of the company compounded annually over the past 7 years, the compounded annual growth rate was calculated with respect to net income and sales.

2008 to 2014	
CAGR (NI)	13.47%
CAGR (SALES)	7.81%

After generating the compounded annual growth rates, analysis of sales and net-income and their growth was performed. This analysis shows that even though Air-Tech has been through ups and downs, it was still able to maintain a compounded 13.47% in net-income and 7.81% growth in sales which are considered to be relatively good in the Lebanese market.

As a result, Air-Tech was able to slowly but sustainably grow since its launch in 1996. Although it has faced some down-turns during the turbulent country circumstances, Air-Tech was able to make its way through such situations, sustain itself, and grow itself since. It remains in a strong position in the market with good financial leverage to sustain its growth further.

However, considering the volatility of the Lebanese market, it is critical to analyze Air-Tech's sales that went through ups and downs depending on several different factors as shown in the below table.

Table 4: Sales Growth

	2008	2009	2010	2011	2012	2013	2014
Sales (1,000 USD)	1,712.6	2,599.9	2,739.2	3,565.9	2,340.1	2,400.8	2,688.9
Growth (%)	-	51.82%	5.36%	30.18%	-34.38%	2.60%	12.00%

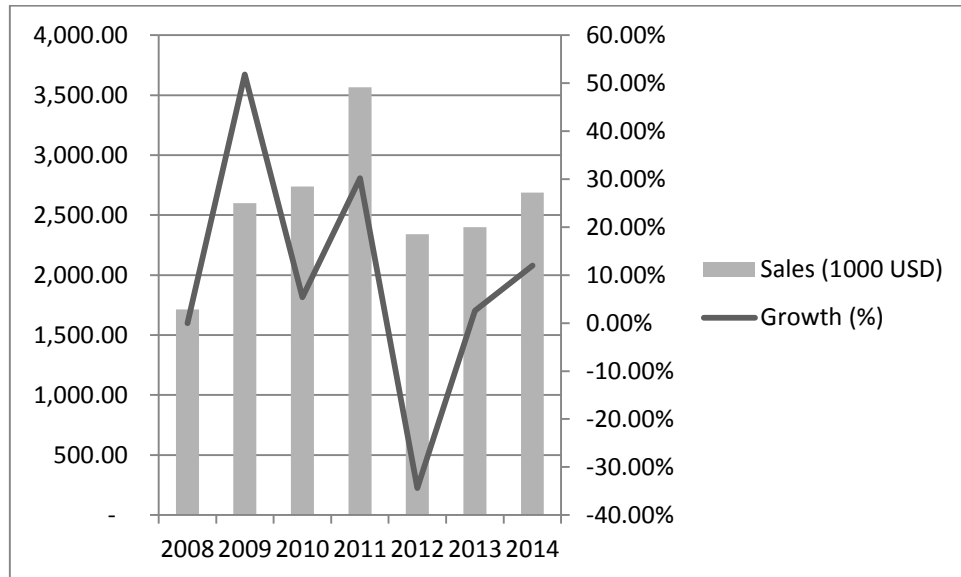


Figure 3: Air-Tech Sales Growth

Air-Tech sales have been heavily affected in 2012 especially due to the spillover from the Syrian civil war to Lebanon. Such events included 2012 summer spillover clashes between Sunni Muslim and Alawites in Tripoli and Beirut; in October, assassination of security chief officer Wissam Al Hassan took place; in December, there were several internal clashes in Tripoli (BBC News, 2015). This was the beginning of the spillover which left the country in shock before the companies were able to readapt and work around the turbulent situation to start growing again.

C. External Analysis

1. PESTEL Analysis

Air-Tech operates in the HVAC industry and plans to enter the full MEP contracting industry in Lebanon. As a result, it is very critical to understand the external factors that would impact Air-Tech's strategies and results and what factors act as major influences that need to be considered.

a. Political Factors

During the past 40 years, Lebanon has faced many ups and downs due to continuous turmoil events. It is considered to be an intriguing complex country with a long history of civil and sectarian wars with a heavy weight of foreign intervention in its internal affairs (Forum, 2014). This list of hazardous events includes the long and devastating civil war from 1975 to 1990, the major Lebanon-Israeli conflicts and the 2006 war, the assassination of key public figures such as the Lebanese Prime Minister Mr. Rafic Hariri in 2005 and many others, and the random explosions that were unidentified and targeting the Lebanese people. Lebanon still faces an uncertain future due to the continuing uprisings in Syria, the closest country to Lebanon covering both its North and East borders. These events have triggered an increased presence of Al-Qaeda forces in Lebanon which has further threatened Lebanon's security and stability (Dakroub, 2014). Lebanon's former ambassador to the US Abdallah Bou Habib told the daily star that "The political, economic and security situation was badly affected by the war in Syria because we got involved in the war there politically and militarily." Lebanon is currently not able to dissociate itself from the neighboring turmoil and thus so long as the situation in Syria remains, investors would think twice before considering initiating investments in Lebanon. Despite this seemingly dark and turbulent environment that Lebanon is in, there is hope for recovery where for instance AUB professor Khashan does not think that the situation would get any worse. Regional and international foreign policies manage and control the situation in Lebanon and they have no intention in allowing it to explode (Dakroub, 2014).

Understanding the local environment, so far, Lebanon has been without any presidential leadership for almost a year, where in November 2014, the parliament

extended their term until 2017. This situation has increased the fears for foreign investors and made Lebanon a land where strong entities take control over the weak. In addition, sectarianism remains conspicuous in Lebanon and there are big disparities between the rich and the poor within different regions (Forum, 2014).

All these political factors have played a major role in influencing the HVAC and MEP segments in Lebanon over the years. Since these sectors are greatly related to the construction segment (in which they comprise around 20% to 40% of this sector), the analysis will be made in context to influences on the construction industry implicated by the on-going turbulence. Recent studies show that the construction industry is considered to be amongst the most resilient and auspicious industries despite all the uncertainties in the Lebanese political situation (ifpinfo, 2014). This industry totaled around 9 billion USD in 2013 and shows positive future prospects for growth especially with the increased level of expertise amongst the Lebanese developers (ifpinfo, 2014). Since over 80% of the companies in Lebanon are family businesses, this has helped local businesses to sustain themselves and work around the turmoil circumstances in the country. Since such companies are usually small or medium sized businesses, they are able to quickly and dynamically adapt to changes in the environment in which they operate.

b. Economic Factors

As mentioned above, the Lebanese economy is a resilient one that was able to withstand civil wars, sectarian clashes, and Israeli wars (Economy Watch, 2010). Despite these events, the Lebanese GDP was able to grow by 9% during the 2008 financial crisis (Economy Watch, 2010).

Table 5: Lebanon GDP Growth, Source: (Bertelsmann Stiftung, 2014)

Economic Indicators	2009	2010	2011	2012
GDP (Million \$)	34,650.7	37,124.4	40,094.3	42,945.3
GDP Growth (%)	8.5	7.0	3.0	1.4

However, analyzing more recent figures with respect to GDP growth in the past 6 years, the influence of the Syrian crisis in the past three to four years is evident in its negative impact on Lebanon's GDP growth rate. As of 2014, the Lebanese people have a 14,609.9 USD GDP per capita (Bertelsmann Stiftung, 2014), expected to rise to 19,100 USD by the year 2015 (Economy Watch, 2010). So it can be noticed that even though the economic situation is under threat and facing difficulties in growth, the Lebanese economy is still considered to be a somewhat stable and solid one that can be considered among the strongest economies in the region (Economy Watch, 2010). In 2010, the unemployment rate was estimated around 9.2% with the Lebanese labor force market consisting of over 1.481 million employees, of which more than 1 million are foreign workers (Economy Watch, 2010). However, the recent outbursts of violence in Syria have pushed over 1 million refugees to flee to Lebanon (Dakroub, 2014). This has impacted the Lebanese economy heavily with respect to unemployment levels, disposable incomes and the average living standards.

It is important to note the key role that the Lebanese expats play in creating international connections, financing foreign investments, providing their technological know-how in different industries, and contributing as tourists to the economy; in total contributing to almost 20% of the Lebanese GDP (Economy Watch, 2010).

The strongest industries in the Lebanese economy are the Tourism, Financial and Construction sectors. The construction sector contributes around 15% to GDP in Lebanon (Bertelsmann Stiftung, 2014). Services, especially those concerning tourism

and financial services, account for 75% to 80% of the GDP (Bertelsmann Stiftung, 2014). Even though tourism was stricken due to the recent political turmoil, it remains one of the most prominent key drivers of the Lebanese economy. Financial services, however, such as the banking services, are the strongest and most stable sector in the Lebanese economy that are considered to be the main catalyst for economic growth. This is due to the strict regulations that they enforce which provides them with a level of protection against the political instabilities (Economy Watch, 2010).

Table 6: Construction Permit Growth (Orders of Engineers, 2013)

Construction Sector	2008	2009	2010	2011	2012	2013	2014 (Q1)
Permits Growth (%)	32.59%	9.63%	18.91%	1.96%	0.09%	-7.55%	18.00%
Area Growth (%)	66.23%	-11.30%	25.18%	-7.51%	-10.89%	-11.02%	N/A

Family businesses in Lebanon have a strong position and currently cover over 80% of the Lebanese work force (Halawi, 2014). The construction industry, which is one of the most resilient industries in Lebanon that foresees future growth, directly influences the MEP industry. Even though it has gone through ups and downs due to the country environment, the construction sector is considered one of the strongest industries in Lebanon. The number of construction permits has increased by 18% during the first quarter of 2014 from the same quarter in 2013 indicating an improved level of construction activity (ifpinfo, 2014). The MEP industry is also impacted with the touristic sector, such as increased Hotels, Resorts or Restaurants; as well as the financial sector such as providing loans for the private sector, building new Branches, Offices, etc...

Other factors also affect the Lebanese market such as foreign investments and interactions between private parties are not restricted by the government, taxes, tariffs, or policies, where Lebanon is a free market economy (Angie, 2012). In addition,

Lebanon has one of the modest international tax rates of only 15% for enterprises and 20% for individuals (Angie, 2012). Corruption and complex customs remain one of the most recurring issues in the Lebanese economy (Angie, 2012) .

c. Social and Cultural Forces

Lebanon has a score of 0.739, a medium to high score, on the UNDP Human Development Index for 2011, placing it well ahead of other non-oil Middle Eastern countries such as Egypt, Tunisia, or Jordan (Bertelsmann Stiftung, 2014). Lebanese people tend to aspire towards the finest education, where in 2010, the total spending on education, whether public or private, contributed to 13% of the GDP (Bertelsmann Stiftung, 2014). As such, the overall population has a high literacy rate of around 88% implicating a fairly educated labor market. But due to the recent increasing number of refugees (over 1.5 million Syrian and existing 300,000 Palestinians), this resulted with an expanded cheaper and overall less educated workforce. Both the Syrian and the Palestinian refugees are more willing to work at lower wages than their Lebanese counterparts which has affected the Lebanese employment rates and rate of emigration from the country. It is important to note that although the rate of emigration for the skilled Lebanese individuals is high due to the economic and political insecurities, but due to the high literacy rate, there remains a fair level of skilled workforce.

At the same, there is a trend of increased consumer awareness when it comes to shifting to environmentally friendly and energy efficient systems. On one hand consumers would be catering for the environment and desperately saving on their income on the other hand, i.e. a win-win situation.

Family businesses in Lebanon are more family focused and oriented; whereby employees are considered as family members, even though they need not be family. In general, their needs are catered for and they are constantly provided with incentives, aid when necessary and small loans to support them. Their relationships are close with each other and they share similar core values which aids in creating a peaceful and coherent teamwork amongst them. This attitude also helps in showcasing the company's values to its clients and its suppliers.

d. Technological Factors

Due to their limited disposable income, the Lebanese have become more and more interested in energy efficient and solar technologies. This is why it is becoming more important for companies to focus on latest innovative energy efficient technologies. Therefore, it is becoming critical for companies to include energy efficient products based on the rising customer demand. This technology is useful to save on the cost of electrical bills for heating domestic water usage. Other technologies are environmental friendly technologies that do not emit gases that are toxic to the ozone layer.

e. Environmental Analysis

As mentioned above, the increased customer awareness has driven companies to address environment issues. As a result of all this awareness, more companies have been recently committing to shifting their products to more environmentally friendly products which use advanced technologies that emit less or no R22 heat emissions that are detrimental to the Ozone layer; in addition to solar technologies.

Research shows that environmentally friendly HVAC systems result in around 3.5% to 7% reduction in the energy consumption of the building (Aircuity, 2011). Solar heating for domestic water usage can save nearly 90% of the customer's water heating bill which corresponds to almost 25% of the total electricity bill of a typical Lebanese home (UNDP, LCEC, & GEF, 2012).

f. Legal & Regulatory Analysis

Companies in the MEP industry usually incur an annual loss of around 3% to 5% due to bad-debt that cannot be collected. Therefore, they often opt for a settlement for such debt to avoid going through complicated and long legislative processes that would most likely not bring back the lost income.

In addition, the Lebanese government has been incentivizing environmentally friendly technologies to help sustain the environment in Lebanon. It is providing a 20% rebate for customers and enterprises upon purchase and installation of energy efficient systems. Also, a \$200 grant is offered by the Ministry of Energy and Water for solar water heaters installed through national financing, i.e. incentivized loans (UNDP, LCEC, & GEF, 2012). This has helped increase customer demand for environmentally and cost-efficient technologies. As a result, many companies aim to push for solar technologies in order to maximize profits and make use of government incentives.

g. PESTEL Conclusion

Companies such as Air-Tech have been resilient and able to sustain themselves in a politically unstable and turmoil environment due to their small size and strength of the construction industry in Lebanon. This instability has led many companies,

including Air-Tech, to think of possible penetration to new regional markets so as to sustain their businesses further. In addition, it has caused them to become resistant to developing local long-term strategies and re-investments for further growth and development due to the consistent threats of war and terrorism in the country.

Considering the technological, environmental and legal factors together, then the company needs to address increased demand with respect to environmentally friendly and cost-efficient technologies given the developing technologies, the increased consumer awareness, the positive impact on the environment and the government incentives provided. As a result, Air-Tech plans to enter into such technologies to become a more socially aware and socially responsible corporation. It needs to expand its products to include energy efficient products based on this rising demand; however, it has yet to enter the market of solar energy and heating.

The country's economic situation and diverse labor force has pushed Air-Tech to rely on skilled Lebanese labor force for its technical work and cheaper labor force (possible less educated Lebanese, Syrian or Palestinian laborers) for the less technical assistantship work. Despite this, finding and hiring employees with the right set of skills is a continually challenging task in the Lebanese environment. Therefore the Lebanese economy shows a kind of sustainability and expected growth where there remains ample opportunity for growth for Air-Tech in the Lebanese market.

