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MASTER'S RESEARCH PAPER

On the topic: “An investigation of operational management in the organization, on
the example of the Apple Computer, Inc.”

Accomplished by the student of the
group IBMm-62

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ABSTRACT

Topic: «An investigation of operational management in the organization, on the example of the Apple Computer, Inc.»

Diploma work: 102 p., 6 figs., 5 tables, 1 appendix, 72 references.

The Object of Investigation – the process of managing of operating activities of Apple, Inc.

The Aim of the Work is to formulate theoretical approaches and to develop practical recommendations on directions of improvement of operating management at the organization.

Research methods: methods of analysis, synthesis, comparison, detailing, system approach.

This paper analyzes the operational management of Apple, Inc. and provides recommendations for it's improvement. In particular, the main directions of solving the problems of operational management of the company have been outlined, the proposals on improvement of expansion distribution network and organization of innovative activity of the Apple Inc. have been made.

Keywords: operational management, operational activity, SWOT – analysis, competitive advantages of the organization.

АНОТАЦІЯ

Тема: «Дослідження системи операційного менеджменту організації, на прикладі Apple Computer, Inc.»

Магістерська робота: 102 с., 6 рис., 5 табл., 1 додаток, 72 літературних джерела.

Об'єкт дослідження – процес управління операційною діяльністю компанії Apple, Inc.

Мета дослідження - формування теоретичних підходів та розробка практичних рекомендацій щодо напрямів вдосконалення системи операційного менеджменту компанії Apple, Inc.

Методи дослідження: методи аналізу, синтезу, порівняння, деталізації, системний підхід.

У роботі проведено аналіз операційного менеджменту Apple, Inc., а також викладені рекомендації щодо його вдосконалення. Зокрема, окреслено основні напрями вирішення проблем операційного менеджменту компанії, внесено пропозиції щодо розширення дистриб'юторської мережі, а також вдосконалення організації інноваційної діяльності Apple Inc.

Ключові слова: операційний менеджмент, операційна діяльність, SWOT – аналіз, конкурентні переваги організації.

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INTRODUCTION

Theme actuality. Operations Management plays a vital role to ensure the effective functioning of the organization. It involves similar management for every industry or business irrespective of their nature of the operation. Planning, organizing, staffing, monitoring controlling, directing and motivating are its significant elements. Operation management is obligatory for organizations to manage the daily activities seamlessly. With its help, an organization is able to make good use of its resources like labor, raw material, money and other resources.

Operation Management is important to improve the overall productivity. The ratio of input to output is termed as productivity. It gives a measure of the efficiency of the manager as well as the employees. Since the discipline focuses on using the available resources in the best possible way to achieve end goals, so it improves the overall productivity.

Operation management is the management of the various business activities that take place within an organization and contributes in making the products to align with customer's requirements. Operation management is the heart of an organization as it controls the entire operation. If the products are made catering to the needs of the customers then, they'll be sold at a rapid rate. Under operation management, there is the optimum utilization of resources leading to enormous profits of the organization. The efforts of the employees and the various raw materials are efficiently utilized and converted into the services and goods required by the organization. Operation management plays a crucial role in an organization as it handles issues like design, operations, and maintenance of the system used for the production of goods. The manufacturing of raw materials to make the goods and selling them along with management of sales is necessary, and this is done efficiently by managing the operations.

The main **aim** of this research paper is to investigate system of Operations Management of the Apple Inc. and to formulate theoretical approaches and to

develop practical recommendations on directions of improvement of operating management at the organization.

The main **tasks** of master research paper are the following:

- to consider the theoretical framework of operational management;
- to determine the environmental factors that influences the Operational Management at the Apple Inc.;
- to conduct the analysis of operation management at Apple Inc.;
- to give recommendations for improvement of Operational Management at the Apple Inc.

The **object of study** of the master's work is the process of managing the operational activity, and the **subject** is the directions of improving the operational management at the company.

The information base of the investigation are materials of scientific research in the sphere of Operational Management, operating data of the Apple Inc. and other information sources.

Research methods cover methods of analysis, synthesis, comparison, detailing, system approach.

Structure of master's thesis. The master's thesis consists of an introduction, seven chapters, conclusions, a referances and applications.

CHAPTER 1

THE THEORETICAL FRAMEWORK OF OPERATIONAL MANAGEMENT

1.1 Meanings and definition of operational management

Operations management is the administration of business practices to create the highest level of efficiency possible within an organization. It is concerned with converting materials and labor into goods and services as efficiently as possible to maximize the profit of an organization. Operations management teams attempt to balance costs with revenue to achieve the highest net operating profit possible.

Operations management involves utilizing resources from staff, materials, equipment, and technology. Operations managers acquire, develop, and deliver goods to clients based on client needs and the abilities of the company.

Operation management is a process that involves planning, organizing, managing, controlling and supervising the production and manufacturing processes. The major aim of an operation manager is to ensure timely delivery of the products and to successfully turn the raw materials into the finished products (input to output) [3]. Operations management handles various strategic issues, including determining the size of manufacturing plants and project management methods and implementing the structure of information technology networks. Other operational issues include the management of inventory levels, including work-in-process levels and raw materials acquisition, quality control, materials handling, and maintenance policies.

Operations management entails studying the use of raw materials and ensuring minimal waste occurs. Operations managers utilize numerous formulas, such as the economic order quantity formula to determine when and how large of an inventory order to process and how much inventory to hold on hand.

A critical function of operations management relates to the management of inventory through the supply chain. To be an effective operations management professional, one must be able to understand the processes that are essential to what a

company does and get them to flow and work together seamlessly. The coordination involved in setting up business processes in an efficient way requires a solid understanding of logistics.

An operations management professional understands local and global trends, customer demand and the available resources for production. Operations management approaches the acquisition of materials and the use of labor in a timely, cost-effective manner to deliver customer expectations. Inventory levels are monitored to ensure excessive quantities are on hand. Operations management is responsible for finding vendors that supply the appropriate goods at reasonable prices and have the ability to deliver the product when needed.

Another large facet of operations management involves the delivery of goods to customers. This includes ensuring products are delivered within the agreed time commitment. Operations management also typically follows up with customers to ensure the products meet quality and functionality needs. Finally, operations management takes the feedback received and distributes the relevant information to each department to use in process improvement.

Operations managers are involved in coordinating and developing new processes while reevaluating current structures. Organization and productivity are two key drivers of being an operations manager, and the work often requires versatility and innovation.

An MBA in operations management can give someone a global perspective on industry trends and an awareness of any financial regulations and political uncertainties that can affect an organization. It also gives someone a solid grasp on the inherent complexities and the tools needed to respond well to change.

Operations management was previously called production management, clearly showing its origins in manufacturing. Historically, it all began with the division of production, starting as early as the times of ancient craftsmen, but spreading more widely only by adding the concept of interchangeability of parts in the eighteenth century, ultimately sparking the industrial revolution.

Still, it was not until Henry Ford took a twist on manufacturing with his

famous assembly line concept, otherwise known as “bring work to men,” that the management of production for improving productivity became a hot topic. From the 1950’s and 1960’s, it formed a separate discipline, besides bringing other concepts, such as Taylorism, production planning, or inventory control, to life.

As the economies in the developed world were gradually shifting to be service-based, all the corporate functions, including product management, started to integrate them. The service side also began its approach by applying product management principles to the planning and organizing of processes, to the point where it made more sense to call it operations management.

Operations management is now a multidisciplinary functional area in a company, along with finance and marketing. It makes sure the materials and labor, or any other input, is used in the most effective and efficient way possible within an organization - thus maximizing the output.

Operations management requires being familiar with a wide range of disciplines. It incorporates general management, factory- and equipment maintenance management by tradition. The operations manager has to know about the common strategic policies, basic material planning, manufacturing and production systems, and their analysis. Production and cost control principles are also of importance. And last, but not least, it has to be someone’s who is able to navigate industrial labor relations.

The skills of operations manager required to perform such work are as diverse as the function itself. The most important skills are:

- Organizational abilities. Organizing processes in an organization requires a set of skills from planning and prioritizing through execution to monitoring. These abilities together help the manager achieve productivity and efficiency.
- Analytic capabilities/understanding of process. The capability to understand processes in your area often includes a broad understanding of other functions, too. An attention to detail is often helpful to go deeper in the analysis.
- Coordination of processes. Once processes are analyzed and understood, they can be optimized for maximum efficiency. Quick decision-making is a real

advantage here, as well as a clear focus problem-solving.

- People skills. Flaws in the interactions with employees or member of senior management can seriously harm productivity, so an operation manager has to have people skills to properly navigate the fine lines with their colleagues. Furthermore, clear communication of the tasks and goals serves as great motivation and to give a purpose for everyone.

- Creativity. Again, problem-solving skills are essential for a creative approach if things don't go in the right direction. When they do, creativity helps find new ways to improve corporate performance.

- Tech-saviness. In order to understand and design processes in a time when operations are getting increasingly technology-dependent, affinity for technology is a skill that can't be underestimated. Operations managers have to be familiar with the most common technologies used in their industries, and have an even deeper understanding of the specific operation technology at their organizations.

An operations management professional understands local and global trends, customer demand and the available resources for production. Operations management approaches the acquisition of materials and the use of labor in cost-effective manner to deliver customer expectations. Inventory levels are monitored to ensure excessive quantities are on hand.

Operations management is responsible for finding vendors that supply the appropriate good sat reasonable prices and have the ability to deliver the product when needed. Another large facet of operations management involves the delivery of goods to customers. This includes ensuring products are delivered within the agreed time commitment. Operations management also typically follows up with customers to ensure the products meet quality and functionality needs. Finally, operations management takes the feedback received and distributes the relevant information to each department to use in process improvement. Operations managers are involved in coordinating and developing new processes while reevaluating current structures. Organization and productivity are two key drivers of being an operations manager, and the work often requires versatility and innovation.

1.2 Principles and methods of operations management

When operations management is implemented, there are key adjustments that are made to help support the company in reaching strategic goals. These strategic goals are met through understanding the most important principles of operations management and provide thorough visibility into the operation. Therefore, here are the 10 Principles of Operations Management within a manufacturing operation, outlined by Randall Schaeffer, who is an experienced manufacturing and operations management professional, an industrial philosopher, and regular speaker at conferences organized by APICS, the leading US association of supply chain and operations management.