2. Customer Analysis

The MEP industry customers can be divided into several categories with respect to their size, type of work and with respect to the type of maintenance service

they would expect for these electro-mechanical services (especially for the HVAC systems).

As per industry experts, the largest customer segment in this industry is the developers segment that comprises more than 60% of the customers. These customers are usually well-structured large corporations with highly educated staff and technical consultants. They require continuous thorough and meticulous follow-up. Most of these customers usually expect high quality maintenance services and instant support upon needing any repairs in which they are high urgency customers. Developers are very critical clients in which they are characterized by high continuity. They always have major upcoming new projects in the country ranging in excess of \$250,000.

Another large customer segment in this industry is the enterprises that comprise almost 25% of the industry's customers. These customers can be international franchises, multinational or local banks, or even local or multinational corporations. They would require new or replacement of mechanical services for their offices, shops, branches, restaurants, etc... Most of these customers are also considered to be high-urgency customer where their work environment depends on the mechanical and ventilation services provided. Maintenance support for such customers is continuously needed to be provided in a regular and timely manner; and any repairs need to be provided in a very tight deadline so as not to impact the on-going business. Contracts for these customers usually range between \$40,000 and \$250,000.

Finally, there are the individual customers who require new installation or repair services for their homes, small offices, apartments, villas, residences, etc... Those are normally one-time customers and may have at most two or three projects. Once the

installation is finalized at their residence, usually these individuals do not require scheduled maintenance visits or high urgency on-going support. They would only require repair services upon facing critical issues with the installed products; hence, these customers can be considered as mostly low urgency customers. Contracts for these customers normally range lower than \$40,000.

Table 7: Industry Customer Segments

Customer Segment	Contract Size	Continuity	Segment Size
Developers	250,000+	High (New projects)	60%
Enterprises	40,000\$-250,000\$	High (New offices, branches, locations)	25%
Individuals	<40,000\$	Low	15%

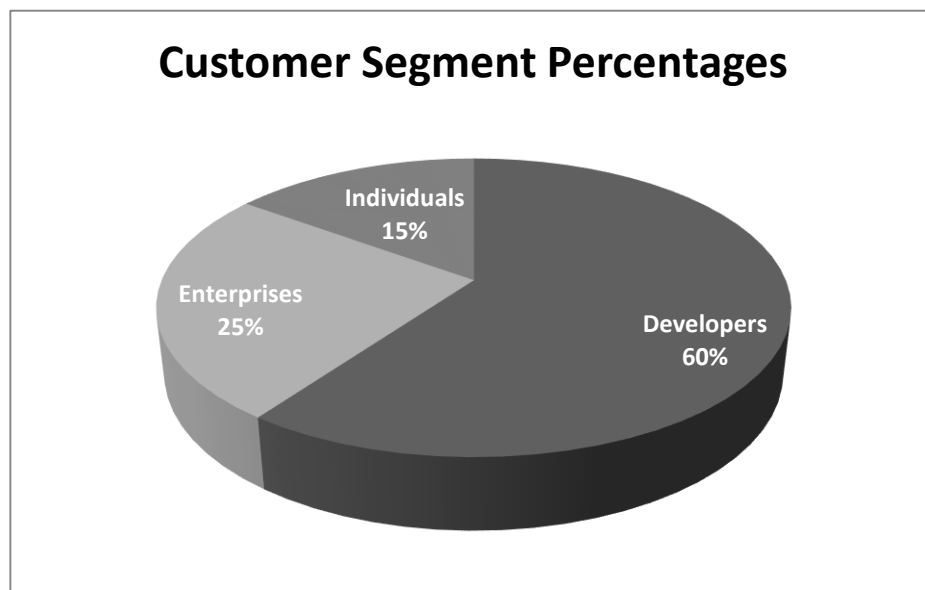


Figure 4: Industry Customer Segments (Percentages)

In order to properly differentiate between the different types of maintenance services and support that these customers would require, a segmentation and detailed description of each type of maintenance requirement is needed.

a. Focused Customer Analysis for Maintenance

For a maintenance firm, focus needs to be on different customer segments which require maintenance services differently. These customers can be segmented based on the urgency and the extent to which the customer needs to be supported. Moreover, it is important to note that the level of urgency depends on the season. For instance, in hotter seasons, May through September, the level of urgency for each of the customer categories increases and the criticality of ensuring proper maintenance and functionality increases. In order to provide high quality maintenance and repair service, all customers' needs must be attended to throughout the year. The differentiation is on the window of tolerance of time-to-repair that the customer usually expects or demands which is also directly related to the premium price the customer is willing to pay for higher service. Customers with low urgency would pay a minimal fee for a reasonable time-to-repair; however, highly urgent requests would be supported within a short period, for example in one hour, but it comes at a premium cost that not all customers are willing to pay.

i. High Urgency Customers

These are the customers that usually need the ventilation and air-conditioning system to be working on the clock, either due to having their own clients or due to critical on-going work. Contracts with these customers are specialized to mention that the service will be ensured to be provided within a maximum of few hours. Any delay in providing the service would jeopardize the relationship with this customer and impact their image with their clients. Examples of these customers would include:

Restaurants/Cafés: there are two aspects for ventilation and air-conditioning at a restaurant, the kitchen and the dining area. A problem with the ventilation system

would inhibit the kitchen from providing the meals regularly. Similarly, a problem with the dining area would result with negative feedback from the customers which would impact the restaurant's image. Both areas need to be functional at all times and any issue that occurs would heavily impact the restaurant's image and its clients.

Banks/Branches: branches require air-conditioning and ventilation at all times to ensure that their customers are satisfied with their service. In addition, some banks require special ventilation and cooling mechanisms for their issuance machines used to issue cards. Banks have their image above everything else and would require nothing less than on-time service in case of any issues. Moreover, banks rely on yearly scheduled visits to avoid any unexpected issues.

Industrial Customers: such as shops, these shops also have client interaction and sometimes critical material which requires a working ventilation and cooling system at all times. Shops serving chocolate material are one example, where contracts need to include restrictions ensuring that maintenance and repair service can be provided for these customers within a very tight deadline to ensure that their material remains intact and their clients and image are not impacted.

ii. Medium Urgency Customers

These are mainly the customers at high-end towers or buildings who have implemented high-maintenance systems such as the new VRV systems. Such systems are new in the market, centralized, and require regular skilled maintenance. Unspecialized companies would not be able to support such customers. They would be offered a bulk contract once the project with the developers is complete to sign-off for a building maintenance contract. Regular preventive maintenance is expected to be

scheduled; however, the time to service these customers is not as tight and critical as it is to serve the initial market segment. For which these customers expect to pay a reasonable amount for a tolerable time to repair, for example expected time to repair an issue with the HVAC system is no more than 24 hours. The list of possible issues and attributed delays should be detailed in the contract.

iii. Low Urgency Customers

These are the customers at regular households who face an issue with their systems. Such customers do not require yearly or constant maintenance services. They may request repair services upon facing an issue with the installed systems. Preventive contracts with such customers are usually cheaper and have a more flexible time-to-repair restriction, for instance allowing up to 72 hours for fixing the issues depending on the contract.

b. Consolidated Result

No matter what kind of maintenance contract that is signed with the customers, it is in the end setting the customer's expectations. A customer that pays a premium for highly urgent service would request to be served in that manner. Similarly, even low urgency customers need to be attended to within the specified deadline and time restriction in the contract so as to maintain the company's reputation and strengthen the customers' relationships with the company.

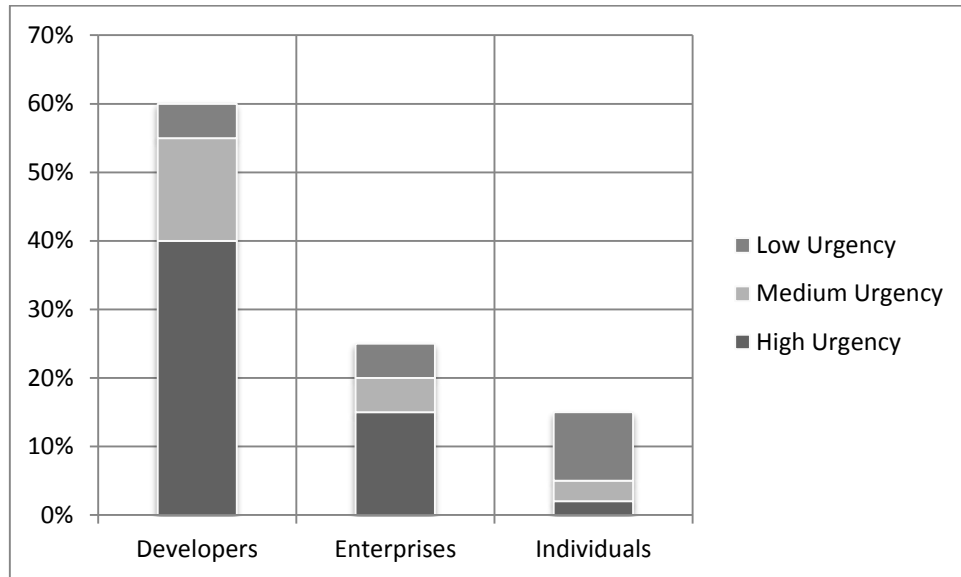


Figure 5: Consolidated Industry Customers (with Maintenance)

Based on the above results, it is therefore important for Air-Tech to focus its strategy to mainly target the developers and the enterprises. These customers usually have long-lasting relationships and provide recurring work. Moreover, developers provide a window of opportunity for the company to push for maintenance services at their premises once the development is complete. At the same time, enterprises usually require consistent maintenance services and are more aware of the criticality of preventive maintenance thus serving as promising installation and maintenance clients at the same time. Air-Tech currently has some human resource constraints with respect to handling large projects, but upon implementing its growth strategy, it needs to be extremely targeted with its customer selection and the projects that it would bid on.

3. *Customer Acquisition and Retention*

Air-Tech has relied significantly on customer referrals, word of mouth and reputation for new customer acquisitions. This is due to its strong relationships with its customers; especially the developers who usually have new projects developing

frequently. For such customers, Air-Tech focuses on maintaining these relationships by providing regular on-time maintenance services or repair requests whenever requested. This is in addition to the high performance that is expected from the products once installed. This resonates with the mentioned bank or restaurants' requirement for high quality ventilation systems and its risk on their reputation. In which scenario, if Air-Tech is able to maintain a positive reputation through high quality installations and services, then this would help retain its existing customers as well as refer it to other new customers through word of mouth and customer relationships.

In addition, Air-Tech is involved in a frequent bidding process in order to acquire new customers and work on new projects for recurring customers. Bids differ between big projects (building costing above \$150,000) and small and medium projects. Air-Tech on average is involved with bids for an average 10 big projects per year; three or four of these requests are from existing or recurrent customers. Out of 10 bids, Air-Tech is normally able to acquire around 6 or 7 projects (60%). Bidding is an easier process with existing clients which makes the process more of a negotiation than with new clients. So, Air-Tech is more-so able to acquire around 3 or 4 big projects annually from new customers through its bidding process. For small and medium sized projects (from \$15,000 to \$150,000), Air-Tech normally bids on around 40 to 50 projects annually of which it is able to win almost 35 projects (almost 70%). 60% of these clients are recurring clients with new projects, while the rest are bids on new projects for new clients.

In order to successfully win the bids, Air-Tech has to provide special discounts and efficient cost-estimations so it can compete with other companies. It is important to note that Air-Tech did not yet push the level of bidding due to its limited human

resources, whereby only the CEO or the general manager are involved in the bidding process so far. It means to maintain a reasonable amount of projects so as not to overload its current human capabilities. On average, Air-Tech usually performs around 5 or 6 big projects and 30 to 40 small and medium sized projects annually depending on the number of bids and new projects it was able to win. Air-Tech means to expand its internal capabilities, human resources, product breadth and to be able to provide maintenance services before starting to push through into more competitive waters with full MEP services and while acquiring the maintenance contracts for the projects as well. The mentioned figures are consolidated in the below table.

Table 8: Project Bids and Contracts Won

Project Type	Approx. Budget	No. Bids Existing clients	No. Bids New clients	Total Bids	# Bids won From New Clients	# Bids won from existing clients	Total Won	% Won
Large Projects	> \$150,000	3	7	10	3	3	6	60%
Small & Medium Projects	<= \$150,000	30	20	50	14	21	35	70%

4. Competitor Analysis

Having been in the HVAC industry for 20 years now, Air-Tech has achieved a solid competitive position in this industry. Air-Tech is considered to be a leading firm when it comes to the commercial and residential segment of the HVAC industry, as it was able to establish and to maintain strong relationships with most of its clients. Even though there are a lot of competitors in this industry, yet they do not pose a direct threat for Air-Tech due to its specialization and strong positioning. Most of the competitors in the HVAC industry are established corporations, whether small or large, and they have

a minimum level of skilled engineering knowledge in order to exist in this industry. In order to further develop its business, Air-Tech needs to expand its market beyond the HVAC industry without inducing any competitor retaliation. In the process, Air-Tech needs to carefully assess its competitors' skills and ensure maintaining its core competencies within the new segments it targets to enter.

To do so, a full competitive assessment in the remaining industry segments needs to be performed. Analyzing the plumbing and heating industry segments, it is critical to identify two different types of service providers. There are the well established companies that offer both mechanical and plumbing and heating services as a package; on the other hand, there are the experienced plumbers who take on individual contracts and usually provide services to their customers with lower costs and less technical skills; in addition to lacking necessary project management skills to follow through large projects. As a result, to enter this industry, Air-Tech needs to position itself competing against the skilled organizations, keeping in mind that around 40% of the companies provide full mechanical services and 20% provide full MEP services (Appendix A). As a result, if Air-Tech plans to enter into the plumbing and heating industry segment, it needs to enter it by providing full mechanical contracts. In this manner an analysis for the well-known competitors in this industry strengths and weaknesses was performed.

Table 9: Industry Competitors

Competitors	Khater Engineering And Trading Sarl	Genec S.A.R.L.	EM Tech	CLIM – Climate Technologies	Sabeco
Established	1960	1996	2001	1996	1982
Size	Corporate	SME	Corporate	Medium-Large	Large

Competitors	Khater Engineering And Trading Sarl	Genec S.A.R.L.	EM Tech	CLIM – Climate Technologies	Sabeco
Services	Heating, Ventilation and Air Conditioning. Electronic Controls and Building Management Systems. Thermal Energy Storage and Ice Storage. Metering Solutions. Plumbing and Drainage.	HVAC Services Maintenance Services Ducting Services	Specialized in the design, management and execution of Mechanical, Electrical & Plumbing (MEP) works Steel Tankers, containers Energy power generators...	Specialized in the supply and installation of electrical, heating, ventilation, air conditioning and plumbing works for medium and large-scale construction projects Recently split to have specialized maintenance firm	Heating, Cooling, Plumbing, Ventilation, Installation, Maintenance, Air-conditioning, Electrical contracting, mechanical contracting
Dealerships / Product Lines	HITACHI - Europe & Japan: AIR CONDITIONING SYSTEMS. SIEMENS BUILDING TECHNOLOGIES - Switzerland: Building Management System, Building Automation & HVAC Products, Energy Metering & Cost Allocation. CIAT - France: Air Handling-Ventilation	No exclusive dealerships, Products include: Carrier Samsung LG Hitachi Fuji Mitsubishi Samsung ...	No exclusive dealerships, products include: Air-conditioning Dealer for: Carrier, TRANE, Daikin, Carrier, LG , General ... Heating Dealer for: Dietrich, Chappee, Ideal Standard, Etc...	No exclusive dealerships, works with different HVAC and electrical brands including: Carrier, LG, Samsung, General Electric, Siemens, etc...	No exclusive dealerships, works with different HVAC and electrical brands

Competitors	Khater Engineering And Trading Sarl	Genec S.A.R.L.	EM Tech	CLIM – Climate Technologies	Sabeco
Number of Projects	118 Local Projects 27 Maintenance Projects 23 International Projects	80 Local Projects (around 15 small residential projects)	41 major local projects 25 major international projects	35 major local projects 2 international projects	Major projects for Saudi OGER Many international
Customers	Villas, Hospitals, Restaurants, Hotels, Residential, Buildings, Banks, Clubs, Schools, Universities, Casinos, Councils, Malls, Airports...	Hotels, Offices, Villas, Shops, Mosques, Churches, Residential Buildings, Schools, Banks	Hotels, Hospitals, Schools, Shops, Residential, Banks, Universities, Industrial, Mosque, Environmental	Resorts, Malls, Hospitals, Industrial, Gyms, Universities, Residential, Banks, Restaurants	Villas, Hospitals, Mosques, Plants, Hotels, Schools, Universities, Residential
Locations	Lebanon, Middle East and Gulf Countries	Lebanon	Lebanon, Nigeria, Algeria Operated Projects in Erbil, Dubai, Syria, Jordan, Turkey, Saudi	Lebanon and in the process of opening sister company in Algeria and Turkmenistan	Egypt, Saudi Arabia, Lebanon
Strengths	Has one of the strongest exclusive dealerships of high quality HVAC products in Lebanon Strong technical skills Present in MENA region Good reputation High quality services	Has strong branding strategy where it puts a lot of effort into brand recognition	Strong financial resources Strong technical Skills Fast growth, aggressive penetration ISO certified quality control Good reputation	Has had steady growth and proved itself in the market reaping good reputation Strong technical skills Strong customer relationship	International Presence Good reputation Strong relationships with large clients Strong technical skills

Competitors	Khater Engineering And Trading Sarl	Genec S.A.R.L.	EM Tech	CLIM – Climate Technologies	Sabeco
Weaknesses	Very expensive services Has a lot of on-going projects ⇔ overloaded	Most of the projects are residential oriented Cannot handle very large projects	Very expensive services Not enough man-power to enter multiple projects	Very expensive services	Still does not have a very strong presence in Lebanon, Most clients are abroad

Many of the competitors in the industry are handling multiple projects simultaneously; however, no company significantly dominates the industry. Since the market is not yet saturated and due to the competitors' resource stretch, they more likely will not aggressively retaliate against Air-Tech's entry into the full mechanical industry segment. Focusing on the Lebanese market, most of the large corporations have expanded regionally which has somehow diluted their competitiveness in the Lebanese industry. This is the same scenario that Air-Tech might encounter upon planning to expand internationally.

5. Industry Analysis and Maturity

The MEP industry is a core aspect of the construction industry in Lebanon and hence it is extremely correlated with it. Despite the recent political instabilities and turmoil happening in Lebanon, the construction industry remains one of the most stable and reliable industries with constant growth. As a result, demand for the MEP services has been steady and slowly growing throughout the past years. Moreover, due to the new energy efficient technologies, there was increased demand for such new MEP systems since they would help households and businesses to control their costs. This is very critical in a country with very limited spending per-capita.

Assessment for all the industry segments is needed to analyze the maturity of each segment and how Air-Tech should operate and plan its strategy for each segment. The HVAC segment that Air-Tech currently operates in is considered to be a late-growing industry due to the overall slow growth of the industry with continuous innovations and energy-efficient technologies that are being developed. The plumbing segment is more mature with less aggressive developments in it. At the same time, the heating segment for domestic water usage can be considered to be a growing industry due to the constant new innovations and on-going growing technologies. A summary analysis of each segment of the mechanical and electrical industries in Lebanon is listed in the table below.

Table 10: Industry Maturity by Segment

Industry Segment/ Indicators	HVAC	Plumbing	Water Heat by Solar Systems	Overall mechanical	Electrical Systems
Growth Rate	Early Mature	Mature	Growth	Late-Growth	Mature (Conventional)
Growth Potential	Well-known > Present Volume	Well-known > Present Volume	Uncertain >> Present Volume	> Present Volume	Well-known > Present Volume
Product line breadth	New and energy-efficient products offered in addition to conventional products	Renewal (although new systems and techniques are being developed, overall is mature)	Proliferating (growing)	A lot of product are renewing and new products are being introduced	New technologies resulted in intelligent systems such as EIB and BMS systems)

Industry Segment/ Indicators	HVAC	Plumbing	Water Heat by Solar Systems	Overall mechanical	Electrical Systems
Rate of technology	Some products are renewed while new products are being offered	Product lines are being renewed with new technology	Product line refinement and extension	Advanced technology helps introduction of new products and renewal of existing products	Product lines are being renewed with new technology
Industry Competitiveness	High	Medium	Low	High	Depending
Customer Loyalty	High	Medium	Medium	Medium-High	Medium-High
Supplier Loyalty	High	Medium	High	Overall High	Medium
Importance of Cost	High	High	High	High	High
Ease of Entry	Difficult	Moderate	Easy	Depends on segment	Difficult
Overall Status	Early Mature	Mature	Growth	Late-growth	Mature
Industry Status	On the overall, the electro-mechanical industry can be considered to be a mature industry				

On the overall, the mechanical contracting industry can be considered as a late-growth industry where new technologies and systems remain developing in most of its segments. Because Air-Tech currently holds a strong position in the HVAC industry segment, which is the bulk of the mechanical contracting segment, it thus holds good potential to expand its industry coverage and position itself firmly in the mechanical industry and eventually into the full MEP industry, a mature industry on the overall.

Moreover, since Air-Tech has already established a good position in the late-growing HVAC market where it is difficult for new firms to enter with high customer

loyalty, then this serves as a good industry market for Air-Tech to provide its maintenance services to its local and to new customers.

6. *Industry Attractiveness – Porter’s Five Forces*

In order to analyze which strategic option is best and how will the company go about the required implementation, the strengths and weaknesses of the key industry forces that affect the company’s operations in this industry need to be assessed. These forces are Michael Porter’s five forces which include the bargaining power of suppliers, bargaining power of buyers, industry rivalry, threats of substitutes and threats of new entrants (Porter M. E., 2008). Based on this assessment, the company would be able to prioritize its options and assess in what manner it would need to go about implementing its strategic choice for every industry segment. This would include identifying which forces pose a threat to the company, which forces impose high barriers to entry, which segments have the most intense rivalry and which segments are the easiest to penetrate.

a. Bargaining Power of Suppliers

i. Air-Conditioning and Ventilation Systems Segment

Suppliers in the HVAC industry normally prefer to establish long-term relationships with contracting companies and often provide them with dealerships for their products to ensure strong relationships and more installations for their products in the industry. When companies establish good relationships with the suppliers they diminish their bargaining power and they would be able to purchase the products at competitive prices which would help them compete in the market. Such relationships are built through working with the company for long years and through building mutual

respect between the company and the supplier. When such a relationship is established, suppliers start to provide companies with lines of credit for frequent products with high turnover to help increase their market share. Even though there is significant rivalry between these suppliers whether they are selling directly to the market, or to retailers or to contracting companies, they still maintain a strong position in the market.

ii. Plumbing and Heating Systems Segment

The plumbing segment is a more mature industry with a relatively higher demand than the HVAC segment. As a result, suppliers for this segment have a stronger bargaining power than in other segments. The same supplier usually provides both plumbing and heating services for contractors or individual consumers. Recently, the competition between these suppliers has intensified due to their increased abundance which has slightly weakened their bargaining power. When buying from these suppliers, companies usually have a higher bargaining power with them than individual plumbers; since the companies sign-up for long contractual agreements which would incur consistent revenue upon the suppliers.

iii. Solar Heating for Domestic Usage Systems Segment

Mr. Elie Kanan from Kanaan Trading Company mentioned that “The solar water heating market has risen significantly to become one of the leading markets in Lebanon” (UNDP, LCEC, & GEF, 2012). As a result, the suppliers for these technologies have been incrementally increasing throughout the years. At this point in time, since these suppliers are still limited, they maintain a relatively strong bargaining power against companies in Lebanon.

iv. Electrical Systems Industry

The electrical industry is also considered to be a mature industry with a strong base of suppliers from all over the world. These suppliers face a lot of competition amongst themselves, but at the same time, there is significant demand for their products due to the abundance of companies providing electrical systems. As a result, even though they compete against each other, suppliers of electrical systems still maintain a slightly strong bargaining power against companies purchasing from them.

b. Bargaining Power of Buyers

Since industry under study is a service industry, whether mechanical or electrical services, the customer always needs to be put first. In addition, considering the turmoil environment of Lebanon, fewer customers are able to continue purchasing such services which gives them even stronger bargaining power in that aspect. It is very critical for companies to build strong and healthy long-term relationships with these customers, usually enterprises and developers, in order to maintain working with them whether through providing them with maintenance services or through working on their new and recurring projects. Buyer demand and bargaining power slightly differs amongst the different industry segments, and will be analyzed separately.

i. Air-Conditioning and Ventilation Systems Segment

Recently established construction standards have made properly installed ventilation systems a necessity for new sites. Despite the political setbacks, the construction industry remains one of the most promising and attractive industries in Lebanon's resilient economy (ifpinfo, 2014); therefore, so the demand for proper ventilation systems remains strong. At the same time, considering the mild climate of

Lebanon's geography, air-conditioning remains a plus, especially in projects outside major cities. It is still a necessity though for large residential buildings, offices, shops, or branches... However, due to the existing competition, customers maintain a strong bargaining power when it comes to HVAC services.

ii. Plumbing Systems Segment

The plumbing segment is a core segment of any new construction project that would be initiated; hence the demand for such services is very high. Some companies opt for cheaper services such as hiring individual plumbers to handle these kinds of services. However, most of the developers for large construction projects would prefer to sign-up for one contract covering all mechanical services; which is why companies that provide full mechanical services face a stronger bargaining power from developers especially for large projects that impose a higher cost on the customers thus driving them to negotiate further.

iii. Heating (Radiators) Segment

Heaters and radiators are considered a luxury in a country with mild geographic climate such as Lebanon. Demand for such services usually comes from high-altitude areas where the weather is more intense. Since there is a limited number of clients and a limited number of contractors providing such services, this industry segment remains weak. Customers have a relatively strong bargaining power especially in warmer climates since they can opt out installing these services if the country situation was unstable or if they were not able to get a satisfactory deal.

iv. Solar Heating Systems Segment

Nowadays, many customers are becoming more socially aware and as a result have been increasingly interested with solar heating technologies being installed at their premises. Also considering the tight economic situations that customers face in Lebanon, they are shifting towards using energy-saving technologies whenever they can. These technologies remain optional which gives the customers a strong bargaining position.

At the same time, due to the increasing demand, limited number of existing contractors and the incentives that the government is providing for these technologies, the customers have become encouraged to use this technology and the contractors have better positioned themselves to bargain with these products.

v. Electrical systems

As the electrical segment is very mature with many strong competitors, customers have a strong bargaining power in this segment, even though these services are critical to all individuals, companies, and developers.

c. Industry Rivalry

When considering the competitors in the industry, it is critical to note that individual service providers whether those that handle heating or sanitary contracts will not be considered as competitors. Such individuals usually provide their services at comparatively much lower costs than any other engineering company can provide. They provide lower quality services and often do not have engineering or project management skills to follow through with large projects. Also, they do not have any operation or over-head costs and as a result can provide much cheaper services. Such providers will

be excluded from comparison since they are not relevant. Companies do not aim and cannot compete with them. Such companies provide skilled professional mechanical engineering services and compete in the bidding process in this regards.

Almost 40% of the companies in the MEP industry already provide heating and plumbing services (Appendix A). These companies are usually medium sized and provide good quality engineering services and as a result, some of these companies have limited human or financial resource constraints when dealing with large projects which prohibits them from handling a maximum number of projects per year. Thus, even though there is significant competition between companies in this industry, there is little threat of retaliation or aggressiveness since, as per the industry experts, the market is not yet saturated. Most of these competitors cannot have more than three or four major large projects running at the same time either for financial or resources constraints. However, this is not the same scenario when it comes to electrical services. Since this segment is mature and very competitive, many companies have already established strong competitive positions and renowned reputations in this industry. This would create a barrier to entry against companies attempting to enter into this market segment and would hence require significant high level of skills and resources to aggressively enter this market.

d. Threat of Substitutes

Conventional home heating or cooling systems can be considered as weak substitutes for professionally installed HVAC systems. These systems could include movable air-conditioners, fans, or heaters. Such systems usually cannot provide the same kind of quality that HVAC systems and are sought after by clients with tighter

budgets. Since, HVAC systems have more recently become more affordable, most of the customers opt for higher quality services at their homes, offices, buildings, etc... Also, since ventilation systems have become a necessity for new construction projects, such systems also face extremely weak threat of substitutes. Similarly, plumbing services face little to no threat of substitutes since they are a necessity for any customer.