The 10 principles operations management are:

- Reality. Operations management should focus on the problem, instead of the techniques, because no tool in itself would present a universal solution.
- Organization. Processes in manufacturing are interconnected. All elements have to be predictable and consistent, in order to achieve a similar outcome in profits.
- Fundamentals. The Pareto rule is also applicable to operations: 80% of success comes from a strict adherence to precisely maintaining records and disciplines, and only 20% comes from applying new techniques to the processes.
- Accountability. Managers are expected to set the rules and the metrics, and define responsibilities of their subordinates, as well as regularly check if the goals are met. Only this way would the workers put in the necessary efforts.
- Variance. Variance of processes has to be encouraged, because if managed well, they can be sources of creativity.
- Causality. Problems are symptoms: effects of underlying causes. Unless the causes are attacked, the same problems will appear again.
- Managed passion. The passion of employees can be a major driver of company growth, and it can be instilled by the managers if not coming naturally.
- Humility. Instead of a costly trial and error process, managers should acknowledge their limitations, “get help, and move on.”
- Success. What is considered success will change over time, but always

consider the interest of the customer. In order to keep them, all the other principles have to be revised occasionally.

- Change. There will always be new theories and solutions, so you should not stick to one or the other, but embrace the change, and manage for stability in the long term.

The 16 principles of operations management by Dr. Richard Schonberger, renowned researcher of American manufacturing and author of the book «World Class Manufacturing: The Next Decade»:

- Team up with customers. Know what they buy and use, and organize product families accordingly.

- Continual, rapid improvement. Aim for non-stop improvement to always deliver the best quality, aim for a quicker response to customer demand, and always offer maximum flexibility. Thus, it gives more value, in a more flexible way.

- Unified purpose. Involve frontline employees in strategic discussions to make sure they understand the purpose of their work and have their say in what to change.

- Know the competition. Know their customers, their best practices, and their competitive edges.

- Focus. Allow no variations that the customers don't buy or demand.

- Organize resources. Set priorities in organizing resources in a way the operations are close to the customer rate of use or demand.

- Invest in HR. Offer cross-training options, job rotation, and improvements in work safety and health. Also offer more rewards and recognitions.

- Maintain equipment. Always think of improvement of current assets first, instead of a new purchase.

Simple “best” equipment. Keep the equipment as simple and flexible as possible, at a reasonable cost.

- Minimize human error. Improve the equipment and keep frontline workers accountable.

- Cut times. Shorten product path to customer by making processes and

delivery faster.

- Cut setup. Be prepared to support different processes and get all information and tools ready for on-demand production.

- Pull system. Improve the workflow and cut the waste by producing on demand.

- Total quality control. Use only the best materials, processes, and partners.

- Fix causes. Focus on controlling the root causes that really affect cost and performance.

- Visibility management. Promote corporate achievements, let the market know about your improvements in competence or productivity.

Techniques of operations management are employed in service as well as in manufacturing industries. It is a responsibility similar in level and scope to other specialties such as marketing or human resource and financial management. In manufacturing operations, operations management includes responsibility for product and process design, planning and control issues involving capacity and quality, and organization and supervision of the workforce.

The “five M’s”

Operations management’s responsibilities are summarized by the “five M’s”: men, machines, methods, materials, and money. “Men” refers to the human element in operating systems. Since the vast majority of manufacturing personnel work in the physical production of goods, “people management” is one of the production manager’s most important responsibilities.

The operations manager must also choose the machines and methods of the company, first selecting the equipment and technology to be used in the manufacture of the product or service and then planning and controlling the methods and procedures for their use. The flexibility of the operations process and the ability of workers to adapt to equipment and schedules are important issues in this phase of production management.

The operations manager’s responsibility for materials includes the management of flow processes—both physical (raw materials) and information

(paperwork). The smoothness of resource movement and data flow is determined largely by the fundamental choices made in the design of the product and in the process to be used.

The manager's concern for money is explained by the importance of financing and asset utilization to most manufacturing organizations. A manager who allows excessive inventories to build up or who achieves level production and steady operation by sacrificing good customer service and timely delivery runs the risk that overinvestment or high current costs will wipe out any temporary competitive advantage that might have been obtained.

Planning and control

Although the five M's capture the essence of the major tasks of operations management, control summarizes its single most important issue. The production manager must plan and control the process of production so that it moves smoothly at the required level of output while meeting cost and quality objectives. Process control has two purposes: first, to ensure that operations are performed according to plan, and second, to continuously monitor and evaluate the production plan to see if modifications can be devised to better meet cost, quality, delivery, flexibility, or other objectives. For example, when demand for a product is high enough to justify continuous production, the production level might need to be adjusted from time to time to address fluctuating demand or changes in a company's market share. This is called the "operations -smoothing" problem. When more than one product is involved, complex industrial engineering or operations research procedures are required to analyze the many factors that impinge on the problem.

Inventory control is another important phase of operations management. Inventories include raw materials, component parts, work in process, finished goods, packing and packaging materials, and general supplies. Although the effective use of financial resources is generally regarded as beyond the responsibility of production management, many manufacturing firms with large inventories (some accounting for more than 50 percent of total assets) usually hold production managers responsible for inventories.

Successful inventory management, which involves the solution of the problem of which items to carry in inventory in various locations, is critical to a company's competitive success. Not carrying an item can result in delays in getting needed parts or supplies, but carrying every item at every location can tie up huge amounts of capital and result in an accumulation of obsolete, unusable stock. Managers generally rely on mathematical models and computer systems developed by industrial engineers and operations researchers to handle the problems of inventory control.

To control labour costs, managers must first measure the amount and type of work required to produce a product and then specify well-designed, efficient methods for accomplishing the necessary manufacturing tasks. The concepts of work measurement and time study introduced by Taylor and the Gilbreths, as well as incentive systems to motivate and reward high levels of worker output, are important tools in this area of management. In new operations particularly, it is important to anticipate human resource requirements and to translate them into recruiting and training programs so that a nucleus of appropriately skilled operators is available as production machinery and equipment are installed. Specialized groups responsible for support activities (such as equipment maintenance, plant services and production scheduling, and control activities) also need to be hired, trained, and properly equipped. This type of careful personnel planning reduces the chance that expensive capital equipment will stand idle and that effort, time, and materials will be wasted during start-up and regular operations.

The effective use and control of materials often involves investigations of the causes of scrap and waste; this, in turn, can lead to alternative materials and handling methods to improve the production process. The effective control of machinery and equipment depends on each machine's suitability to its specific task, the degree of its utilization, the extent to which it is kept in optimum running condition, and the degree to which it can be mechanically or electronically controlled.

Because of the enormous complexity of typical production operations and the almost infinite number of changes that can be made and the alternatives that can be pursued, a productive body of quantitative methods has been developed to solve

operations management problems. Most of these techniques have emerged from the fields of industrial engineering, operations research, and systems engineering. Specialists in these fields are increasingly using computers and information processing to solve production problems involving the masses of data associated with large numbers of workers, massive inventories, and huge quantities of work in process that characterize most of today's production operations. Indeed, many mass operations could not run without the support of these industrial engineers and technical specialists.

In the past, operations had a much more challenging time with boosting efficiency within their production facility. This was due to a lack of thorough insight and hindrances that included a lack of collaboration throughout the organization. As production facilities came across this problem frequently, operations management became a viable solution. Functions of Operations Management Operations management pertains to managing the operation and process within an organization. With effective operations management, there is much more accountability and accuracy for successful delivery of a product or project. Within the process, operations management performs various functions that are apart of aiding the increase within production. Therefore, here are the key functions of operations management.

Key functions of operations management include the following [5]:

1) Finance - Finance is a crucial component within operations management. It is essential to make sure that all finances have been utilized to their fullest extent and are being properly carried out to ensure for optimized creation of goods and services. Proper utilization of finances will allow for a product or service to be created that will satisfy overall consumer needs.

2) Strategy - When utilizing strategy within operations management, this refers to planning tactics that can aid through optimized resources and development of a competitive edge over other businesses. Many business strategies include supply chain configuration, sales, capacity to hold money, and optimum utilization of human resources.

3) Operation - This function of operations management is concerned with planning, organizing, directing, and overall control of all activities within the organization. This is the primary function of operations management and will effectively aid in converting raw materials and human efforts into a durable good and service that consumers will be able to utilize.

4) Product Design - With new technology becoming available, the selling of a product become much more simple. One of the main duties of operations management is to ensure that a product is designed properly and caters to market trends and needs of consumers. Modern-day consumers are concerned about quality instead of quantity, which is why it is so crucial to develop a durable and top-notch quality product.

5) Forecasting - Forecasting is the process in which software makes an estimate of certain events that may occur in the future. In operations management, forecasting can take an estimate of consumer demand, which correlates with production through creating an accurate amount of product needed within a given time. Overall, forecasting plays a crucial role within the production process.

6) A software that is becoming extremely common among manufacturing operations includes advanced planning and scheduling software. Advanced planning and scheduling software can provide thorough insight within a production operation and take the facility to next level in terms of optimization and efficiency.

Advanced Planning and Scheduling (APS) software has become a must for modern-day manufacturing operations due to customer demand for increased product mix and fast delivery combined with downward cost pressures. APS can be quickly integrated with a ERP/MRP software to fill gaps where these system lack planning and scheduling flexibility and accuracy. Advanced Planning and Scheduling (APS) helps planners save time while providing greater agility in updating ever-changing priorities, production schedules, and inventory plans.

The companies need:

- to create optimized schedules balancing production efficiency and delivery performance;

- to maximize output on bottleneck resources to increase revenue;
- to synchronize supply with demand to reduce inventories;
- to provide company-wide visibility to capacity;
- to enable scenario data-driven decision making;

Implementation of Advanced Planning and Scheduling software will take manufacturing operations to the next level of production efficiency.

The importance of Operations management to the business firm:

- Reputation, Goodwill and Image: Operations management helps the firm to satisfy its customers. This increases the firm's reputation, goodwill and image. A good image helps the firm to expand and grow;

- helps to introduce new products: Operations management helps to introduce new products in the market. It conducts Research and development (R&D). This helps the firm to develop newer and better quality products. These products are successful in the market because they give full satisfaction to the customers;

- supports other functional areas: Operations management supports other functional areas in an organisation, such as marketing, finance, and personnel. The marketing department will find it easier to sell good-quality products, and the finance department will get more funds due to increase in sales. It will also get more loans and share capital for expansion and modernisation. The personnel department will be able to manage the human resources effectively due to the better performance of the production department.