Since individual contractors for plumbing and heating services were not considered as competitors, they can be considered as substitutes to companies providing these services at higher costs. Yet, they remain a weak threat of substitute since the quality delivered by these individuals is usually lower than that provided by engineering companies. The customers who usually seek such services are usually low-middle income individuals whom are not the consumers mainly targeted by contractors in this industry, hence they would not be considered as a threat of substitute.

e. Threat of New Entrants

Individuals in Lebanon either have limited resources or are hesitant to take risks with large investments and new corporations due to the continuous instabilities that the country is in. This is why the threat of new entrants in Lebanon is currently weak. Industry experts explained that many of the existing companies who have already established strong positions in the market are hesitant with their growth plans due to the country's situation, let alone companies who are starting up and entering a new market. However, larger companies and those who are successfully growing are being able to shift into neighboring emerging countries to be involved with MEP projects there. The industry segment with the most new entrants is the solar systems segment since it is a growing segment, cost-efficient for middle income consumer markets and requires less

capital investment than other industries. Overall, the Lebanese market has potential for growth that is hindered with the continuous threats of wars and political insecurities; hence, this force remains weak so far.

f. Porter's Five Forces Analysis

The major forces that influence the company's profitability are (1) the bargaining power of the buyers, (2) the bargaining power of the suppliers, and (3) the industry rivalry. Since Air-Tech operates in a service industry and puts customer service as its core competence that it extremely values, the buyers have the strongest negotiation power against it. The customers' needs need to be always fulfilled and satisfactory services provided in order to maintain good reputation and any future work with these buyers. At the same time, the suppliers also some bargaining power in the market that could underpin profitability for Air-Tech. Over the years, Air-Tech was able to establish solid relationships with many of the suppliers in the market as it made several dealership agreements with them. Air-Tech needs to maintain such relationships since they help position it in the market and provide it with competitive prices to help its bidding process. In addition to assisting Air-Tech take on more projects by providing it with lines of credit as their relationship matures. This is why it aims to attract as many dealerships as possible to further weaken this industry competitive force. Being a contractor, Air-Tech needs to sustain strong relationships with both the suppliers and the customers in the market. Strong relationships with the buyers are key elements for being successful and to be able to properly compete in the industry.

If Air-Tech plans to enter the solar technology segment at this point, it would start by buying from local suppliers, but due to their high bargaining power, when

successful, Air-Tech would shift to importing the supplies from abroad rather than purchase them from local suppliers. As the competition between the suppliers increase and their bargaining power weakens, Air-Tech could then consider purchasing such products locally. In addition, Air-Tech needs to position itself strongly in the market before the number of contractors significantly increase, otherwise it would have to face a stronger bargaining power from its customers.

Some of Air-Tech's competitors are able to provide a high level of skill-set and a wider range of services; however, since there is no aggressive rivalry in the mechanical industry segment, there remains opportunity for growth. In this sense, Air-Tech would expect minimal competitor retaliation against its service-expansion since its competitors already have a lot on their plate. This is not the same scenario when it comes to entering into the electrical segment, where industry rivalry is more intense and aggressive. In order to differentiate itself in the market, Air-Tech needs to be highly keen on its customer and supplier relationships and should push itself to deliver the technically distinctive and innovative services to be able to compete in the market and acquire more market share.

7. Industry Key Success Factors

Key success factors for this industry include:

- **Technical Skills:** High level of engineering skills in technical actions.
- **Product Quality:** High quality products that are being installed, especially new technologies that are more cost-effective and environmentally friendly
- **Project Management:** Advanced project and coordination management skills in order to properly complete projects on time and with the agreed on specifications (in

addition to properly coordinate between the different services provided by the company)

- **Service Quality:** Timely and high quality maintenance services
- **Cost Estimation and Pricing:** The Company's ability to provide competitive prices through more accurate estimations for its project is a key success factor for it to acquire new contracts.
- **Customer relationships:** many customers have recurring projects which is why it is very critical for companies wanting to succeed in this industry to maintain strong relationships with their customers. In this manner, they should ensure that their customers' requirements are always met, projects are completed on time, and products should be maintained and quickly serviced when necessary. This is especially true when dealing with supporting existing customers such as in providing maintenance and repair services to these clients.

Next, a competitive matrix is derived in order to provide further insight into how the key success factors come to play between Air-Tech and some of its main competitors. While this remains to be a subjective assessment for the success factors' weights and their scoring per company, questions were asked for industry experts in order to elaborate and provide approximately relative values. Though not 100% accurate, this method will provide insight into the effectiveness of Air-Tech's positioning and where its competitors are in the corresponding market segments. The weights devised for this approach were based on the HVAC industry expert, the consulting industry expert and Air-Tech's CEO estimated criticality of key success factors in the relevant industries.

Table 11: KSF Weight Factors

Skills	Industry Segment	Score	Reason
Technical Skills	HVAC	20%	Critical KSF to all industry segments, especially for the electrical segment
	Plumbing	20%	
	Electrical	25%	
Product Quality	HVAC	15%	Although important for all industries, it is especially important for the plumbing segment
	Plumbing	30%	
	Electrical	15%	
Service Quality (Management)	HVAC	20%	Managing the projects and proper service is most important for electrical and mechanical while less critical for plumbing
	Plumbing	10%	
	Electrical	20%	
Pricing (Cost Estimation)	HVAC	25%	This is very critical for HVAC while also important for electrical segment, and least critical for the plumbing segment
	Plumbing	15%	
	Electrical	20%	
Customer Relationships	HVAC	20%	Customer relations are always important for all industry segments, for the plumbing, this KSF is more important than others
	Plumbing	25%	
	Electrical	20%	

Values were assigned to these factors based on industry estimates, company reputation in the industry, and online data collection about the company.

Table 12: KSF Competitive Matrix

KSFs	Industry Segments			Company Evaluation			Competitor Evaluation								
	Score-weight per Segment			Air-Tech Scoring			CLIM Scoring			Genec			Khater Scoring		
	HVAC	Plumbing	Electrical	HVAC	Plumbing	Electrical	HVAC	Plumbing	Electrical	HVAC	Plumbing	Electrical	HVAC	Plumbing	Electrical
Technical Skills	0.2	0.2	0.25	5	1	0	3.5	2	2.5	3	2	0	5	3	4.5
Product Quality	0.15	0.3	0.15	4	2	0	3	2	3	3	1	0	5	3	4
Service Quality (Management)	0.2	0.1	0.2	3.5	3	0	5	3.5	4	2	2	0	4	3	4
Pricing (Cost-Estimation)	0.25	0.15	0.2	4	0	0	4	3	3	3	2	0	4	3	3
Customer Relationships	0.2	0.25	0.2	4	3	0	3	3	3	4	1	0	4	3.5	4
	1	1	1	4.1	1.85	0	3.75	2.55	3.075	3	1.45	0	4.35	3.125	3.925

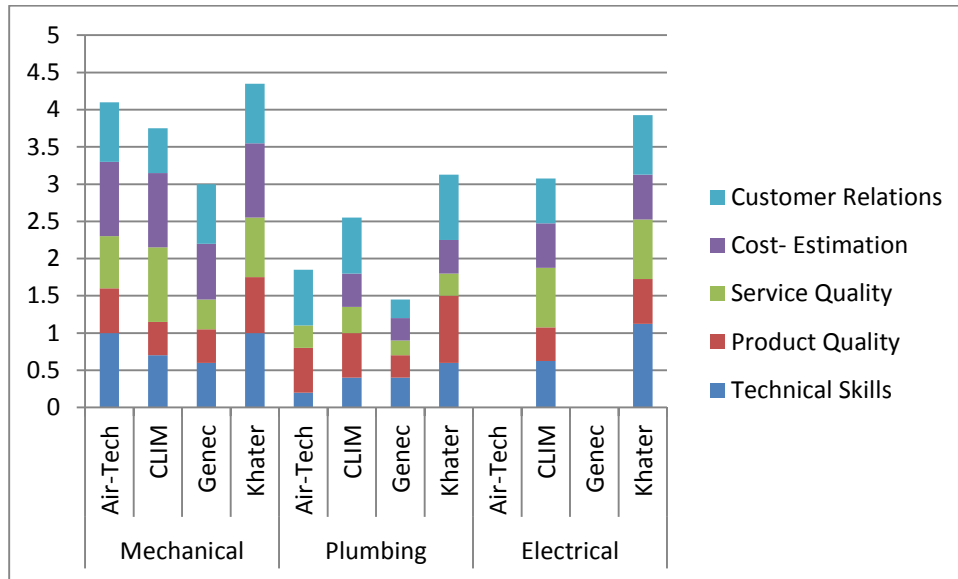


Figure 6: KSF Scores Results

As per the consolidated results, Air-Tech holds a strong position in the HVAC segment due to its strong score, but still needs to strengthen its position in the plumbing and heating segments (since it only partially provides them). Air-Tech currently has no presence in the electrical segment similar to some of its competitors; however, to be able to compete with larger competitors on the long run, it needs to provide full MEP services. While some competitors are very experienced and hold strong positions in electrical segment, others are still struggling in these segments.

Due to the new industry trend where customers prefer to sign the least number of possible contracts, the scores are added together to identify the position of each company with respect to the entire MEP industry. This sum provides insight as to where the company stands against other competitors with respect to clients who request a wider set of services. Whereas Air-Tech held a significantly strong position in the HVAC segment compared to even larger corporations, summing the scores results in Air-Tech being in a weaker competitor than its larger competitors.

Table 13: KSF Results across MEP Industry

	Air-Tech	CLIM	Genec	Khater
KSF sum	5.65	9.375	4.4	11.5

Looking at the industry wide results, Air-Tech now is better positioned than competitors operating in the HVAC industry as well; however, it falls at a lower score when comparing it to other competitors who are able to offer a wider variety of services. This is why Air-Tech needs to widen its services to be able to better position itself in the MEP industry.

D. Strengths, Weaknesses, Threats and Opportunities Analysis (SWOT)

Table 14: SWOT Analysis

Strengths	Opportunities
Long and extensive experience in the industry	Be leader by exploiting advancing technologies
Strong customer relationships	Capitalize on growing environmental concerns by providing new energy efficient systems (go-green)
Well renowned reputation in the HVAC segment	Capitalize on growing financial concerns in Lebanon by providing new cost-effective systems
Competent and skilled staff with good technical skills and working with family values (although not all are family members)	Advancements in growing industry segments
Good and consistent profit margins indicating cost-effective operations implementation and sustainability	With its expertise, it can easily diversify into similar industry segments (full mechanical) to consolidate
Good credit score implies company can leverage loans for further growth	Several projects were lost since the company was not providing full mechanical services → growing demand
	New major projects with high net worth clients offer maintenance opportunities
	Increased customer awareness for the importance of maintenance services

Weaknesses	Threats
Still only operating in one segment of its target industry	Political turbulence, economic insecurities, and industry instability are all direct threats to companies operating in this industry
Limited human resources, cannot take many projects	Threats of war (due to local and regional risks of wars and their influences)
Growth and succession challenges	Most of the skilled workforce has moved to work abroad
Customer relationships are very dependent on the CEO person himself	Risk of economic down-turn implicating delay in projects initiation
	Tax changes

E. Strategy Specific Options

All the strategies under study are considered to be **internal growth strategies** with which the company plans to grow organically and does not plan to perform any vertical or horizontal integration through external investments with other companies (whether mergers, acquisitions or partnerships) (Harrison & St. John, 2008).

Concentrated analysis to be performed for each strategic option whether the company needs to create its extension maintenance firm, expand its product line or penetrate new markets or any combination that is analyzed to be relevant for the company to implement.

1. Expanding the Product Line to include full MEP products

This strategy covers the expansion of the existing products to include similar products in the same industry which are the plumbing, heating and electrical services that can be provided by Air-Tech. It is considered to be an internal product development growth strategy since it is adding new products/services for new and existing customers.

a. Internal Analysis Focus

Short Term:

- Expand to provide plumbing and heating services (especially solar heating)
- Ensure completion of more than 10 projects annually with both HVAC, heating and plumbing before further expanding
- Develop technical expertise covering full mechanical services

Long Term:

- Develop electrical contracting expertise
- Acquire full MEP contracts and develop skills as necessary

i. Strategy Specific Objectives

- Provide the full mechanical package by the end of 2020 including comprehensive services beyond ventilation and air-conditioning systems to include solar heating for domestic water pipes, sanitary systems, heating systems
- Provide full MEP package by the end of 2025 through adding a new business unit to handle electrical systems
- Outperform competitors on service quality
- Develop the company's technical expertise with respect to plumbing, heating and electrical services

ii. Scope of Services

Industry Segment / Covered Scope	Heating	Ventilation	Air-Conditioning	Solar Heating Systems	Plumbing	Electric
Existing	Partially Available	Available	Available	Not Available	Not Available	Not Available
Strategy Scope	Available (Part II)	Available	Available	Available (Part III)	Available (Part I)	Available (Phase II)

b. External Analysis Focus

Air-Tech has established a strong competitive position in the HVAC industry throughout its 20 year extensive experience in this industry sector. It plans to start with acquiring plumbing contracts since it has the most demand, whereby it is a necessity for all projects, does not require large investment, and faces the weakest external forces and barriers to entry. Once successful, Air-Tech will venture into heating contracts (conventional, radiators, or solar heating of domestic water pipes) depending on the kind of projects it is in.

Air-Tech stands in a strong position with respect to its competitors especially for entering the full mechanical segment. This is due to its strong customer relationships that are built on mutual trust which would help Air-Tech acquire full mechanical contracts once it develops the technical know-how to do so. Where several of its customers have already requested such contracts but Air-Tech had missed out on these opportunities due to its technical and capacity constraints at the time.

Entering the electrical segment to provide the full MEP strategy would be more challenging considering the tougher industry external factors coming into play.

Competition is intense and there are strong competitors that have established strong positions and somewhat high barriers to entry for other firms in this segment. Due to the increased level of investment required and the risky political situation in Lebanon, the plan to enter this segment needs to be assessed before considering implementing it.

c. Investment Cost and Required Resources

Table 15: MEP Strategy - Investment Cost and Required Resources

Industry Segment	Required Resources	Years of Industry Experience	No.	Approximate Individual Annual Cost	Total Cost
(1) Plumbing and Sanitary	Expert Plumbers	7-8	2	\$12,000	\$24,000
	Support Co-workers	2-3	4	\$7,200	\$28,800
	Mechanical Engineer (Dedicated on-site)	5	1	\$24,000	\$24,000
	Mechanical Engineer (Project Management and Planning - Office)	15	1	\$42,000	\$42,000
Years 1-3:	Totals	-	8	-	\$118,800
(2) Heating Note: Same engineering staff can follow-up	Heating Plumbers	7-8	1	\$12,000	\$12,000
	Support Co-workers	2-3	2	\$7,200	\$14,400
Years 4-5:	Totals	-	3	-	\$26,400
(3) Electrical Systems (New SBU)	Electrical Engineer (Project Management and Planning – Office)	20+	1	\$54,000	\$54,000
	Electrical Engineer (On-site)	5-6	2	\$24,000	\$48,000
	Electrical Engineer (Installments)	1-2	2	\$9,600	\$19,200
	Support co-workers	4-5	4	\$7,200	\$28,800

Industry Segment	Required Resources	Years of Industry Experience	No.	Approximate Individual Annual Cost	Total Cost
Years 5-10:	Totals	-	9	-	\$150,000

The costs will be spread out across the strategic plan with workers hired based on the developing needs and the steps of the plan implementation.