- helps to face competition: Operations management helps the firm to face competition in the market. This is because production management produces products of right quantity, right quality, right price and at the right time. These products are delivered to the customers as per their requirements;

- optimum utilisation of resources: Operations management facilitates optimum utilisation of resources such as manpower, machines, etc. So, the firm can meet its capacity utilisation objective. This will bring higher returns to the organisation;

- minimises cost: Operations management helps to minimise the cost of

production. It tries to maximise the output and minimise the inputs. This helps the firm to achieve its cost reduction and efficiency objective;

- expansion of the firm: The Operations management helps the firm to expand and grow. This is because it tries to improve quality and reduce costs. This helps the firm to earn higher profits. These profits help the firm to expand and grow.

The importance of Operations management to customers and society:

1) Higher standard of living: Operations management conducts continuous research and development (R&D). So they produce new and better varieties of products. People use these products and enjoy a higher standard of living.

2) Generates employment: Operations activities create many different job opportunities in the country, either directly or indirectly. Direct employment is generated in the production area, and indirect employment is generated in the supporting areas such as marketing, finance, customer support, etc.

3) Improves quality and reduces cost : Operations management improves the quality of the products because of research and development. Because of large-scale production, there are economies of large scale. This brings down the cost of production. So, consumer prices also reduce.

4) Spread effect: Because of production, other sectors also expand. Companies making spare parts will expand. The service sector such as banking, transport, communication, insurance, BPO, etc. also expand. This spread effect offers more job opportunities and boosts economy.

5) Creates utility: Operations creates Form Utility. Consumers can get form utility in the shape, size and designs of the product. Production also creates time utility, because goods are available whenever consumers need it.

6) Boosts economy: Operations management ensures optimum utilisation of resources and effective production of goods and services. This leads to speedy econ
There are three major groups of activities performed by operations management, deriving from its planning or designing, organizing, and supervising functions. All activities involve considering assets, costs, and human resources, and are preceded by a thorough analysis of processes.

Before planning processes or designing products, operations management should be busy analyzing the market to test the demands. If it delivers promising results, e.g. a niche to target or a new product or service to develop, you can start planning.

In most cases, planning involves designing a new product, from the initial concept to the actual launch, with several testing phases involved. During planning, you will have to consider both technical and business requirements.

Sometimes the processes need to be updated: designing a new supply chain or other logistics processes. If your product is a service, process design aims for a variety of requirements and customer contact levels.

Again in other cases, it's about a new facility: your company decides to expand its operations, and you will have to decide on the location of the facility, its capacity, and its layout.

Plans should always support the business objectives: they are in focus when considering the costs and finding the best matching quality and capacity, or calculating inventory and human labor needs.

Therefore, it is important to set proper measures in the planning phase, to know if the actual performance meets them, or there is need for adjustments. Capacity is one of these measures, as is product quality, or delivery times. The initial figures are usually estimates based on the market analysis conducted before economic growth and well-being of the nation.

1.3 Factors affecting the Operations activity of Apple Inc. company

The external factors in Apple's remote or macro-environment indicate the value of strategic management and flexible long-term strategic planning in managing external factors. PESTEL/PESTLE analysis serves as a guide for strategic formulation processes to address external pressures the technology corporation is experiencing. Apple Inc.'s generic strategy for competitive advantage and intensive strategies for growth are examples of strategic congruence for countering such pressures.

Factors Affecting Apple's Business shows in Figure 1.1.

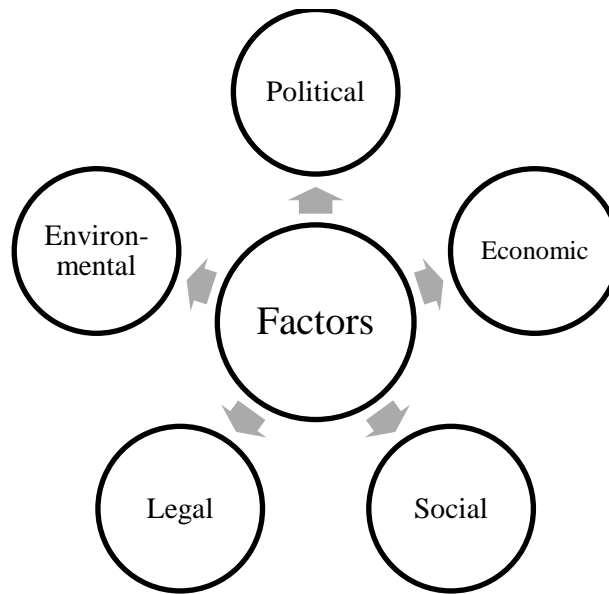


Figure 1.1 - Factors Affecting Apple's Business

In Apple's external analysis case, the following technological external factors are the most significant:

- 1) Growing cloud computing demand (opportunity);
- 2) Increasing technological integration in businesses (opportunity);
- 3) Growing mobile market (opportunity).

Apple Inc.'s high performance is linked to effectiveness in addressing external factors in the company's remote or macro-environment. The corporation's success is a result of strategic management that exploits opportunities and protects the business from threats in the consumer electronics and information technology services industries. PESTEL/PESTLE analysis of Apple Inc. identifies the most significant external factors that the company must strategically address in its industry environment. The PESTEL/PESTLE analysis framework evaluates the political, economic, sociocultural, technological, ecological, and legal factors relevant to the business. These strategic factors are opportunities or threats that impact business performance relative to competitors, such as Google, Microsoft, Amazon, Samsung, IBM, Dell, HP, Sony, Lenovo, Huawei, and LG. While Apple has a leading position,

especially in the premium consumer electronics market, the company must continue evolving its strategies to keep its leadership.

Political Factors Affecting Apple's Business.

The political external factors in Apple's remote or macro-environment mainly present opportunities. This aspect of the PESTEL/PESTLE analysis model indicates the influence of governments and related organizations on businesses. In Apple's case, the following are some of the major political external factors:

1. Improving free trade policies (opportunity);
2. Stable politics in developed countries (opportunity);
3. Trade disputes, especially between the U.S. and China (threat).

Better overall free trade policies are created over time. This external strategic factor increases the opportunities for Apple Inc. to distribute more of its products around the world. This PESTEL/PESTLE analysis also identifies the stability of the political landscape of developed countries as an opportunity for Apple to grow, considering the reduced political problems affecting business operations in these countries. In spite of these trends that present opportunities, the political external factor of trade disputes, especially between the United States and China, creates a threat against the company's potential growth and the global sales revenues of its products, such as consumer electronics. For example, growing China-U.S. tensions could lead China to impose higher tariffs on imported electronic components used in Apple's product assembly. Based on this part of the PESTEL/PESTLE analysis, Apple can improve its performance by taking advantage of political opportunities in its remote or macro-environment, although caution is needed to ensure stability despite trade disputes.

Economic Factors Important to Apple Inc.

Most of the economic external factors in Apple's remote or macro-environment create opportunities. This aspect of the PESTEL/PESTLE analysis model indicates market and industry conditions that impact firms. In this external analysis case of Apple Inc., the following economic external factors are the most significant:

1. Stable economies of developed countries (opportunity);
2. Rapid growth of developing countries (opportunity);
3. Increasing disposable incomes among target customers (opportunity).

The economic stability of developed countries creates opportunities for Apple's expansion. However, the rapid growth of developing countries is a more significant economic external factor in this PESTEL/PESTLE analysis case, in terms of support for growing the technology business. For example, the high economic growth rates of Asian countries are opportunities for Apple to increase its revenues through sales in these foreign markets. In relation, higher disposable incomes create more opportunities to sell the company's relatively high-priced technology products. In exploiting these economic opportunities, it is essential to consider competitive forces in the international market, as described in the Porter's Five Forces analysis of Apple Inc. These external strategic factors indicate growth potential for the corporation and its competitors, especially large multinational firms like Samsung. Based on this part of the PESTEL/PESTLE analysis framework, speed and effectiveness are critical in Apple Inc.'s growth and expansion efforts because competitors also target these same economic opportunities.

Competition. The markets for the Company's products and services are highly competitive and the Company is confronted by aggressive competition in all areas of its business. These markets are characterized by frequent product introductions and rapid technological advances that have substantially increased the capabilities and use of mobile communication and media devices, personal computers and other digital electronic devices. Many of the Company's competitors that sell mobile devices and personal computers based on other operating systems seek to compete primarily through aggressive pricing and very low cost structures. The Company's financial condition and operating results can be adversely affected by these and other industry-wide downward pressures on gross margins. Principal competitive factors important to the Company include price, product and service features (including security features), relative price and performance, product and service quality and reliability, design innovation, a strong third-party software and accessories ecosystem,

marketing and distribution capability, service and support and corporate reputation.

The Company is focused on expanding its market opportunities related to personal computers and mobile communication and media devices. These markets are highly competitive and include many large, well-funded and experienced participants. The Company expects competition in these markets to intensify significantly as competitors attempt to imitate some of the features of the Company's products and applications within their own products or, alternatively, collaborate with each other to offer solutions that are more competitive than those they currently offer. These markets are characterized by aggressive price competition, frequent product introductions, evolving design approaches and technologies, rapid adoption of technological advancements by competitors and price sensitivity on the part of consumers and businesses.

The Company's services also face substantial competition, including from companies that have significant resources and experience and have established service offerings with large customer bases. The Company competes with business models that provide content to users for free. The Company also competes with illegitimate means to obtain third-party digital content and applications.

The Company's future financial condition and operating results depend on the Company's ability to continue to develop and offer new innovative products and services in each of the markets in which it competes. The Company believes it offers superior innovation and integration of the entire solution including the hardware (iOS devices, Mac, Apple Watch and Apple TV), software (iOS, macOS, watchOS and tvOS), online services and distribution of digital content and applications (Digital Content and Services). Some of the Company's current and potential competitors have substantial resources and may be able to provide such products and services at little or no profit or even at a loss to compete with the Company's offerings.

Supply of Components. Although most components essential to the Company's business are generally available from multiple sources, certain components are currently obtained from single or limited sources. In addition, the Company competes for various components with other participants in the markets for

mobile communication and media devices and personal computers. Therefore, many components used by the Company, including those that are available from multiple sources, are at times subject to industry-wide shortage and significant commodity pricing fluctuations that could materially adversely affect the Company's financial condition and operating results.

The Company uses some custom components that are not commonly used by its competitors, and new products introduced by the Company often utilize custom components available from only one source. When a component or product uses new technologies, initial capacity constraints may exist until the suppliers' yields have matured or manufacturing capacity has increased. If the Company's supply of components for a new or existing product were delayed or constrained, or if an outsourcing partner delayed shipments of completed products to the Company, the Company's financial condition and operating results could be materially adversely affected. The Company's business and financial performance could also be materially adversely affected depending on the time required to obtain sufficient quantities from the original source, or to identify and obtain sufficient quantities from an alternative source. Continued availability of these components at acceptable prices, or at all, may be affected if suppliers decide to concentrate on the production of common components instead of components customized to meet the Company's requirements.

The Company has entered into agreements for the supply of many components; however, there can be no guarantee that the Company will be able to extend or renew these agreements on similar terms, or at all. Therefore, the Company remains subject to significant risks of supply shortages and price increases that could materially adversely affect its financial condition and operating results.

Substantially all of the Company's hardware products are manufactured by outsourcing partners that are located primarily in Asia, with some Mac computers manufactured in the U.S. and Ireland. A significant concentration of this manufacturing is currently performed by a small number of outsourcing partners, often in single locations. Certain of these outsourcing partners are singlesourced suppliers of components and manufacturers for many of the Company's products.

Although the Company works closely with its outsourcing partners on manufacturing schedules, the Company's financial condition and operating results could be materially adversely affected if its outsourcing partners were unable to meet their production commitments. The Company's manufacturing purchase obligations typically cover its requirements for periods up to 150 days.

Social/Sociocultural Factors in Apple's Industry Environment

Apple's business is subject to the effects of social or sociocultural trends. This aspect of the PESTEL/PESTLE analysis model points to the social external factors that influence consumer behaviors and expectations. In Apple's case, the following sociocultural trends are significant in the remote or macro-environment:

1. Rising use of mobile access (opportunity);
2. Increasing dependence on digital systems (opportunity);
3. International anti-Apple sentiments (threat).

The rising use of mobile access is an opportunity to grow Apple Inc.'s revenues. This social external factor relates to the increasing demand for devices like smartphones and tablets. This PESTEL/PESTLE analysis also points to the increasing dependence on digital systems, which is another sociocultural trend that creates opportunities for Apple to sell more of its products based on higher demand. Despite these opportunities, the company faces the social threat of opposition against its business operations. Anti-Apple sentiments are mounting, questioning business practices, such as the company's lawsuits against third-party repair service providers that repair products like the iPhone and MacBook. In the PESTEL/PESTLE analysis context, these sentiments have the potential to reduce brand image and consumer confidence in the corporation's technological products. These sociocultural factors emphasize the importance of Apple Inc.'s corporate social responsibility strategy. Such strategy helps satisfy stakeholders, including customers and governments. In addition, Apple Inc.'s corporate culture is a relevant factor because it influences the quality of service provided to customers. The company's internal cultural approach must align with the sociocultural trends influencing the global market. In this part of the PESTEL/PESTLE analysis of Apple Inc., opportunities for growth, as well as

threats against the business, are identified. These strategic concerns require that the company continue improving its policies and practices, as well as its approaches to technological innovation. Also, Apple Inc.'s marketing mix or 4Ps must include strategies that match such social external factors.

Technological Factors in Apple's Business Environment

The technological external factors in Apple's remote or macro-environment generally provide opportunities for the enterprise. In this aspect of the PESTEL/PESTLE analysis framework, current technologies and technological trends are evaluated based on their effect on business conditions. In Apple's external analysis case, the following technological external factors are the most significant:

1. Growing cloud computing demand (opportunity);
2. Increasing technological integration in businesses (opportunity);
3. Growing mobile market (opportunity);
4. Growing technological capabilities of other firms (threat).

This PESTEL/PESTLE analysis of Apple Inc. identifies the growing demand for cloud computing as an opportunity to grow the business. The company now offers cloud services, although to a limited extent. In exploiting this opportunity, together with support from Apple Inc.'s corporate structure, developing an expanded cloud infrastructure could maximize the profitability of the business in offering cloud-computing services. In relation, the external strategic factor of increasing technological integration presents the opportunity to enhance the company's services and grow the business by offering its technological goods and services to more customers, including organizations. Furthermore, this PESTEL/PESTLE analysis includes the growth of the mobile market as an opportunity for Apple Inc. to gain higher revenues, including revenues through the App Store and related digital content distribution platforms. However, the technological advancement of other firms threatens the company, as more new players could enter the market. Thus, to ensure the achievement of Apple Inc.'s corporate vision and mission statements, it is beneficial to reinforce business capabilities to exploit the opportunities and protect the business against the competitive threats.

Ecological/Environmental Factors

The ecological factors in Apple Inc.'s remote or macro-environment provide opportunities for business improvement. This aspect of the PESTEL/PESTLE analysis model highlights ecological trends and their impacts on business. In Apple's case, the following ecological external factors are the most important:

1. Business sustainability trend (opportunity);
2. Energy efficiency trend (opportunity).

The business sustainability trend is an ecological factor linked to increasing favor among businesses to adopt sustainable practices, based on concerns about the adverse environmental impact of business operations. In this PESTEL/PESTLE analysis of Apple Inc., such an ecological trend offers the opportunity to strengthen the company's corporate image. In addition, the energy efficiency trend is an ecological external factor that promotes the adoption of newer and more efficient technologies among businesses and customers. Apple has the opportunity to improve its operational cost efficiencies in this regard, while offering more attractive products to an increasingly environmentally aware customer population. Based on this part of the PESTEL/PESTLE analysis model, Apple addresses these ecological/environmental factors in its remote or macro-environment. The company has strategic measures to adjust its operations and technological products to respond to these ecological trends. Apple Inc.'s operations management also supports business efforts to exploit opportunities on these trends.

Legal Factors that Limit Apple

The legal external factors in Apple's remote or macro-environment create threats to the business. This aspect of the PESTEL/PESTLE analysis framework indicates the impact of laws or regulations on businesses. In Apple's case, the following are the most significant legal external factors:

1. Increasing privacy regulations (opportunity & threat);
2. Legal challenges against Apple's policies and practices (threat).

Governments' pressure on privacy in the digital age has resulted in increasing privacy regulations on businesses like Apple Inc. This legal external factor is a threat

that could impose costly regulatory compliance requirements and more limits on the technology company. However, this PESTEL/PESTLE analysis identifies the same external factor as a trend that presents the opportunity for Apple to boost its business through enhanced privacy measures. In addition, the company faces legal challenges related to its practices and policies on after-sales service and other areas of the business. For example, in Australia, the European Union, and the United States, among other countries, the company has faced strong criticism and legal battles regarding its policies on third-party repair services. Based on the PESTEL/PESTLE analysis model, Apple must emphasize privacy protection and regulatory compliance in all of its products, and consider adjusting its policies and practices to address current legal pressures on the business.

PESTEL/PESTLE analysis shows that the majority of external factors in Apple's remote or macro-environment provide opportunities. Given its current industry position, the company can exploit these opportunities to expand its reach in the global information technology goods and services market. However, Apple must develop suitable strategies to effectively address the threats identified, especially those in the legal dimension of its remote or macro-environment. Based on ESTEL/PESTLE analysis, it is expected that Apple will remain in its strong industry position. Nonetheless, the dynamics of the market and the presence of aggressive competitors could drastically change the company's strategic position. In this context, it is of critical importance to further improve the strengths of Apple Inc.

Conclusions to Chapter 1

Operation management is a process that involves planning, organizing, managing, controlling and supervising the production and manufacturing processes. The major aim of an operation manager is to ensure timely delivery of the products and to successfully turn the raw materials into the finished products (input to output). It handles various strategic issues, including determining the size of manufacturing plants and project management methods and implementing the structure of information technology networks.

CHAPTER 2

RESEARCH AND ANALYSIS

2.1 Company introduction

Apple is an American multinational corporation that develops and sells computer electronics, software, personal computers and portable devices internationally. Founders Steve Jobs, Steve Wozniak and Ronald Wayne established Apple in 1976, with its incorporation in 1977. Apple has a history that spans over 30 years, and during that time the company has experienced its ups and downs in financial performance. It was after 2007 when Apple finally achieved widespread success with the launch of the iPhone, the iPod touch and the iPad.

The company's best-known hardware products include Macintosh computers, the iPod and the iPhone. Apple software includes the Mac OS X operating system, the iTunes media browser, the iLife suite of multimedia and creativity software, the iWork suite of productivity software, Final Cut Studio, a suite of professional audio and film-industry software products, and Logic Studio, a suite of audio tools. The company operates more than 250 retail stores in nine countries and an online store where hardware and software products are sold.

In terms of revenue, Apple is the world's largest information technology company, with 500 retail stores around the world. It is also the world's second-largest mobile phone manufacturer, after Samsung – its South Korean rival. With that being said, Apple has been bringing positive economic impacts to the United States and to the cities and countries where it has local employees.

From its technologically advanced smartphones, tablets and laptops, amazing music, exciting apps, while supporting civil rights as being the biggest and most profitable company in the world, Apple has helped change the world in so many ways. Established in Cupertino, California on April 1, 1976 and incorporated January 3, 1977, the company was called Apple Computer, Inc. for its first 30 years, but dropped the word "Computer" on January 9, 2007 to reflect the company's

ongoing expansion into the consumer electronics market in addition to its traditional focus on personal computers. Apple has about 35,000 employees worldwide and had worldwide annual sales of US\$32.48 billion in its fiscal year ending September 29, 2008. For reasons as various as its philosophy of comprehensive aesthetic design to its distinctive advertising campaigns, Apple has established a unique reputation in the consumer electronics industry. This includes a customer base that is devoted to the company and its brand, particularly in the United States. Fortune magazine named Apple the most admired company in the United States.