2. *Expanding into Regional Countries (Dubai)*

This strategy covers the expansion of the existing products and services to new regional markets especially starting with Dubai since Air-Tech already has established relations with developers who could provide possible projects there. It is considered to be an internal market development growth strategy since it is entering into the same industry but in a new market.

a. Internal Analysis Focus

Expanding into international countries requires a large financial investment and a heavy load of resources, yet is expected to yield profitable returns if implemented correctly.

Strategic Objectives:

- Start to position the company in the new market by the end of first year
- Expand sales to acquire 10 major projects in the new market by the second year of implementation
- Introduce existing products into the new market
- Outperform competitors on service quality
- Build strong relationships with the suppliers in the new market

b. External Analysis Focus

Given its geography and climate, the UAE market is in constant need for proper air-conditioning and ventilation systems. The UAE had an average real growth rate of 4.4% from 1991 until 2001 and an average of 7.2% between 2001 until 2008 which was considered among the strongest in the world (Oryx ME, 2010). The UAE GDP had dropped by 0.7% in 2009 which led to a slow-down of the construction sector which is the third largest sector comprising around 6% of the GDP (ClimateControlMe, 2011). The air-conditioning segment comprising a core component of the construction industry was accordingly heavily impacted in this down-turn. However, the GDP is expected to recover with a strong growth above 4% during 2014 (Oryx ME, 2010). Thus, the UAE is now recovering from this economic downturn with economists forecasting the HVAC market in the Gulf to grow at a compounded annual rate of 7.4% (CAGR) until 2016 (Staff, 2013). As such, the construction market is expected to grow within the coming years and with it the MEP services are also anticipated to rise in demand (Research and Markets, 2013).

The HVAC industry in the UAE is a heavily competitive market with a lot of large industry competitors. Accordingly, Air-Tech expects to be able to only acquire around 1 or 2 of every 10 bids they perform. Given the increased costs that Air-Tech would need to incur, it would then need specialized engineers with cost-estimation to apply to many bids in order to start building the company reputation in Dubai.

c. Investment Cost and Required Resources

To start-up in Dubai (international office), Air-Tech needs to bear the fixed costs of acquiring the license and setting up the office space. Moreover, new staff will

need to be hired, trained and followed-up with in order to ensure proper performance as per Air-Tech's values and vision. Key resources required for this plan include:

- CEO coordinating between Beirut and Dubai office
- In the beginning, the requests for bids would be received from the company's contacts and relationships in Dubai
- Senior Mechanical engineer should have cost estimating skills to be responsible for the bidding process
- As the company grows, it will require more resources due to the larger market in Dubai, another skilled engineer would be needed for bidding
- As the number of bids increase and the number of acquired projects increase, the number of technicians and junior engineers need to be hired accordingly

Necessary required investment is required to be around \$80,000 fixed costs and \$330,000 recurring costs. Total cost required to start in Dubai is estimated to be around \$410,000 within the first year of starting up, and \$330,000 of annual recurring costs. In order to be able to succeed in the market, Air-Tech needs to be have strong financial leverage to be able to position itself in the market and take on major projects that would recover the additional costs incurred.

3. Creating an Extension Maintenance Firm

Offering a maintenance service is a different challenge for Air-Tech than providing the traditional installation service. Currently, Air-Tech is able to handle the maintenance load for around 7 annual contracts on average; however, it is not flexibly able to acquire more contracts. Each contract on average covers the following topics:

- Annual fee
- Number of annual visits
- Minimum fee per visit
- Deadline for support (i.e. number of hours allowed before the customer must be supported and issue must be resolved)

Depending on the size and criticality of the customer's business, different contracts are developed based on the needs of each customer. However, due to the kind of industry that Air-Tech operates in, customer frustration depends on the need for ventilation, cooling or heating. Given the type of geography and culture that Lebanon has, there is usual higher need for maintenance support during the seasons with higher temperatures. The season with the highest demand is the summer season covering months June through August. However, there remains significantly high demand in April, May and September on occasions.

Installation projects provided by Air-Tech are usually consistent throughout the year and not impacted heavily by the change of the season; however, these projects usually have deadlines such as due in 1 year or 6 months. At the same time, regular maintenance visits are scheduled evenly throughout the year by customer and by region in order to cover the most number of clients within the same visit in the region. Given that each visit should not take on average more than a few hours to complete the regular check-up. Air-Tech's services currently cover wide ranges in Lebanon including North Lebanon, Beqaa Region, South Lebanon and Beirut Area.

Therefore, there is a kind of trade-off that Air-Tech is now operating in to be able to provide high quality services. In high seasons during the summer, Air-Tech

would require to have one or two teams from the installation teams to help with the customer support to ensure that the customers are always satisfied. Air-Tech hopes to resolve this by implementing this strategy and specializing in providing maintenance services. By distributing a higher number of regular visits and increasing the number of maintenance contracts that are acquired; Air-Tech should be able to have the proper scheduling techniques and enough staff to ensure customer satisfaction by being able to provide on-time support during the high demand season in the summer.

This strategy covers the development of Air-Tech's current services to include maintenance services in addition to installation services for the HVAC segment. It is considered to be an internal service development growth strategy since it is growing its service within the core business that it operates in.

a. Internal Analysis Focus

Currently Air-Tech is serving several maintenance contracts and in order to centralize its efforts and provide superior service, it has decided to dedicate two teams solely for maintenance purposes. One team will be responsible to follow-up with banks, since these are the most critical and urgent clients; while the other team is responsible to follow-up with the corporates and individuals.

Moreover, Air-Tech is keen on training these employees and keeping them up to date with the latest technologies. They need to follow up on training for the new technological machines that Air-Tech is installing into its new projects such as the Variable Refrigerant Volume systems. Air-Tech's core competencies focus on being able to completely support all kinds of systems whether simple or complex that are installed at a client. Moreover, it is able to support almost any system that is installed in

the market even if not installed by Air-Tech itself. High quality maintenance service would ensure on-time support with no delays inherently no negative impacts on the customer's business, clients, work, or home.

i. Strategy Specific Goals

Short Term:

- Provide high quality maintenance services to at least 100 annual contracts per unit
- Acquire full building maintenance contracts once a developer project is complete
- Implement and deploy a strong IT infrastructure that enables providing high end maintenance scheduling and repair support by the end of the second year
- Develop policies and procedures to ensure on-time and regular maintenance

Long Term:

- Acquire maintenance contracts for advanced systems installed by other companies

b. External Analysis Focus

There are several external factors into play when it comes to maintenance services to be provided by the firm. As per the competitor analysis performed, it can be deduced that all firms providing HVAC or MEP services also provide maintenance services. While few of the firms provide maintenance services only for the installations that they have implemented in the market; almost most of the remaining firms can provide maintenance services for any installation performed by another firm. However, very few of the competitors have created a separate maintenance firm that handles only maintenance contracts for the firm. Such firms would be the direct competitors facing Air-Tech's maintenance firm. However, all other firms providing HVAC contracts will

be considered as indirect competitors as well since they also provide some kind of maintenance services.

Air-Tech is already providing maintenance services for around 7 annual maintenance contracts; this would make it easier for the extension maintenance firm to capture and start off in the market. Moreover, there are many maintenance contracts that Air-Tech has lost recently since it didn't have the necessary human resources (i.e. enough staff) to provide these services. There is an imminent need for maintenance services that are provided in a professional manner, especially with the new technologies that are being installed at high-end towers which require a high level of technical skills to maintain.

c. Investment Cost and Required Resources

In order to start up a separate maintenance firm, at least two new teams need to be hired to support the new contracts. Each team should comprise of experienced trained technician with at least 10 years of experience and a support co-worker to assist him in his job. These technicians need to be regularly sent to trainings for HVAC systems such as the new VRV system. An experienced technician would require up to 2 years of bi-yearly training to acquire the complete knowledge and experience to master a VRV system. Similarly for other products, the newly hired technicians will be sent for trainings for different kind of products in the industry in order to gain industry wide experience. These trainings are normally offered for free by the supplier company in order to support the installation of their products at other vendors. Therefore, it is critical for Air-Tech to hire the right staff with right skills even if they come at a higher cost such as technicians who already established VRV systems experience. This will

help Air-Tech to be able to provide on-time high quality maintenance services for varied products installed for their customers or for customers who have systems installed from different providers. Air-Tech would start up with 2 new maintenance teams and then expand to 3 or more teams after 3 years depending on the number of maintenance contracts that are acquired by the company and the necessary capacity requirements to maintain high-level of customer support.

Table 16: Maintenance Strategy - Investment Costs

Industry Service	Required Resources	Years of Industry Experience	No.	Approximate Individual Annual Cost	Total Cost
Maintenance Service	Maintenance Engineer – Engineering Management	5	1	\$24,000	\$24,000
	Expert Trained Technicians	> 10	2	\$22,800	\$45,600
	Support Co-workers	2-3	2	\$7,200	\$14,400
	Cars (fixed)	-	2	\$12,000	\$24,000
Years 1-3:	Totals	-	-	-	\$108,000
Advanced Maintenance Services	Expert Trained Technician	> 10	1	\$22,800	\$22,800
	Support Co-workers	2-3	1	\$7,200	\$7,200
	Cars (Fixed)	-	1	\$12,000	\$12,000
Years 4-5:	Totals	-	-	-	\$42,000

Total investment cost for the first 5 years:

$$\text{Total Fixed Cost} + \text{Total Variable Cost} \times \text{Number of Years}$$

$$= \$12,000 \times 3 + (\$84,000 \times 5) + (\$42,000 \times 2) = \$540,000$$

Thus, \$540,000 total investment is required for the next 5 years to implement the maintenance strategy. Air-Tech has an excellent credit score and banks are willing to give loans up to \$150,000. Air-Tech would be able to re-invest around \$70,000 from its equity, and it would be able to cover the remaining amount from a bank loan.

Since the company expects an annual profit margin of 15% when implementing this strategy, then the estimated required revenues would be:

$$\begin{aligned} \text{Revenues} &= \text{Costs} / (1 - \text{Profit Margin}) = \{\text{Example for Year 1}\} \\ &= \$108,000 / (1 - 15\%) = \$127,058 \end{aligned}$$

Therefore, \$127,058 additional revenues are required to achieve a 15% profit margin for this investment. This is equivalent to around 150 maintenance contracts per unit per year (at an average of 500\$ per contract) and 250 repair calls per year.

















Assuming an average of 4 visits per maintenance contract, then considering that Air-Tech is operating with 4 expert technicians, each technician needs to cover on average almost 3 scheduled visits per week (This number would be significantly reduced when multiple units are joined within the same location and contract). In addition, each technician should be able to respond to at least 1 service repair call per week during the year to achieve the required revenues. Therefore, it can be deduced that the expected revenues are achievable within the targeted margins given that the company is able to market itself, bid on projects and win contracts to acquire the needed number of contracts for such revenues.

F. Risk Analysis

The probability of achieving successful performance in a strategy implementation that meets the company's expectation is an underpinning risk that the company goes through. High risk implies that there is a high chance that the company would not meet its goals.

1. Internal Risk









Table 17: Internal Risk Analysis

Criteria	Comment	Risk Level (H, M, L)	
Specific Industry	Contracting industry (HVAC, plumbing and electrical services)	L	
Industry Maturity	Late-growing industry on the overall	M	
Relative power of suppliers/customers	HVAC segment	M	
	Plumbing segment	M	
	Electrical segment	H	
Competitive Position	HVAC segment	L	
	Plumbing segment	M	
	Electrical segment	H	
Management capabilities	HVAC segment	L	
	Plumbing segment	L	
	Electrical segment	H	
Objectives (aggressive/moderate)	Create maintenance extension firm	L-M	
	Expand product line to include mechanical	M	
	Expand product line to include full MEP products	M-H	
	Expand into new regional markets	H	
Past performance	Strong existence in HVAC industry	M	
OVERALL	Company faces low-medium level of risk in the HVAC industry segment, but faces higher risks in other industry segments		

Another source of internal risk for a company in this industry is employee retention and turnover, whereby Air-Tech needs to be able to retain its skilled employees and technicians. For the maintenance strategy, a way to mitigate the risk would be to provide incentives for employees to promote the service while staying with the firm. In which case, upon their repair calls, maintenance technicians would attend to the repair request and try to upsell the customer for a full maintenance contract. If successful, these technicians would be provided a commission for their sale by that providing incentives for its employees and pushing to increase its customer base. These incentives act as a way of employee retention that would mitigate the risk of high turnover for the company.

2. External Risk

Table 18: External Risk Analysis

UNCERTAINTY	Probability of Occurrence (H, M, L)		EXPOSURES	Impact (H, M, L)		Risk Mitigation (Manageability & Contingency Planning)
ECONOMIC			PHYSICAL ASSETS			The highest threat for the company is the political turmoil and economic instabilities that would negatively impact the company by slowing down its projects development and strategy implementations.
O Recession	H	●	- Office	M		Risk Mitigation
O Inflation	M	●	- Vehicles			external factors cannot be controlled, but it can consider:
O Exchange Rate	L	●	PEOPLE			cheaper office rental
SOCIAL			- Employees	M-H		if needed, lower debt-ratio
O Minimum Wage	L	●				Signing insurance coverage
O Quality of Life	L	●	FINANCIALS	H		Preparing employee development and rewarding programs to increase retention
POLITICAL			- Sales	H		Develop contingency plans
O Turmoil	H	●	- Profits	H		
O War	M-H	●	- Cash Flows			
O International agreements	M-L	●	- Receivables	M		
O Regulatory						
TECHNOLOGICAL	M-L	●	INTANGIBLES			
O Substitute Products	L	●	- Reputation	L		
O Green technologies	M	●	- Time			
NATURAL			- Core Competencies	M-L		
O Earthquake	M-L	●				

The overall risk for Air-Tech in the industry is considered to be relatively high when it comes to external factors; however, it was able to grow throughout the past 20 years and so is resilient to a reasonable level of turmoil. Moreover, this risk is mitigated by taking up rent in less expensive areas, especially since Air-Tech is a service business and merely operations management and technical preparations take place in the office. Insurance coverage for the company could mitigate some of the risk incurred as well as contingency plans prepared to deal with worst case scenarios.

G. Best-fit Strategy

In order to identify the best-fit strategy, analysis will be performed based on the framework and recommendations of Mr. Bill Liabotis in the IVEY Business School paper in which he provided a framework for identifying best-fit growth strategies for businesses.

1. Identify the Core Business

The core business that Air-Tech operates in the HVAC service industry where it was able to successfully position itself in the Lebanese market. Core services that Air-Tech has mastered and is able to out-perform its competitors include installing HVAC systems, manufacturing the ducting systems and providing maintenance for its services.