The Apple products that came out theoretically should have been very good for the company, but were either poorly managed or not marketed well enough to gain ground. The Newton, launched in 1993, is a good example of a strong Apple product that never found its following. The Newton was to be a revolutionary Personal Digital Device one of the world consumer PDAs (Personal Digital Assistants). It had a touchscreen and a pen stylus like today's smart phones, and almost no competition in the market. But it flopped despite its revolutionary design and high luxury pricing (two of the things Apple enthusiasts tout as reasons for the iPhone's success). One problem was that Apple allowed Motorola, Sharp, and Digital Ocean to manufacture devices that ran the Newton OS and ultimately the lack of uniformity may have been a turnoff to adopters.

Since 1995, Apple had been allowing the other companies to make Mac-compatible computers. The arrangement was cutting into Apple's bottom line and diminishing the quality of Mac computers in the marketplace. The same story applies to the Newton: With the OS being rented out to anyone who could create a device for it, the products lacked the uniformity and the quality control that Apple products are now known for. Coming back to Apple, Jobs taught Apple that in-house products are the way to go, and Apple has operated the world's most successful walled garden ever since. From 1997 on, Apple has been the pioneer of the computer industry, producing everything from hardware such as the iBook (in the early 2000s), iPod and iPhone to revolutionary concepts like the App Store.

Apple Inc Mission “to bringing the best user experience to its customers through its innovative hardware, software, and services.” And in a manifesto dated 2009 Tim Cook set the vision specified as “We believe that we are on the face of the earth to make great products and that’s not changing.” The Company is committed to bringing the best user experience to its customers through its innovative hardware, software and services.

Apple’s Cash generated by operating activities in 2016-2018 shown in the Table 2.1.

Table 2.1 - Apple’s Cash generated by operating activities in 2016-2018 [41]

	Years ended			Deviation 2017/2016		Deviation 2018/2017	
	Septem- ber, 2016	Septem- ber , 2017	Septem- ber, 2018	abso- lute, (+, -)	relative , %	abso- lute, (+, -)	rela- tive, %
1	2	3	4	5	6	7	8
Operating activities:							
Net income	45,687	48,351	59,531	2,664	5,8	11,18	23,1
Adjustments to reconcile net income to cash generated by operating activities:							
Depreciation and amortization	10,505	10,157	10,903	-0,348	-3,3	0,746	7,3
Share-based compensation expense	4,210	4,840	5,340	0,63	15,0	0,5	10,3
Deferred income tax expense/(benefit)	4,938	5,966	-32,590	1,028	20,8	-38,556	-646,3
Other	486	-166	-444	-652,0	-134,2	-278,0	167,5
Changes in operating assets and liabilities:							
Accounts receivable, net	527	-2,093	-5,322	-529,1	-100,4	-3,229	1254,3

Continuation of Tabl. 2.1

1	2	3	4	5	6	7	8
Inventories	217	-2,723	828	-219,723	-101,3	830,723	30507,6
Vendor non-trade receivables	-51	-4,254	-8,010	46,746	-91,659	12,264	-288,3
Other current and non-current assets	1,055	-5,318	-423	-6,373	-604,1	-417,682	7854,1
Accounts payable	2,117	8,966	9,175	6,849	323,5	0,209	2,3
Deferred revenue	-1,554	-626	-44	-624,446	40,183	582	-93,0
Other current and non-current liabilities	-1,906	1,125	38,490	3,031	-159,0	37,365	3321,3
Cash generated by operating activities	66,231	64,225	77,434	-2,006	-3,0	13,209	20,6

Apple points this out in its annual report for 2018. Understanding the elements of Apple mission statement is critical:

- Best user experience;
- Innovative hardware;
- Innovative software and services.

From this element also the way the organizational structure is designed is crafted. Therefore, at Apple user experience comes first; this gives great power to design and designers over engineers.

Not surprisingly Apple products are beautifully crafted. Everything about Apple products has to be designed with maximum attention to details.

At the same time, Apple has leveraged on software, integrated within the hardware that made its products more valuable for users. An iPhone without its App Store would not be worth much, even though that is a beautiful device.

As part of its strategy, the Company continues to expand its platform for the discovery and delivery of digital content and applications through its Digital Content and Services, which allows customers to discover and download or stream digital content, iOS, Mac, Apple Watch and Apple TV applications, and books

through either a Mac or Windows personal computer or through iPhone, iPad and iPod touch® devices (“iOS devices”), Apple TV, Apple Watch and HomePod.

Furthermore, through a clear mission statement the company can identify the key stakeholders to involve in the growth process and allow its products to be successful.

The Company also supports a community for the development of third-party software and hardware products and digital content that complement the Company’s offerings.

Also, it can leverage resources to achieve the business goals defined within its mission statement. Indeed, part of the “best user experience” implies a high-quality buying experience, where the whole process is controlled and customized:

The Company believes a high-quality buying experience with knowledgeable salespersons who can convey the value of the Company’s products and services greatly enhances its ability to attract and retain customers.

One strategy that Apple chose to create this high-quality buying experience is via its stores as a part of its distribution strategy:

Therefore, the Company’s strategy also includes building and expanding its own retail and online stores and its third-party distribution network to effectively reach more customers and provide them with a high-quality sales and post-sales support experience. The Company believes ongoing investment in research and development (“R&D”), marketing and advertising is critical to the development and sale of innovative products, services and technologies.

Apple Distribution Strategy shown on fig. 2.1.

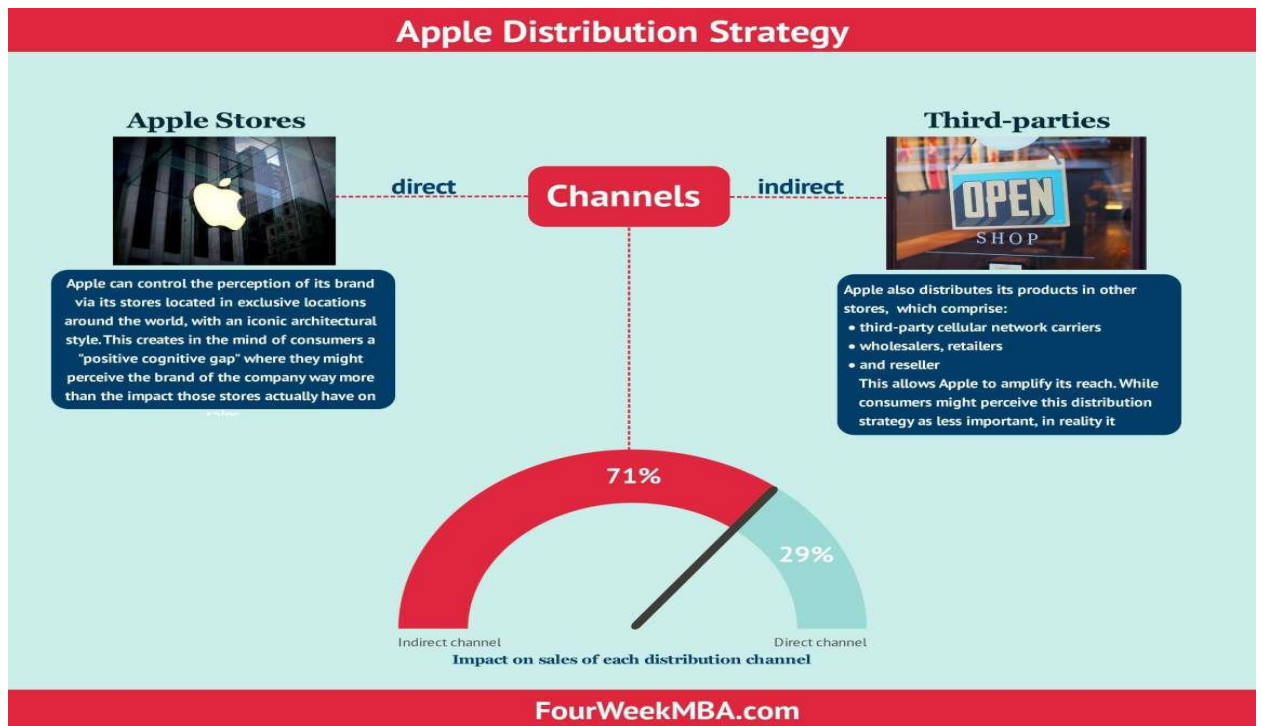


Figure 2.1 – Apple Distribution Strategy

Almost as soon as Apple had started selling its first computers, Wozniak moved on from the Apple I and began designing a greatly improved computer: the Apple II. Wozniak completed a working prototype of the new machine by August 1976. The two Steves presented the Apple II computer to the public at the first West Coast Computer Faire on April 16 and 17, 1977. On the first day of the exhibition, Jobs introduced the Apple II to a Japanese chemist named Toshio Mizushima, who became the first authorized Apple dealer in Japan. In the May 1977 issue of Byte, Wozniak said of the Apple II design, "To me, a personal computer should be small, reliable, convenient to use, and inexpensive."

While the Apple II was already established as a successful business-ready platform because of Visicalc, Apple was not content. The Apple III was designed to take on the business environment in an attempt to compete with IBM in the business and corporate computing market. The Apple III was first announced on May 19, 1980, with a retail price ranging from \$4,340 to \$7,800, and released in March 1981.

The Apple III was a relatively conservative design for computers of the era. However, Jobs did not want the computer to have a fan; rather, he wanted the heat

generated by the electronics to be dissipated through the chassis of the machine, forgoing the cooling fan.

However, the physical design of the case was not sufficient to cool the components inside it. By removing the fan from the design, the Apple III was prone to overheating. This caused the integrated circuit chips to disconnect from the motherboard. Customers who contacted Apple customer service were told to "raise the computers six inches in the air, and then let go", which would cause the ICs to fall back into place.

Thousands of Apple III computers were recalled. A new model was introduced in 1983 to try to rectify the problems, but the damage was already done.

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The Company designs, manufactures and markets mobile communication and media devices and personal computers, and sells a variety of related software, services, accessories and third-party digital content and applications. The Company's products and services include iPhone®, iPad®, Mac®, Apple Watch®, AirPods®, Apple TV®, HomePod™, a portfolio of consumer and professional software applications, iOS, macOS®, watchOS® and tvOS™ operating systems, iCloud®, Apple Pay® and a variety of other accessory, service and support offerings. The Company sells and delivers digital content and applications through the iTunes Store®, App Store®, Mac App Store, TV App Store, Book Store and Apple Music® (collectively “Digital Content and Services”). The Company sells its products worldwide through its retail stores, online stores and direct sales force, as well as through third-party cellular network carriers, wholesalers, retailers and resellers. In addition, the Company sells a variety of third-party Apple-compatible products, including application software and various accessories, through its retail and online stores. The Company sells to consumers, small and mid-sized businesses and education, enterprise and government customers.

The Company is committed to bringing the best user experience to its customers through its innovative hardware, software and services. The Company's business strategy leverages its unique ability to design and develop its own operating systems, hardware, application software and services to provide its customers products and solutions with innovative design, superior ease-of-use and seamless integration. As part of its strategy, the Company continues to expand its platform for the discovery and delivery of digital content and applications through its Digital Content and Services, which allows customers to discover and download or stream digital content, iOS, Mac, Apple Watch and Apple TV applications, and books through either a Mac or Windows personal computer or through iPhone, iPad and iPod touch® devices (“iOS devices”), Apple TV, Apple Watch and HomePod. The Company also supports a community for the development of third-party software and hardware products and digital content that complement the Company's offerings. The Company believes a high-quality buying experience with knowledgeable

salespersons who can convey the value of the Company's products and services greatly enhances its ability to attract and retain customers. Therefore, the Company's strategy also includes building and expanding its own retail and online stores and its third-party distribution network to effectively reach more customers and provide them with a high-quality sales and post-sales support experience. The Company believes ongoing investment in research and development (“R&D”), marketing and advertising is critical to the development and sale of innovative products, services and technologies.

Let's consider Company's Products. The dynamics of their sales shown in Fig. 2.2.

Table 2.2 - The dynamics of sales Apple's Products in 2016-2018 [41]

Products	Years ended			Deviation 2017/2016		Deviation 2018/2017	
	September 24, 2016	September 30, 2017	September 29, 2018	absolute, (+, -)	rela- tive, %	absolute, (+, -)	rela- tive, %
iPhone	136,700	141,319	166,699	4,619	3,4	25,38	18,0
iPad	20,628	19,222	18,805	-1,406	-6,8	-0,417	-2,2
Mac	22,831	25,850	25,484	3,019	13,2	-0,366	-1,4
Services	24,348	29,980	37,190	5,632	23,1	7,21	24,0
Other Products	11,132	12,863	17,417	1,731	15,5	4,554	35,4
Total net sales	215,639	229,234	265,595	13,595	6,3	36,361	15,9

iPhone is the Company's line of smartphones based on its iOS operating system. iPhone includes Siri®, an intelligent assistant, and Apple Pay, Touch ID® and Face ID® on qualifying devices. In September 2018, the Company introduced three new iPhones. iPhone Xs and Xs Max feature a Super Retina™ OLED display, an all-screen stainless steel and glass design, faster processors and enhanced cameras,

and were available beginning in September 2018. iPhone XR features a Liquid Retina™ LCD display in an all-screen aluminum and glass design, and was available beginning in October 2018. The Company's line of smartphones also includes iPhone 8, 8 Plus, 7 and 7 Plus models. iPhone works with the iTunes Store, App Store, Book Store and Apple Music for purchasing, organizing and playing digital content and apps.

iPad is the Company's line of multi-purpose tablets based on its iOS operating system, which includes iPad Pro®, iPad and iPad mini®. iPad includes Siri, Apple Pay and Touch ID. In March 2018, the Company released a new 9.7-inch iPad with Apple Pencil® compatibility. In October 2018, the Company introduced a new version of iPad Pro as well as a new Apple Pencil and Smart Keyboard Folio™. The new 11-inch and 12.9-inch iPad Pro models feature a Liquid Retina LCD display in an all-screen aluminum and glass design and integrate Face ID. iPad works with the iTunes Store, App Store, Book Store and Apple Music for purchasing, organizing and playing digital content and apps.

Mac is the Company's line of desktop and portable personal computers based on its macOS operating system. Mac includes Siri and supports Apple Pay, and also includes Touch ID on qualifying devices. The Company's desktop computers include iMac® 21.5-inch, iMac 21.5-inch with Retina® 4K display, iMac 27-inch with Retina 5K display, iMac Pro®, Mac Pro® and Mac mini®. The Company's portable computers include MacBook®, MacBook Air®, MacBook Pro® and MacBook Pro with Touch Bar™. In October 2018, the Company introduced a new MacBook Air featuring a Retina display and Touch ID, and a new Mac mini with upgraded performance.

Operating Systems. IOS is the Company's mobile operating system that serves as the foundation for iOS devices. Devices running iOS are compatible with both Mac and Windows personal computers and Apple's iCloud services. In September 2018, the Company released iOS 12, which includes improved performance and responsiveness, new augmented reality capabilities and expressive communication

features, and introduces Siri Shortcuts, enabling Siri to intelligently pair with third-party apps.

macOS is the Company's desktop operating system and is built on an open-source UNIX-based foundation and provides an intuitive and integrated computer experience. Support for iCloud is built into macOS so users can access content and information from Mac, iOS devices and other supported devices and access downloaded content and apps from the iTunes Store. macOS Mojave, released in September 2018, is the 15th major release of macOS and makes apps such as News, Stocks, Voice Memos and Home available on the Mac for the first time. macOS Mojave also adds desktop and Finder® enhancements, such as Dark Mode, and introduces a full redesign of the Mac App Store.

WatchOS is the Company's operating system for Apple Watch. In September 2018, the Company released watchOS 5, which helps users stay healthy and connected with new features including Activity Sharing competitions, auto-workout detection, advanced running features, Walkie-Talkie, Apple Podcasts and third-party apps on the Siri watch face.

TvOS is the Company's operating system for Apple TV. The tvOS operating system is based on the Company's iOS platform and enables developers to create new apps and games specifically for Apple TV and deliver them to customers through the Apple TV App Store. tvOS incorporates Siri capabilities that allow searching across apps and services. In September 2018, the Company released tvOS 12, which supports enhanced sound quality and provides additional 4K high dynamic range (“HDR”) content.

Digital Content and Services. The iTunes Store, available for iOS devices, Mac and Windows personal computers and Apple TV, allows customers to purchase and download or stream music and TV shows, rent or purchase movies and download free podcasts. The App Store, available for iOS devices, allows customers to discover and download apps and purchase in-app content. The Mac App Store, available for Mac computers, allows customers to discover, download and install Mac applications. The TV App Store allows customers access to apps and games specifically for Apple TV.

The Book Store, available for iOS devices and Mac computers, features e-books from major and independent publishers. Apple Music offers users a curated listening experience with on-demand radio stations that evolve based on a user's play or download activity and a subscription-based internet streaming service that also provides unlimited access to the Apple Music library.

iCloud iCloud is the Company's cloud service which stores music, photos, contacts, calendars, mail, documents and more, keeping them up-to-date and available across multiple iOS devices, Mac and Windows personal computers and Apple TV. iCloud services include iCloud Drive®, iCloud Photos, Family Sharing, Find My iPhone, iPad or Mac, Find My Friends, Notes, iCloud Keychain® and iCloud Backup for iOS devices.

AppleCare. The Company offers a range of support options for its customers. These include assistance that is built into software products, electronic product manuals, online support including comprehensive product information as well as technical assistance, AppleCare+ (“AC+”) and the AppleCare® Protection Plan (“APP”). AC+ and APP are fee-based services that extend the coverage of phone support eligibility and hardware repairs. AC+ offers additional coverage for instances of accidental damage and is available in certain countries for certain products. Additionally, AC+ with theft and loss protection is available for iPhone in the U.S.

With all of the new services Apple continues to launch combined with its growing installed base of users and underlying healthy growth trends. The company should be able to sustain iPhone demand through 2021 with the anticipated launch of 5G-enabled and lower-cost devices on the horizon.

Apple Pay. Apple Pay is the Company's cashless payment service available in certain countries that offers an easy, secure and private way to pay. Apple Pay allows users to pay for purchases in participating stores accepting contactless payments and to pay for purchases within participating apps on qualifying devices. Apple Pay accepts credit and debit cards across major card networks and also supports reward programs and store-issued credit and debit cards. In December 2017, the Company

released an update to iOS 11 and watchOS 4 introducing Apple Pay Cash in the U.S., allowing peer-to-peer payments using Apple Pay.

Apple TV connects to consumers' TVs and enables them to access digital content directly for streaming video, playing music and games, and viewing photos. Content from Apple Music and other media services is also available on Apple TV. Apple TV allows streaming digital content from Mac and Windows personal computers through Home Sharing and from compatible Mac and iOS devices through AirPlay®. Apple TV runs on the Company's tvOS operating system and is based on apps built for the television. Additionally, the Apple TV remote features Siri, allowing users to search and access content with their voice. The Company offers Apple TV and Apple TV 4K®, which supports 4K and HDR content.

Apple Watch is a personal electronic device that combines the watchOS user interface and technologies created specifically for a smaller device, including the Digital Crown®, a unique navigation tool that allows users to seamlessly scroll, zoom and navigate, and Force Touch, a technology that senses the difference between a tap and a press and allows users to access controls within apps. Apple Watch enables users to communicate from their wrist, track their health and fitness through activity and workout apps, and includes Siri and Apple Pay. In September 2018, the Company introduced Apple Watch Series 4, with a new design including a larger display and thinner case, and featuring new health monitoring capabilities.

Other Products. The Company also sells AirPods, Beats® products, HomePod, iPod touch and other Apple-branded and third-party accessories. AirPods are the Company's wireless headphones that interact with Siri. In February 2018, the Company released HomePod, a high-fidelity wireless smart speaker that interacts with Siri and Apple Music.

Developer Programs. The Company's developer programs support app developers with building, testing and distributing apps for iOS, macOS, watchOS and tvOS. Developer program membership provides access to beta software and advanced app capabilities (e.g., CloudKit®, HealthKit™ and Apple Pay), the ability to test apps using TestFlight®, distribution on the App Store, access to App Analytics and

code-level technical support. Developer programs also exist for businesses creating apps for internal use (the Apple Developer Enterprise Program) and developers creating accessories for Apple devices (the MFi Program). All developers, even those who are not developer program members, can sign in with their Apple ID to post on the Apple Developer Forums and use Xcode®, the Company's integrated development environment for creating apps for Apple platforms. Xcode includes project management tools; analysis tools to collect, display and compare app performance data; simulation tools to locally run, test and debug apps; and tools to simplify the design and development of user interfaces. All developers also have access to extensive technical documentation and sample code.