2. Evaluate the performance of the core business

Air-Tech's HVAC business is able to grow at a compounded annual rate of almost 8%; which shows consistent growth throughout the years. Also, it is able to maintain a profit margin of at least 5% showing stable and good positioning in the market. It has strong customer relationships, where especially developers continue to provide new projects for Air-Tech to take on. These developers prefer working with Air-Tech due to the mutual trust between them that has been built and developed over the years, its strong industry reputation, and due to its strong performance over the years. In addition to that, Air-Tech has been able to slowly grow with these developers and newly acquired customers in the market. As a result, the core-business can be considered to be performing well in the market and is able to sustain itself with compounded growth over the years.

3. *Assess Strategic Options and Growth Viability*

In order to check which strategic options are best, the following questions need to be answered to identify which strategic direction Air-Tech needs to follow.

a. How are the KSF developing?

The following trends can be noticed with respect to key success factors in the MEP industry segments.

- Technical expertise: more recently, demand for broadened technical expertise covering full MEP services has been increasing; whereby high-end developers are more recently preferring to sign one contract with a company that provides all those services rather than contracting with different company for each kind of service.
- Cost-effective and environmentally friendly technologies: there is significantly rising demand for the most cost-efficient and environmentally friendly technologies from customers (especially high-end developers) which has made providing such technologies a key success factor in these industries.
- Customer Relationships are more important than ever, and customers are becoming more aware in which they demand rather than just expect higher quality service and they are more socially aware where they are requesting specific types of technologies as mentioned above

b. What is the firm's competitive differentiator?

Air-Tech's main differentiator in the HVAC industry is the extremely strong and close customer relationship that it maintains and builds with its clients. This has allowed Air-Tech to build mutual trust and long-term relationships with those clients;

which has helped Air-Tech to work with the same clients on more than seven projects and still on-going projects. To maintain these relationships, Air-Tech is keen on providing the highest quality installation services to its clients while following up with them through continuous customer support. Moreover, Air-Tech is able to maintain strong margins due to being able to manufacture high quality ducts in-house which reduces costs of sub-contracting them to other companies.

c. Is the core business under major threat?

The company's core business has been able to successfully position itself as a strong firm in the market. Despite these set-backs, Air-Tech has been able to grow at a compounded annual growth rate of 8% over the past 7 years. As a result, there is no major threat to this core business at this time.

d. Are there attractive growth opportunities within the core business?

Air-Tech currently operates in the HVAC market, mainly in the residential and commercial industry. Since the construction industry is still solid, Air-Tech is able to slowly but sustainably grow in that market. Air-Tech is already leading within the specialized industry that it operates in; however, in order to be able to win larger projects in wider industry segments, it needs to be able to provide at least full mechanical services. Therefore, when it comes to installation of new HVAC systems, there are growth opportunities but Air-Tech has almost reached its full potential whereby it is able to handle simultaneously major installation projects while providing high end services to its customers. Employing further staff and training them for more extensive bidding bears more risk for Air-Tech than venturing into contracting for maintenance services starting with the existing and then with new clients. Moreover,

growth opportunities for installation services increase the wider the services that Air-Tech is able to support due to the current industry trend. For instance, when it is able to support services from both the HVAC segment and plumbing segment, it can expand its market exposure and thus have a larger market to operate in and increase customer acceptance especially with the recent trend to prefer contracting with the least number of possible firms.

Maintenance services provide strong regular cash flows that are paid in advance and a wide market of existing clients of which Air-Tech can leverage to develop significantly with respect to maintenance. Therefore, there are very attractive growth opportunities that can be targeted within the core business which are the maintenance services that can be provided to Air-Tech's existing customers and new customers who have installations provided by other contractors.

4. Consolidated Comparison of Growth Strategies

Growth strategies need to be aligned with the company's internal strengths and meticulously prepared for in order to be thoroughly followed through. Analysis should be performed in a consolidated manner in order to identify which strategies are viable, which face internal or external constraints and which are the most difficult to follow through with.

As a result, a consolidated external and internal assessment is summarized in the tables below after which an assessment is conducted for each strategy. Analysis is done to cross-analyze internal constraints on the firm, whether financial or resource restrictions with the external constraints that the firm would face such as strong forces, high entry barriers and turmoil environments.

Strong forces weaken a company's position in a market. These include strong presence of competition or strong competitive forces; whereby for instance strong bargaining power of suppliers implicate a weaker position for the company to negotiate deals with the suppliers. A fair force would impact a company's performance in the market; whereas a weak force results with the least impact on a company.

For the key success factors, the ratings are added based on the current strength of the company's KSF in the market. For instance, the company has weak technical skills when it comes to expanding to electrical products. This indicates that the company lacks some critical key success factors that are needed when operating in the electrical segment of this industry. Strong skills implicate that the company has the required skills for a certain strategy.

Table 19: Consolidated Strategy External Analysis

Strategy	PESTEL Overview			Customer Analysis		Competitor Strength		Bargaining power of suppliers		Bargaining power of buyers		Industry Rivalry		Threat of Substitutes		Threat of New Entrants		Technical Skills		Cost Estimation (Pricing)		Product Quality		High Quality Service/Project Management		Customer Relations		
	PESTEL Overview	Customer Analysis	Competitor Strength	Bargaining power of suppliers	Bargaining power of buyers	Industry Rivalry	Threat of Substitutes	Threat of New Entrants	Technical Skills	Cost Estimation (Pricing)	Product Quality	High Quality Service/Project Management	Customer Relations															
Expanding the Product Line to include full MEP products	Volatile	Exist/New	Fair	Fair	Strong	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair
Expanding to full mechanical products	Volatile	Exist/New	Strong	Fair	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Expanding to electrical products as well	Stable	New	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong	Strong
Expanding into Regional Countries (Dubai)	Volatile	Exist/New	Weak	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair
Creating an Extension Maintenance Firm	Volatile	Exist/New	Weak	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair

Table 20: Consolidated Investment Analysis

	Projected	Incurred Cost		Year 1	Year 1	Projected
	Profit Increase	Fixed Cost	Variable Cost	Total Investment	Expected Return	ROI (2015)
Expanding the Product Line to include full MEP products						
Expanding to full mechanical products	8%	\$ -	\$ 145,200.00	\$ 145,200.00	\$ 12,440.62	8.57%
Expanding to electrical products as well	10%	\$ -	\$ 150,000.00	\$ 150,000.00	\$ 15,550.77	10.37%
Expanding into Regional Countries (Dubai)	20%	\$ 80,000.00	\$ 330,000.00	\$ 410,000.00	\$ 31,101.55	7.59%
Creating an Extension Maintenance Firm	15%	\$ 36,000.00	\$ 126,000.00	\$ 162,000.00	\$ 23,326.16	14.40%

A consolidated internal analysis was performed for the expected return on investment per strategy based on the CEO estimates for each strategy and the calculated estimated total investment costs required for each strategy. Air-Tech has expressed that due to its current resource restrictions, it is only willing to invest around \$70,000 from its equity where the rest of the needed investment amount will be leveraged as external debt. Moreover, local banks in Lebanon have expressed their consent to finance Air-Tech with up to \$150,000 in leverage.

After performing a consolidated internal and external analysis, the following can be deduced with regards to each strategy:

- **Expanding the product line to include full MEP products**

This strategy is divided into two parts, in which, the company first will venture into the full mechanical products and then consequently into the electrical products to provide the full package of MEP products. Since the plumbing and heating services are closely related to the mechanical services and their know-how are somewhat interlinked with the HVAC services that are currently being provided by Air-Tech, then it has less difficulties entering into these market segments. Moreover, the costs to enter such segments are the least when compared to other strategies or the other part of this strategy. Cost-wise it would make sense for Air-Tech to venture into this market first since it doesn't require as much financial resources and has an expected 8% increase in profit margins; an overall 8.57% of return on investments. The factors mostly

underpinning the first aspect of this strategy are the bargaining power of suppliers and the industry rivalry. Since it is a new segment, Air-Tech needs to go into new negotiations to build relationships with the suppliers for plumbing and heating services who possess significant bargaining power. Also, as Air-Tech aims to provide full mechanical services, it is now competing with larger companies who already have established their positions in these segments. In this manner, Air-Tech needs to build company reputation and ensure its existing and new customers that it is also able to provide high quality services in these segments as it is providing in the HVAC segment. All this expansion is underway in Lebanon which is facing volatile and uncertain future prospects as per the PESTEL analysis; yet, since somewhat manageable investment is required as per the investment and required resources analysis and since there are major opportunities underlying these segments, as per the SWOT analysis, then this option remains viable for Air-Tech to venture into.

The electrical segment is a completely new segment that somewhat lies beyond the current scope of expertise for Air-Tech, in this manner, it has an even more difficult target to position itself. The industry rivalry force in this market is fierce and Air-Tech's plan to enter this market could be faced with aggressiveness from some of the competitors. In addition, new relationships need to be built with the suppliers who also possess strong bargaining power. As for the customers, to acquire full MEP contracts, Air-Tech needs to target the higher-end customers (large developers) who have the strongest bargaining power, as it will have to enter into aggressive biddings to acquire new projects. Financially speaking, and since this segment is completely new, a different division needs to be created to handle such services and extremely skilled resources are required, requiring a significant investment cost on Air-Tech. Since this

segment will also be entered in Lebanon and would face the turbulent socio-economic environment, then the investment would bear significant risk at this point. All these factors considered, it would be unrealistic for Air-Tech to enter this market segment at this point due to the high investment requirements, high risks and strong forces underpinning this strategy; however, it could remain as a plausible growth option in the future. This is especially considering that it has an expected 10.37% return on investment which is higher than many other strategies due to the high demand and close ties with the stable and growing construction industry in Lebanon.

- **Expanding into Regional Countries (Dubai)**

Analyzing the consolidated analysis performed, it can be noticed that expanding into regional countries bears the highest risk and investment amongst all others. As per the economic analysis for Dubai, the country in itself is somewhat stable and the HVAC segment within it faces growing demand. But, venturing into such a strategy requires significant investment costs, resources, and local know-how that Air-Tech is not capable of supporting at this point. Since management is insisting on not taking loans larger than \$150,000, then Air-Tech would not have sufficient resources for this strategy. Moreover, besides financial resources, Air-Tech faces huge risks due to the strong competitive forces underpinning this strategy. There is strong industry competition and competitors are expected to retaliate against new entrants. Suppliers and buyers have strong bargaining power while Air-Tech still did not build strong relationships with them. Air-Tech is weak on some of this industry's most important key success factors, including cost-estimation, which would require newly highly skilled resources and a more aggressive approach for bidding, and strong customer relationships, in which it is a new market and Air-Tech has to slowly start building its

reputation in this industry. In addition, the Dubai market is more sophisticated with its high quality standards and on-time delivery requirements of which Air-Tech does not have hands-on experience. Considering all the internal and external factors, Air-Tech still needs time to develop itself further locally before it can expand and compete in other markets. Moreover, it needs to be generating higher profits in order to be able to bear the large investment resources necessary for this strategy. As a result, this strategy would also remain a plausible future growth plan, but it is not realistically achievable at this point in time; and the 7.59% expected return on investment does not justify the high costs that need to be incurred at this point. Air-Tech has several options that require less costs and provide higher ROI, hence this strategic option could be discarded.

- **Creating an extension maintenance firm**

After consolidating the analysis for all the strategies, this strategy rose out as the most-convenient after cross analyzing the external factors and internal capabilities that come into play. When creating an extension maintenance firm, Air-Tech is still operating in the industry in which it has already established a strong position. This implies that it already developed strong bonds with the suppliers, strong customer relationships and has built a strong reputation that would help it stand out against the industry rivalry. This is why the competitive forces are weakest when it comes to this strategy. Also, analyzing the customers, Air-Tech already has strong relationships with customers for this segment; and as per the SWOT analysis Air-Tech is missing out on maintenance contracts with these customers due to its current constrained capabilities. Looking at the key success factors in this industry, Air-Tech has already established a strong position in most of them including customer relation, project management and technical expertise in the segment. Financially speaking, this strategy does not require a

major fixed investment cost in which it lies within what the management has approved for re-investment in addition to a bank loan that does not exceed \$150,000. All factors considered, this strategy lies within the core functionality of Air-Tech, has many opportunities that Air-Tech is missing, involves minimal risk, low investment requirements and provides an estimated 14.4% return on investment which is the highest amongst the strategic options that Air-Tech is assessing. Despite having its own set of challenges, this strategy remains the most plausible strategic choice that Air-Tech should venture into at this point in time provided that Air-Tech is able to solve its estimation bottleneck.

5. Conclusion

The first assessment that needs to be done is whether or not the core business is achieving its full potential. Analyzing the large maintenance opportunities that Air-Tech is missing on within its core business operations shows that there is still ample potential to be reached within the core operations with respect to maintenance.

Even though there exists some growth opportunities within the HVAC segment with respect to new installations; however, maintenance services in this segment are more attractive for Air-Tech at this point than increasing its current growth rate in the market. This is mainly due to the turbulent country situation; whereby maintenance services provide secured annual revenue for the firm once signed. Also, due to the high demand of repair services in the summer season that Air-Tech is not able to fully support due to its constraints, there are more attractive opportunities in the maintenance and repair services in this segment. Whereby, aggressive growth for Air-Tech through

increased bidding in a restricted market in a slowly growing construction industry in a turbulent country is not worth the risk at this point.

Given that Air-Tech has already positioned itself well in this market and has a profitable core business, then it needs to start with implementing the growth strategies within its core business to reach its full potential. This identifies “Creating an extension maintenance firm” as the best-fit strategy that Air-Tech needs to pursue immediately especially noting that it has the highest expected return on investment.

Once the core business reaches its full potential with respect to installations and maintenance services and it is generating enough cash for re-investment, then the strategy would be to venture into core-adjacent businesses (Liabotis, 2007). Such core-adjacent businesses would be the full mechanical services and eventually the full MEP services to be provided by Air-Tech on the long-run. Growing in this manner has become more critical recently due to the development trend in the industry’s key success factors where high-end customers now expect companies to provide the full spectrum of services to be able to succeed in this industry. To enter these segments, Air-Tech will have to start with its core customers who prefer full MEP contractors for their larger projects before expanding its market share to new customers. This is because most companies prefer to start implementation focusing on their core customers and then expanding to new ones (Liabotis, 2007).

Going further, once Air-Tech is able to successfully position itself for all the MEP services in the broadened industry boundaries covering all segments and once it is able to generate sufficient profit from these segments, only then should Air-Tech pursue

the high risk venture of entering into new markets knowing that it has established most of the key success factors for its success in new markets.

H. Strategy Prioritization

Based on the above assessment performed for the strategies and considering that the company will immediately begin with executing these strategies; then they can be prioritized in the following manner:

(1) Create an extension maintenance firm

- Duration: 5 years; expected by: 2020
- Another 5 years are expected to be needed to launch the separate firm by 2025

(2) Expand the product line to include full mechanical services

- Duration: 5 years; expected by 2025

Whereby entering into the electrical segment and penetrating new markets have been discarded as strategic options for Air-Tech within the coming 10 years.