The Company has also invested in programs to enhance reseller sales by placing high-quality Apple fixtures, merchandising materials and other resources within selected third-party reseller locations. Through the Apple Premium Reseller Program, certain third-party resellers focus on the Apple platform by providing a high level of product expertise, integration and support services.

The Company is committed to delivering solutions to help educators teach and students learn. The Company believes effective integration of technology into classroom instruction can result in higher levels of student achievement and has designed a range of products, services and programs to address the needs of education customers. The Company also supports mobile learning and real-time distribution of, and access to, education-related materials through iTunes U®, a platform that allows students and teachers to share and distribute educational media online. The Company sells its products to the education market through its direct sales force, select third-party resellers and its retail and online stores.

The Company also sells its hardware and software products to enterprise and government customers in each of its reportable segments. The Company's products are deployed in these markets because of their performance, productivity, ease-of-use and seamless integration into information technology environments. The Company's products are compatible with thousands of third-party business applications and services, and its tools enable the development and secure deployment of custom

applications as well as remote device administration. No single customer accounted for more than 10% of net sales in 2018, 2017 and 2016.

Figure 2.2 shows Apple's revenue dynamics in 2015-2019 (Fiscal year is October-September).

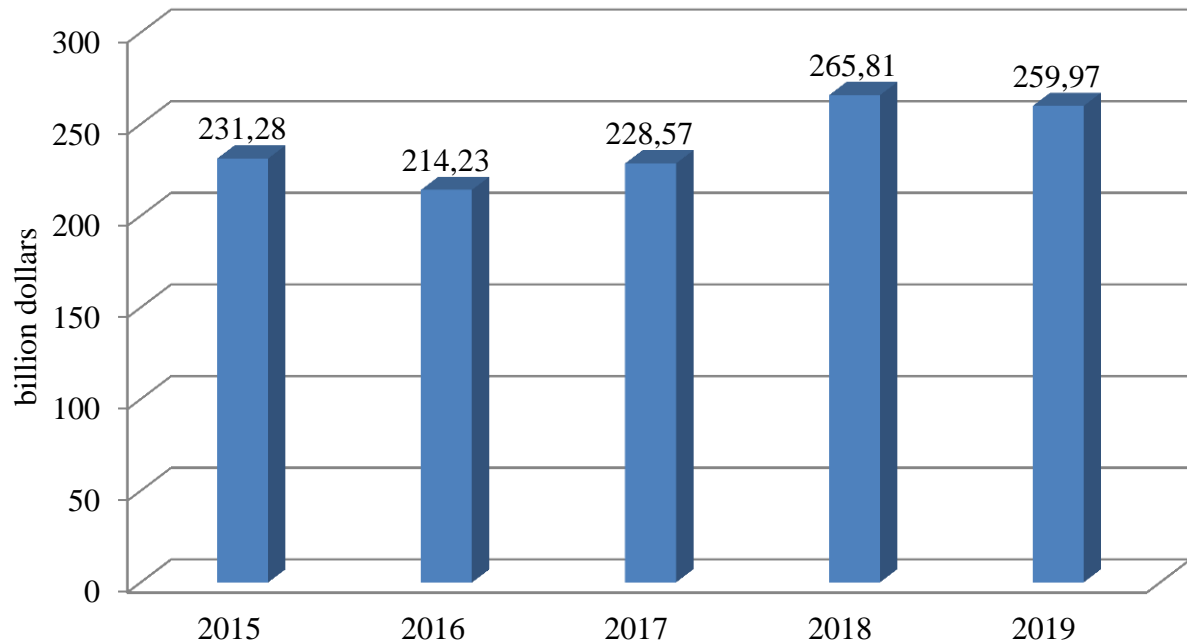


Figure 2.2 - Apple's revenue dynamics in 2015-2019 (Fiscal year is October-September), billion dollars

From Figure 2.2 we see that Apple's revenue dynamics were characterized by a slight decline in the value of this indicator in 2016, then its grew in 2017 and 2018. In 2019, the company's revenue declined by \$ 5.84 billion from the previous year.

Apple's revenue structure in Q4 2018 shown in Figure 2.3.

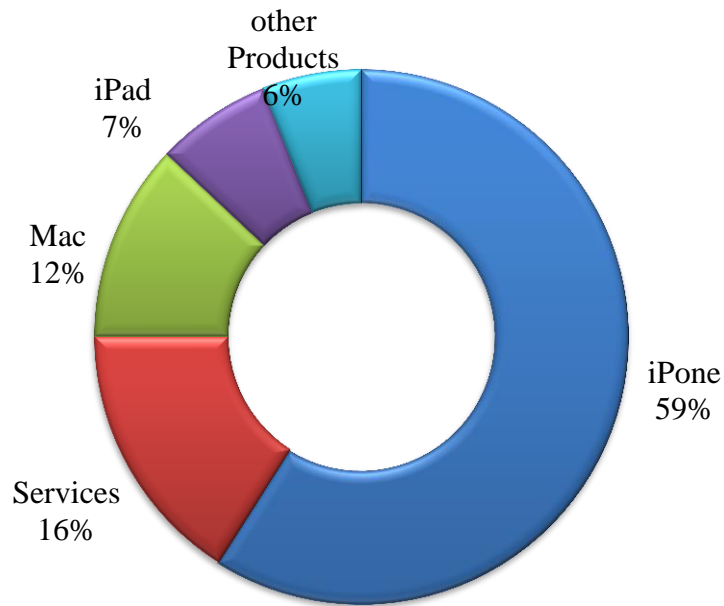


Figure 2.3 - Apple's revenue structure in Q4 2018

From Figure 2.3, we can see that iPhones accounted for the largest share of Apple's revenue in Q4 2018 (59%). The share of services was equal 16%, Mac - 12%, iPad - 7%, other Products - 6%.

2.2 SWOT - analysis of Apple Inc. Company

A SWOT-analysis is an incredibly simple, yet powerful tool to help company develop its business strategy.

SWOT stands for Strengths, Weaknesses, Opportunities, and Threats.

Strengths and weaknesses are internal to the company—things that managers have some control over and can change. Examples include who is on the team, patents and intellectual property, and location.

Opportunities and threats are external—things that are going on outside the company, in the larger market. Managers can take advantage of opportunities and protect against threats, but they can't change them. Examples include competitors, prices of raw materials, and customer shopping trends.

SWOT - analysis of Apple Inc. shown in the Figure 2.4.

<p style="text-align: center;">Strengths</p> <p>Strong brand image</p> <p>High profit margins</p> <p>Effective rapid innovation processes</p>	<p style="text-align: center;">Weaknesses</p> <p>Limited distribution network</p> <p>High selling prices</p> <p>Dependence of sales on high-end market segments</p>
<p style="text-align: center;">Opportunities</p> <p>Expansion of the distribution network</p> <p>Higher sales volumes based on rising demand</p> <p>Development of new product lines</p>	<p style="text-align: center;">Threats</p> <p>Aggressive competition</p> <p>Imitation</p> <p>Rising labor cost in various countries</p>

Figure 2.4 - SWOT - analysis of Apple Inc.

Apple Inc.'s success is linked to the ability to use business strengths to overcome weaknesses and threats, and to exploit opportunities in the industry environment. A SWOT-analysis of the company gives insights on the strategic actions of the business, especially in maximizing its growth based on its strengths and opportunities. The SWOT analysis framework is a strategic management decision-making tool that determines the most pressing issues facing the company, based on the internal business conditions and the external environment. In this case, the SWOT analysis of Apple Inc. scans the business for relevant strengths, weaknesses, opportunities, and threats (SWOT variables), with reference to various industries and markets. The company is involved in the computing technology (hardware and software), consumer electronics, cloud computing services, and online digital content distribution services industries. This condition necessitates that Apple develop a diverse set of strategies to ensure its competitiveness and business growth.

This SWOT-analysis of Apple Inc. presents the strategic factors that influence the decisions of CEO Tim Cook and managers in developing the business. With its operations in various markets around the world, the company deals with different sets of SWOT factors based on regional situations. Also, the Porter's Five Forces analysis of Apple Inc. establishes that the company faces the strong force of competition linked to the aggressiveness of other technology firms, such as Google, IBM, Amazon.com, Samsung, Sony, Lenovo, Dell, and PayPal. This competitive landscape requires innovative strategies and tactics to achieve continuous business growth and development, and to fulfill Apple's corporate mission statement and corporate vision statement.

Apple's Strengths (Internal Strategic Factors)

This aspect of the SWOT analysis framework identifies the strengths that enable the company to overcome weaknesses, take advantage of opportunities, and withstand threats in its business environment. These strengths are internal factors specific to the conditions within the business organization. In this case, the following are the most notable strengths of Apple Inc.:

1. Strong brand image;
2. High profit margins;
3. Effective rapid innovation processes.

Apple is one of the most valuable and strongest brands in the world. In the context of this SWOT analysis, the company is capable of introducing profitable new products by virtue of its strong brand image. In addition, Apple's marketing mix or 4P involves the premium pricing strategy, which comes with high profit margins. This internal strategic factor is a major strength because it maximizes profits, even when sales volumes are limited. Moreover, the generic competitive strategy and intensive growth strategies of Apple Inc. involve effective rapid innovation, which enables the business to keep abreast with the latest technologies to ensure competitive advantages. Based on this aspect of the SWOT analysis of Apple Inc., the company's strengths are difficult to compete with, thereby supporting continued leadership in the global industry environment.

Apple Inc.'s Weaknesses (Internal Strategic Factors)

In this aspect of the SWOT analysis, the emphasis is on the weaknesses or inadequacies of the company. Weaknesses are internal factors that are obstacles to business growth. The following business weaknesses are the most notable in the case of Apple:

1. Limited distribution network.
2. High selling prices.
3. Dependence of sales on high-end market segments.

Apple Inc. has a limited distribution network because of the company's policy of exclusivity. For example, the company carefully selects the authorized sellers of its products. The SWOT analysis framework considers this exclusivity strategy as a factor that limits market reach. This weakness exists despite exclusivity's advantages, such as Apple's strong control on the distribution of products. In addition, because of its premium pricing strategy, the company has the weakness of the dependence of sales on high-end market segments. High prices attract customers from the middle- and high-income brackets, while preventing customers from low-income brackets to easily purchase the company's products. This internal strategic factor is a considerable weakness because high-end market segments represent only a minority of the global market. Based on the internal factors in this aspect of the SWOT analysis, Apple Inc.'s pricing and distribution strategies impose limitations or weaknesses in the business.