I. Implementation Plan for Best-fit Strategy

It is not sufficient to have a well prepared set of strategies; what is more important is having a strong infrastructure that supports successful execution and a prioritization scheme to start with the implementation of strategies with the highest probability of success (Liabotis, 2007).

Before venturing into growth strategies, it is important for Air-Tech to resolve its internal bottlenecks. This would include resolving the constraints that it currently has

with respect to bidding and cost-estimation; whereby there is heavy reliance on the CEO in this process.

Also, before preparing the action plan, we need to analyze the required contracts that the company needs to acquire before being able to achieve the expected estimate of an annual increase of 15% profit.

It is important to differentiate between maintenance contracts and revenue expected from repair services. Annual maintenance contracts can range from \$250 to \$750 per unit depending on the unit type, skills involved, and parts that may be used. Repair services range between \$100 and \$300 depending on the type of service required.

It is important to note that the contracts made are per unit; where for instance each building would consist of an average of 10 floors with each having an average of 2 AC units. Implying that each building is a possible market of 20 maintenance contracts per unit (in reality, contracts will be made per household, but this is just for simplifying revenue estimation). At the same time, each enterprise may require maintenance for its offices, branches, or shops. Each entity of these would have on average around 5 to 6 AC units depending on its type and size. Considering the average costs per contract and some estimated projections based on current maintenance performance, the company would expect to win around 150 maintenance contracts per unit and around 260 repair services in Year 1. The number of maintenance contracts is expected to grow to almost 440 contracts in Year 2, with the number of repairs increasing by 20% to almost 300. This growth is expected to be maintained for Year 5 with the number of maintenance contracts expected to grow to 917 in all and around 400 repair services per year.

In USD	2016	2017	2018	2019	2020
Current NI	155,507.74	178,833.90	205,658.98	236,507.83	271,984.01
(-) Investment Cost	(108,000.00)	(150,000.00)	(126,000.00)	(126,000.00)	(126,000.00)
(+) Required Revenue	131,326.16	176,825.08	156,848.85	161,476.17	166,797.60
New NI	178,833.90	205,658.98	236,507.83	271,984.01	312,781.61
% Change	15.00%	15.00%	15.00%	15.00%	15.00%

The new net income would be the current NI (assuming it remains the same) added to the new acquired contracts and deducted by the investment required.

1. Action Plan

Currently, Air-Tech operates with around 6 annual contracts implicating recurring annual revenue of 50,000 USD. In order to properly implement the maintenance strategy, the following goals and milestones need to be achieved based on the devised action plans.

a. Stabilize and build internal competencies

Goal #1: Hire skilled engineer capable of cost estimation or train internal senior engineers for this skillset

This is especially critical since the CEO would be occupied with implementing the strategy and needs to ensure that Air-Tech sustains its position and growth in the market.

Goal #2: Train these estimators how to bid on projects and how to build customer relationships and trust

Once the company is able to stabilize its internal resources and rely less on the CEO for bidding and customer relationships, it would be ready to venture on its growth strategies; whether for new services, segments or markets.

Goal #3: Develop KPIs for HVAC bidding proposals and acceptances

These KPIs would help the CEO monitor and evaluate the existing company's performance. By implementing these steps, the CEO would be able to sustain growth for the existing business, monitor it, and become more engaged with the implementation of the company's growth strategies.

b. Providing maintenance services and creating separate maintenance firm

Goal #1: Separate all financials and operations relating to maintenance; then hire and train new staff for maintenance

Milestones	Resources	Key Actions /Comments	Timeline	Status
1.1. Create new institution in financial system	Accountant	On the financial system, any financial relating to maintenance needs to be separated	Q1 2016	0%
1.2. Allocate new cost centers to this institution	Accountant in coordination with CEO	Identify how resources are distributed and which are dedicated	Q1 2016	0%
1.3. Dedicate existing maintenance resources	Maintenance Engineer and technician	Identify and assign resources dedicated just for maintenance services	Q1 2016	0%
1.4. Separate maintenance operations	General Manager	Schedules need to be assigned in a separate manner	Q1 2016	0%
1.5. Hire new mechanical engineer	CEO	Find the right engineering and follow-up skills to hire	Q1 2016	0%
1.6. Hire new technicians	General Manager	Ensure proper experience and expertise	Q1 2016	0%
1.7. Assign new staff to training programs provided by suppliers	General Manager	Help new staff gain know-how	Q1 2016	0%

Goal #2: Acquire new annual maintenance contracts for at least \$131,326.16 for the first year

Milestones	Resources	Key Actions /Comments	Timeline	Status
2.1. Prepare maintenance contracts for newly completed projects	Maintenance Engineers	Analyze and prepare contracts for the projects	Q2 2016	0%
2.2. Submit proposals to the new projects	Engineer/ Technician	Emphasize the need and push for adoption/ aggressive bidding phase by experienced engineers with the manager's coordination	Q3 2016	0%
2.3. Hire new sales representative	CEO	Salesman to be responsible to marketing the company, increasing awareness & number of bids		
2.4. Promote and push for new maintenance contracts	Sales representative, CEO	During meetings with the contractors, clients for new or existing projects → push for new contracts	Q3 2016	0%
2.5. Submit proposals to recently completed projects	Engineer/ Technician	Recently finalized projects (especially with high net worth clients) are more likely to sign contracts	Q3 2016	0%

Goal #3: Acquire annual maintenance contracts more than \$156,848.85 by the end of the 3rd year (between Q4 2016 and Q4 2017)

Milestones	Resources	Key Actions /Comments	Timeline	Status
3.1. Prepare maintenance contracts for newly completed projects	Maintenance Engineer	Analyze and prepare contracts for the projects	For new project	0%
3.2. Submit contracts to the new projects	General Manager	Emphasize the need and push for adoption	For new project	0%
3.3. Promote and push for new maintenance contracts	CEO, Salesman	During meetings with the contractors, clients for new or existing projects → push for new contracts	During meetings	0%
3.4. In case KPI is not meeting criteria, push the promotion process	CEO	Based on strategy performance and contract closure rate, the need for ads and promotions is to be assessed and adjusted	During meetings	0%

Goal #4: Expand the team to complete the strategy and build technical skills during the 4th year

Milestones	Resources	Key Actions /Comments	Timeline	Status
4.1. Hire new mechanical engineer	CEO	Find the right engineering and follow-up skills to hire	Q1 2018	0%
4.2. Hire new technicians	General Manager	Ensure proper experience and expertise	Q1 2018	0%
4.3. Assign new staff to training programs provided by suppliers	General Manager	Help new staff gain know-how	Q1 2018	0%
4.4. Additional advertising expenses as the need	CEO	CEO to assess need to hire sales person or push promotions based on performance	Q2 2018	0%

Goal #5: Acquire annual maintenance contracts for at least \$166,797.60 by the end of 5th year

Milestones	Resources	Key Actions /Comments	Timeline	Status
5.1. Prepare maintenance contracts for newly completed projects	Maintenance Engineers	Analyze and prepare contracts for the projects	For new project	0%
5.2. Submit contracts to the new projects	General Manager/CEO	Emphasize the need and push for adoption	For new project	0%
5.3. Promote and push for new maintenance contracts	CEO	During meetings with the contractors, clients for new or existing projects → push for new contracts	During meetings	0%
5.4. In case KPI is not meeting criteria, push the promotion process	General Manager/CEO	Push promotion of maintenance through ads or new meetings	During meetings	0%

Goal #6: Create the extension maintenance firm as a sister company (*this process is expected to require around 5 to 6 years to develop, plan and launch the business*)

By the end of the 4th year, Air-Tech should have established a profitable operating sub-unit that is responsible for all maintenance and repair services. Though in our analysis we have covered all the direct costs incurred with delivering these services, there are additional indirect and overhead costs that need to be considered when devising a business plan for this company. Moreover, since it is a new firm it would require more advanced advertising and promotion and would need its own detailed marketing plan and cost allocated to that. Also, it is important to consider proper IT infrastructure when initiating a service company. This business plan needs to cover all aspects and is not covered within the scope of this project. Finally, there needs to be emphasis on the culture that needs to be nourished amongst the staff. Proper training, team building exercises, and staff development should be devised and coordinated to ensure coherence and better employee retention.

Goal #6.1: Devise scope and plan for the new firm

Maintenance firm can have an initial scope of maintenance and repair services, but can then grow itself to provide other services.

Phase	Service Type	Segment	Service Provided
I	Maintenance	Residential, Commercial, and Industrial	Maintenance (labor-only)
			Maintenance (labor and parts)
			Maintenance (labor, parts and compressor)
I	Repair	Residential, Commercial, and Industrial	Compressor repair
			Compressor replacement
			Regular repair
			Heating boiler repair
II	Consulting	Any	HVAC consulting
II	Special Jobs	Any	Commissioning services

Goal #6.2: Prepare financial analysis and operational analysis for the new firm by Q2

2020

This analysis to be based on the successful implementation of previous steps in which separating financial and operational measures for the maintenance firm provides accurate results for cost of employees per hour and margins to be decided and set for this new firm, some financial analysis was performed in the below table:

Analysis to include:

- Direct cost of resources
 - (1) Costs attributed from Air-Tech's maintenance division (sub-entity)
 - Maintenance Engineers
 - Technicians and their assistants
 - Vehicle and transportation costs
 - (2) Retrieve hourly cost per utilized technician to analyze margins and contract costs under the new management
- Indirect costs and overhead costs accounting for
 - (1) Management: General Manager (expected \$72,000 annual salary)
 - (2) Management: Secretary (expected \$6,000 annual salary)
 - (3) Sales: Coordinator (expected \$6,000 annual salary)
 - (4) Sales: Sales personnel/service engineer (expected \$9,600 annual salary)
- Revenue Streams: expected number of contracts, type of contracts, and revenue generated from each contract. Revenues are required to be at least \$265,000 for the first year i.e. around 350 annual contracts and 550 expected repairs per year. This figure is expected to rise to \$425,000 for the second year to around 600 annual contracts and 700 repairs per year.
- Expected profit margins: based on expert analysis performed, such company is expected to be no more than an estimated 5% net loss for the first year; however, it

is expected to be generating around 15% of net profit within its second year (Air-Tech Maintenance Simulation, 2014).

Goal #6.3: Devise marketing plan for the new firm by Q4 2020

Marketing plan for the firm includes all methods that the firm will use to promote itself in the market other than the direct referrals that will be received from its sister company Air-Tech. Plan to include type of promotion, timing and expected cost:

Type of promotion	Timing	Method	Cost	Reason
Flyers to specific geographic areas announcing new service	April to June	Direct Mail → \$300 Flyers → \$300 Artwork → \$400	\$1,000	Targeted promotions
Biweekly advertisements in local newspaper (WASEET)	May to June	WASEET → \$300 Artwork → \$300	\$1,500	Branding awareness
Van/Car advertisements	-	Sticker/vehicle → \$300	\$600	Awareness and Recognition
... other plans to be developed based on the need				

Goal #6.4: Hire managerial and key staff and analyze, assess and purchase IT software for service management by Q2 2021

Milestones	Resources	Key Actions /Comments	Timeline	Status
6.3.1. Hire general manager for the new firm	CEO	CEO to assign a general manager to manage the maintenance firm	Q1 2021	0%
6.3.2. Hire new IT expert for the firm	CEO/ General Manager	IT expert to help in analyzing, assessing and deploying the IT system	Q2 2021	0%
6.3.3. Hire new secretary	General Manager	Secretary to start taking calls for the company	Q2 2021	0%
6.3.4. Assess different IT software that support service management	CEO, maintenance engineers	Analyze aspects of IT system and its alignment with the company's business	Q3 2021	0%
6.3.5. Sign contract with chosen IT software	CEO	Purchase IT system that is identified to be relevant	Q4 2021	0%

Milestones	Resources	Key Actions /Comments	Timeline	Status
6.3.6. Train staff on using IT software	Maintenance engineers/ technicians	The right culture and technological skillset to be developed for these staff	Q1 2022	0%

Goal #6.5: Prepare the office and office resources (secretary, coordinator) and shift the maintenance department from Air-Tech to the new company by Q4 2022

Creating a new firm entails developing a complete business plan for initiating and launching this new company. Now that Air-Tech has separated all its financial and operational measures between the maintenance and installation services that it provides and having gone through five years of developing maintenance know-how and skills and technological experience, it is ready to separate the firm and create a separate entity for maintenance and other services. Financial analysis for this firm is separated from financial analysis from Air-Tech itself.

Throughout the implementation process and even after the maintenance firm is created, the firm must carefully follow up on the KPIs. Once the first strategy is completed, the second strategy that can be implemented is adding the full mechanical services to the company. Detailed action plans will be developed for the first 5 year strategic plan by listing milestones for the goals that were set for these plans. Once the first two strategic plans are successfully implemented, the company needs to reassess its strategy and probably proceed with it. To implement adding the mechanical services to the firm, the following goals and milestones need to be achieved.

c. Expanding product line to include mechanical products

Goal #1: Bid for at least 30 small and medium projects to acquire and implement at least 10 plumbing and ventilation contracts for small projects such as banks, restaurants, branches, etc... through coordinating with a plumbing contractor

Milestones	Resources	Key Actions /Comments	Timeline	Status
1.1.Acquire an HVAC and plumbing contract for small project	CEO	Achieve initial confirmation from customers	Q1 2021	100%
1.2.Sign deal with Plumbing contractor	CEO	Interview plumbing companies and sign deals with plumbing contractors	Q1 2021	100%
1.3.Prepare pricing for plumbing contracts	CEO	Gain know-how and pricing details for such contracts	Q1 2021	70%
1.4.Kick-off first small project	General Manager	Coordinate activities between mechanical and plumbing services	Q2 2021	30%
1.5.Hire experienced mechanical engineer	CEO/ General Manager	Engineer is responsible for coordination and learning know-how	Q3 2021	0%
1.6.Bid for small projects to acquire contracts	CEO/General Manager/ Engineer	Senior engineers and managers to actively bid on projects	Q4 2021	0%
1.7.Acquire small contracts joining both services	CEO/ General Manager	Sign contracts for small projects to gain industry segment expertise	Q2 2022	0%

Goal #2: Acquire a plumbing and ventilation contract for at least one project and start preparing an in-house plumbing team

Milestones	Resources	Key Actions /Comments	Timeline	Status
2.1. Bid for large projects as a mechanical and plumbing contractor	CEO/ General Manager	Bidding to be done on several projects with hopes to acquire 1 large project	Q3 2022	0%

Milestones	Resources	Key Actions /Comments	Timeline	Status
2.2. Negotiate with developers for future large projects contracts	CEO	Negotiate contracts with existing customers	Q3 2022	0%
2.3. Build an in-house plumbing team		Interview and hire 1 plumbing expert and 2 support workers	Q2 2023	0%
2.3.1. Hire a plumbing expert	CEO		Q2 2023	0%
2.3.2. Hire 2 support workers	General Manager		Q2 2023	0%

Goal #3: Develop and prepare the plumbing team and push for further contracts

Milestones	Resources	Key Actions /Comments	Timeline	Status
3.1. Bid for large projects as a mechanical and plumbing contractor	CEO, Mechanical Engineer (Plumbing Team)	Bidding to be done on several projects to acquire more than 1 large project	Q3 2023	0%
3.2. Negotiate with developers for future large projects contracts	CEO	Negotiate contracts with existing customers	Q3 2023	0%
3.3. Once new projects are acquired, expand plumbing team		Interview and hire 1 additional mechanical engineer, 1 plumbing expert and 2 support workers	Q4 2023	0%
3.3.1. Interview and hire new mechanical engineer	CEO		Q4 2023	0%
3.3.2. Hire plumbing expert	General Manager		Q4 2023	0%
3.3.3. Hire support workers (x 2)	General Manager		Q4 2023	0%
3.4. Implement and install plumbing and mechanical contracts	Plumbing Team	Design, Plan, Coordinate, and install plumbing services for acquired projects	Q4 2023	0%

By **Q4 2023**, the company should have established a strong plumbing team and is able to properly handle, coordinate and install both mechanical and plumbing services

for its customers. Then on, the company can start acquiring heating contracts (or even solar heating contracts). In the beginning, the company will allow the plumbers to handle both heating and plumbing services while new heating plumbers are hired and trained to do the job with high quality.

Goal #4: Sign and acquire a full mechanical contract for at least one large project

Milestones	Resources	Key Actions /Comments	Timeline	Status
4.1. Bid for large projects as a full mechanical contractor	CEO	Bidding to be done on several projects to acquire 1 large project	Q2 2024	0%
4.2. Negotiate with developers for future full-mechanical large projects contracts	CEO	Negotiate contracts with existing customers	Q2 2024	0%
4.3. Implement project providing full services	Mechanical and Plumbing teams	Design, plan, coordinate, and install services	Q2 2025	0%

Goal #5: Build skills and push for new mechanical contracts, and add heating team that will handle both regular heating and the solar heating for domestic water pipes segment

Milestones	Resources	Key Actions /Comments	Timeline	Status
5.1. Bid for large projects as a full mechanical contractor	CEO	Bidding to be done on several projects to acquire more than 1 large project	Q2 2025	0%
5.2. Negotiate with developers for future full-mechanical large projects contracts	CEO	Negotiate contracts with existing customers	Q2 2025	0%
5.3. Once projects are acquired, develop in-house specialized heating team	CEO, General Manager	Hire 1 heating plumber and 2 support workers to start heating team	Q2 2025	0%

Milestones	Resources	Key Actions /Comments	Timeline	Status
5.4. Implement full mechanical projects	Mechanical, Plumbing and Heating teams	All teams to coordinate their activities to deliver high quality installments to clients	Q4 2025	0%

2. Financial Planning and Required Resources

In its first year of operation, Air-Tech requires around 108,000 USD to prepare the operations necessary for the first year. Air-Tech is willing to invest around 70,000 USD in equity and means to take the remaining amount in bank loans of 38,000 USD. Local Lebanese banks have provided consent to provide Air-Tech with up to 200,000 USD of financing.

3. Revision and Follow-up Planning

In order to ensure proper follow-up on the strategy implementation, Air-Tech needs to identify the key performance indicators that are essential to ensure proper performance and then monitor them on regularly scheduled meetings.

a. Key Performance Indicators (KPIs)

It is important to identify the list of key performance indicators that will allow the company to analyze how it is progressing and what are the acceptable performance measures that the company needs to abide by when implementing its maintenance strategy.

Table 21: Operational and Financial KPIs

KPI Operations Annual Range	Acceptable	Good	Excellent
Service Agreements ¹	\$100,000	\$150,000	\$200,000

¹ Service Agreements are annual maintenance contracts signed between the company and its clients

KPI Operations Annual Range	Acceptable	Good	Excellent
Service Repairs per technician ²	500	600	700
Service Repair/Technician/Day (June-July-August)	3	3.5	3.7
Scheduled Visits per technician ³	156	208	260
Utilizable period per technician ⁴	50%	60%	70%
Service Callbacks per technician ⁵	3%	2%	1%
Proposals closure-rate per technician/engineer ⁶	50%	60%	70%
Proposals closure-rate per sales ⁷			
Initiation	30%	40%	50%
Established	50%	60%	70%
KPI Annual Gross Margins	Acceptable	Good	Excellent
Gross Profit	12%	15%	17%
Service Agreements ⁸	20%	30%	40%

b. Quarterly and Semi-Annual follow-up meetings

Air-Tech should ensure to schedule follow-up meetings based on the prepared implementation plan. Meetings between the General Manager and the Mechanical Engineers and Technicians on a monthly basis to follow-up on the completed milestones and what are their next steps. Also, semi-annual meetings to be conducted with the CEO to provide feedback regarding the progress whereby the KPIs can be checked for analyzing performance. It is important to understand that reliance is not just on hard data, whereby the soft data and employee interactions greatly influence the strategy performance. The strategy implementation plan may need to be adjusted dynamically

² Service Repairs are on-time requests that the company should be able to support instantly or within the period specified in the contract

³ The scheduled visits are usually around 4 or 6 visits per year that are pre-defined are per the signed agreement

⁴ Effective utilized percentage of hours per technician when working on service calls and requests ...

⁵ The service callbacks are the recurring callbacks from the customer to a service that was previously provided and checked up by the company within the past preset period of time (one or two weeks)

⁶ The proposals closure rate is the percentage of contracts that the company is able to sign with its clients from the total number of proposals that were submitted.

⁷ The proposals closure rate is the percentage of contracts that the company is able to sign with its clients from the total number of proposals that were submitted by its dedicated sales people. It will be gradually incremented based on the development of the company's brand name in the market.

⁸ Gross margin generated per service-agreement (higher margins with more expensive contracts or lower paid staff)

based on the existing external and internal factors, which is why it is important to ensure CEO involvement in this implementation. Moreover, Air-Tech should build the right leadership culture amongst its employees to be able to properly implement the strategy. Given the company's small size, it should be able to smoothly and dynamically transform steps within the implementation plan but still keep its eye set for the company's goals and essential vision.

J. Conclusion and Recommendation

In the end, the best-fit strategy needs to be backed up with family commitment whereby the family has confidence in it and is willing to invest; supported by the firm's internal capabilities, whether financial or organizational, and facing an overall attractive external environment i.e. the firm's industries and markets (Ward & Carlock, 2001). In addition, the company's staff needs to be committed, engaged and involved with the strategies to be implemented at the company. Air-Tech would want to strengthen its core competencies within its core business before expanding its product line. But before starting with growth, it needs to stabilize its internal operations and bidding process; which is why it was recommended to train cost estimators and develop KPIs to monitor them. After which it is recommended to start with creating the extension maintenance firm before developing its skills to provide full mechanical services starting with smaller projects and then growing into larger projects. This is because for larger projects, the competitors are usually larger, more aggressive and provide a wider scope of services; and if Air-Tech is not able to provide these services in a competitive manner, it would not be able to compete at a larger scale. Air-Tech needs to focus on growing itself internally and hiring and training the right staff to help its development.

The CEO needs to play a key role in implementing the strategy and should be ready to adapt it to any changing events. Moreover, as the CEO would be involved with creating the maintenance firm, he should train and empower his senior employees to be able to bid on more projects to help sustain and push the company's current core business in installation of HVAC services. After Air-Tech is able to grow internally and develop itself on all the core businesses that it now operates in (i.e. the full mechanical services), it can start to analyze new markets and prepare plans to penetrate them after extreme industry analysis of these markets and look into further developments.

CHAPTER V

CONCLUSION

Air-Tech has faced additional challenges when thinking and implementing strategies since it is a family business. On one hand, growth strategy poses a challenge to the business's ownership, structure and operations. On the other hand, political and environmental risks prevent such companies from taking additional risks or from leveraging the company to grow their business. This is what results in resistance for strategic development in family businesses, for instance in the US, studies show that almost two-thirds of the family businesses have not written a strategic plan (Ward & Carlock, 2001). Air-Tech's CEO for example was also resistant to strategic planning due to the unstable environment, lack of proper know-how, political risk and ownership risks. However, since it had to miss out on multiple opportunities including maintenance contracts, repair requests, or plumbing contracts, Air-Tech has realized that there is potential and market demand and that there is opportunity to develop its business further.

But, the probability of achieving profitable growth is heightened whenever an organization has a clear growth strategy and strong execution infrastructure. One without the other impairs the probability of success. A company's ability to achieve profitable growth relies on the clarity of the growth strategy it has defined and the strength of the execution plan and infrastructure prepared for this strategy (Liabotis, 2007). By following this approach, a thorough analysis for several strategies for Air-Tech was performed covering internal and external analysis. Internal analysis focused on the firm's core competencies, strengths and competitive advantages. External

analysis segmented its customers, assessed the environment stability and the strength and impact of its competitors.

Once analyzed, these strategies are mapped against the company's internal strengths in order to identify the best-fit strategy. As per the above recommendation, it is best for Air-Tech to strengthen its core business and create a maintenance firm that will handle all maintenance and repair requests. This company would start with working on Air-Tech's projects and then build its name in the industry and take on maintenance contracts for other companies' projects. Once the maintenance firm is up and running, Air-Tech can shift its focus to expand its product line. Since the plumbing and heating industries are closest to its core business, Air-Tech would start by expanding to provide the full mechanical services. As per the analysis performed, the barriers to entry are relatively manageable and Air-Tech can capitalize on its own experience; therefore, this strategy is the right step for its growth. Once it is able to provide the full mechanical services, Air-Tech can then follow-up in developing its business into full MEP before going international. Air-Tech needs to build the right culture in which all the employees are informed and engaged in the implementation process of the strategy in order to succeed with its implementation. As it was extremely important to devise clear and concise action plans so that the CEO and the existing and new employees have a tangible sense of what the strategy implementation will be like. These plans and goals set the right culture and orient the employees towards the company's vision.

In addition, Air-Tech needs to be keen on checking up on its pre-defined KPIs and adapting the strategy when necessary. This is to be done through scheduled quarterly and semiannual meetings to follow-up and re-analyze the external and internal factors against the implementations performed. For instance, increased political turmoil

might force Air-Tech to slow down its operations and affect its pre-set plans. Or loss of critical human resources would need to be studied and require an urgent hiring process to prepare proper replacement. Setting the strategy and its plan does not mean that the job is considered as done; instead strategy needs to become a way of life, an on-going process with the CEO driving the process at its core (Montgomery, 2008). This is especially true for a small family business such as Air-Tech, where the CEO is the owner and the senior manager which would give him a better sense of ownership of the plan. He needs to set the path to where the company sees itself in the future, in essence playing a key role in shaping the company's identity. Accordingly, if the CEO is properly engaged, this would help reduce his resistance for planning and result in better implementation of the devised strategic plans rather than having them become sets of paper put on the shelves and intermittently reviewed.

The CEO's involvement, perception and vision throughout the strategy development and implementation helps prevent Air-Tech from falling into the trap of going through strategic analysis as a left-brain exercise. Therefore, his main role is to monitor the strategy wherein lies his biggest opportunity to shape and position the company wherever he envisions it to be (Montgomery, 2008). In the end there is ample potential for Air-Tech to grow and develop itself into a larger enterprise given the right performance and engagement from its CEO and staff.

APPENDICES

A. Appendix A: MEP Industry Company Analysis

Analysis is done for most of the companies listed as HVAC, plumbing or electrical that can be considered as direct competitors for Air-Tech in Lebanon. Based on online data results and industry experts, each company is flagged for the services that it provides. A score of 1 indicates that the company provides this kind of service; while a score of 0 indicates otherwise. Accordingly, based on the summation of the results, the number of firms operating in each segment of the industry is identified. These percentages are used to help identify the presence and variety of services offered by Air-Tech's competitors in the MEP industry.

Company Name	HVAC	Plumbing	Electrical	Total
Designs, Air Conditioning & Heating Contracting Sarl	1	0	0	1
Debbas Systems Sal	1	0	1	2
Tyros for Trading & Contracting Sal (Off-shore)	1	0	0	1
Fouad Hanna Mechanical Consultants	1	1	0	2
Sharing Co. Sarl	1	1	0	2
Beta Engineering	1	1	0	2
DomoServe Sal	1	0	0	1
Advanced Technology Services Sal	1	1	0	2
ix It Maintenance & Contracting	1	1	0	2
Rockland Co. Sarl	1	1	1	3
Malia International (Off-Shore) Sal	1	1	1	3
Ligerma	1	0	0	1
Société Nagi Abi-Aad Sarl	1	1	0	2
Batal Generator Maintenance & Contracting	1	0	0	1
International Technical Trading Co. Sarl	1	0	0	1
Sabeco & Partners for Trading & Contracting Sal	1	1	0	2
Khater Engineering And Trading Sarl	1	1	1	3
Genec S.A.R.L.	1	0	0	1
EM Tech	1	1	1	3
CLIM – Climate Technologies	1	1	1	3

Company Name	HVAC	Plumbing	Electrical	Total
National Contracting Corporation Sarl	1	0	0	1
Jacteco Mechanical Sarl	1	0	0	1
Sawa Engineering & Contracting Sarl	1	0	0	1
Metra Mechanical Engineering & Trading Sarl	1	0	0	1
Bitar Engineering & General Contracting Co. Ltd.	1	1	0	2
International Co. for Advanced Systems Sarl	1	0	0	1
Abco	1	0	0	1
Abi Aad Naji Sarl	1	0	0	1
Arabian Contractors Supplies Co. Sarl (A.C.S.C.)	1	0	0	1
Bemtc Sarl	1	0	0	1
Chami Cooling & Heating	1	0	0	1
Chillers Sarl	1	0	0	1
Equip Engineering & Contracting Sal	1	0	0	1
Etcco Sarl	1	1	1	3
Global Contracting Co. Sarl - G.C.C. SARL	1	1	1	3
Klima "Ets."	1	0	0	1
Tabbara Electro Mechanic Sarl (T.E.M)	1	0	0	1
Technical Engineering Group - S.A.R.L	1	0	0	1
Tecmo Sal	1	1	1	3
Unic Sal	1	0	0	1
Webco S.A.R.L	1	1	0	2
Totals Per Industry Segment	41	17	9	67
Total Percentage		41.46%	21.95%	

Therefore, 41.46% of companies providing HVAC services are also providing plumbing services; and 21.95% of the companies provide electrical services.

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