Opportunities for Apple Inc. (External Strategic Factors)

This aspect of the SWOT analysis of Apple Inc. pinpoints the most significant opportunities that are available to the business. Opportunities are external factors based on the industry environment. These factors influence the strategic direction of business organizations. In Apple's case, the following are the most significant opportunities:

1. Expansion of the distribution network;
2. Higher sales volumes based on rising demand;
3. Development of new product lines.

Apple Inc. has the opportunity to expand its distribution network. Such opportunity directly relates to the weakness of the company's limited distribution network. This SWOT analysis emphasizes the need for the company to change its distribution strategy.

Threats Facing Apple Inc. (External Strategic Factors)

In this aspect of the SWOT analysis, the focus is on the threats that the company experiences from various sources, such as competitors. Threats are external factors that limit or reduce the financial performance of businesses. In Apple's case, the following threats are the most significant:

1. Aggressive competition.
2. Imitation.
3. Rising labor cost in various countries.

Tough competition in the industry is partly because of the aggressiveness of firms. Apple competes with firms like Samsung, which also uses rapid innovation. In the context of this SWOT analysis, aggressive competition has a limiting effect on Apple Inc. Because of the aggressive behaviors of competing firms, it is necessary to have strong fundamentals for maintaining competitive advantages. In addition, the company faces the threat of imitation. This threat is significant because of the large number of local and multinational firms that imitate the design and features of Apple's products. Moreover, rising labor costs involving contract manufacturers, such as those in China, reduce profit margins or push selling prices even higher. Based on the external strategic factors in this SWOT analysis, Apple Inc.'s performance could suffer because of aggressive competition and imitation of product design.

2.3 Analysis of operation management at Apple Inc.

Apple Inc. designs manufactures and markets the personal computers along with other mobile communication services, music and digital players. It also provides hardware, software and networks solutions and peripherals. Apple Inc. sells its products throughout the world on its retail stores, online stores, through the third

party wholesalers and its direct sales force. It also deals with the variety of Macintosh i.e. iPhone & iPod etc. It provides the services of the complete software solutions on its iTunes stores. Its consumers are those who purchase its products directly, enterprises, educator and governments. Apple's Financial performance of operating activities in 2016-2018 is in the Table 2.3.

Table 2.3 - Apple's Financial performance of operating activities in 2016-2018

	Years ended			Deviation 2017/2016		Deviation 2018/2017	
	September 24, 2016	September 30, 2017	September 29, 2018	absolute, (+, -)	relative, %	absolute, (+, -)	relative, %
Net sales	215,639	229,234	265,595	13,595	6,3	36,361	15,9
Cost of sales	131,376	141,048	163,756	9,672	7,4	22,708	16,1
Gross margin	84,263	88,186	101,839	3,923	4,7	13,653	15,5
Operating expenses:							
Research and development	10,045	11,581	14,236	1,536	15,3	2,655	22,9
Selling, general and administrative	14,194	15,261	16,705	1,067	7,5	1,444	9,5
Total operating expenses	24,239	26,842	30,941	2,603	10,7	4,099	15,3
Operating income	60,024	61,344	70,898	1,32	2,2	9,554	15,6
Other income/(expense), net	1,348	2,745	2,005	1,397	103,6	-0,74	-27,9
Income before provision for income taxes	61,372	64,089	72,903	2,717	4,4	8,814	13,8
Provision for income taxes	15,685	15,738	13,372	0,053	0,3	-2,366	-15,0
Net income	45,687	48,351	59,531	2,664	5,8	11,18	23,1

Operational plan is the key to run the entire business of company. Operational business plan covers the all areas of company including the finance, manufacturing, internet, operations, R&D, human resources and marketing.

The table shows the improvement of Apple's Financial performance of operating activities in 2017-2018. Net sales, Gross margin, Operating income, Net income increased during these periods.

Apple's Net sales, Gross margin and Net income by Quarter of 2018 shows in the Table 2.4.

Table 2.4 - Apple's Net sales, Gross margin and Net income by Quarter of 2018

	First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Net sales	88,293	61,137	53,265	62,900
Gross margin	33,912	23,422	20,421	24,084
Net income	20,065	13,822	11,519	14,125

Table 2.3 shows that Apple's Net sales, Gross margin and Net income declined in the second and third quarters and increased in the fourth quarter.

The Company manages its business primarily on a geographic basis. The Company's reportable segments consist of the Americas, Europe, Greater China, Japan and Rest of Asia Pacific. Americas includes both North and South America. Europe includes European countries, as well as India, the Middle East and Africa. Greater China includes China, Hong Kong and Taiwan. Rest of Asia Pacific includes Australia and those Asian countries not included in the Company's other reportable segments. Although the reportable segments provide similar hardware and software products and similar services, each one is managed separately to better align with the location of the Company's customers and distribution partners and the unique market dynamics of each geographic region.

The Company evaluates the performance of its reportable segments based on net sales and operating income. Net sales for geographic segments are generally based on the location of customers and sales through the Company's retail stores located in those geographic locations. Operating income for each segment includes net sales to third parties, related cost of sales and operating expenses directly attributable to the segment. Advertising expenses are generally included in the geographic segment in which the expenditures are incurred. Operating income for each segment excludes other income and expense and certain expenses managed

outside the reportable segments. Costs excluded from segment operating income include various corporate expenses such as research and development, corporate marketing expenses, certain share-based compensation expenses, income taxes, various nonrecurring charges and other separately managed general and administrative costs. The Company does not include intercompany transfers between segments for management reporting purposes.

The following table shows information by reportable segment for 2018, 2017 and 2016 (in millions).

Table 2.5 - Apple's Net sales and Operating income in 2016-2018 by reportable segments

Indicators	Years ended			Deviation 2017/2016		Deviation 2018/2017	
	September 24, 2016	September 30, 2017	September 29, 2018	absolute, (+, -)	relative, %	absolute, (+, -)	relative, %
Americas:							
Net sales	86,613	96,600	112,093	9,987	11,53	15,493	16,0
Operating income	28,172	30,684	34,864	2,512	8,9	4,18	13,6
Europe:							
Net sales	49,952	54,938	62,420	4,986	10,0	7,482	13,6
Operating income	15,348	16,514	19,955	1,166	7,1	3,441	20,8
Greater China:							
Net sales	48,492	44,764	51,942	-3,728	-8,3	7,178	16,0
Operating income	18,835	17,032	19,742	-1,803	9,6	2,71	15,9
Japan:							
Net sales	16,928	17,733	21,733	0,805	4,8	4,0	22,6
Operating income	7,165	8,097	9,500	0,932	13,0	1,403	17,3
Rest of Asia Pacific:							
Net sales	13,654	15,199	17,407	1,545	11,3	2,208	14,5
Operating income	4,781	5,304	6,181	0,523	10,9	0,877	16,5

As we can see from Fig. 2.4, the company received the largest share of sales and operating income from the US segment and the smallest - from Rest of Asia Pacific. At the same time, Net sales and Operating income grew in all segments,

except Greater China in 2017.

The main divisions of Apple Inc. human resource, finance, marketing and productions are adopted by the functional approach. In each division the functional subsystem and departments create hierarchies. Operational management is linked with the production division's activities.

The people in Apple Inc. are grouped together on the basis of their expertise and resources. It enabled the Apple Inc. to learn from its functions. The present structure in Apple Inc. has focused upon those activities which reduce the costs and increase the flexibility in its operations. The managers in Apple Inc. have a greater control of the organizational activities. Structure of the Apple Inc. has decentralized the authorities and responsibilities of its management. The marketing department shows a great responsiveness to the outside world.

Apple's Organizational Structure Type and Characteristics

Apple Inc. has a **hierarchical organizational structure**, with notable divisional characteristics and a weak functional matrix. The hierarchy is a traditional structural feature in business organizations. The divisional characteristics refer to the product-based grouping within Apple, such as for iOS and macOS. The weak functional matrix involves inter-divisional collaboration, while the hierarchy is preserved. The following are the main characteristics of Apple's corporate structure:

1. Spoke-and-wheel hierarchy.
2. Product-based divisions.
3. Weak functional matrix.

Spoke-and-Wheel Hierarchy. In the past, everything went through Steve Jobs. Jobs made all the major strategic management decisions. However, under Tim Cook's leadership, this hierarchy in Apple's corporate structure has slightly changed. The company now has more collaboration among different parts of the organization, such as software teams and hardware teams. Apple's vice presidents have more autonomy, which was limited and minimal under Jobs. Thus, the company's organizational structure is now less rigid, but still has a spoke-and-wheel hierarchy where Tim Cook is at the center. The upper tier (innermost tier in the spoke-and-

wheel circle) of the corporate structure has function-based grouping, which is an element derived from the functional type of organizational structure. Senior vice presidents who report to Tim Cook handle business functions. For example, Apple has a senior vice president for retail, and a senior vice president for worldwide marketing. In this structural feature, the company's top leaders address business needs in terms of business function areas.

Product-based Divisions. The upper and lower tiers of Apple's corporate structure has product-based divisions, which is an element derived from the divisional type of organizational structure. There are senior vice presidents and vice presidents for different outputs or products. For example, Apple has a Senior Vice President for Software Engineering (iOS and macOS), a Senior Vice President for Hardware Engineering (Mac, iPhone, iPad and iPod), and a Senior Vice President for Hardware Technologies (hardware components). Apple Inc.'s marketing mix or 4P is linked to this structural characteristic. This aspect of the corporate structure is used to manage specific products or product components that the company delivers to its target customers.

Weak Functional Matrix. Apple Inc.'s weak functional matrix refers to the collaborative interactions among various components of the business. In a weak functional matrix, top management determines project direction, while project heads have limited authority and control. For example, the corporate structure allows hardware teams to collaborate with software teams. In this way, the company facilitates information dissemination that is necessary for innovation processes. This structural feature contributes to effective and rapid innovation processes, which are a major business strength shown in the SWOT analysis of Apple Inc. Through this characteristic of the organizational structure, the company maintains strong innovation processes that support brand development and the use of premium-pricing strategies.

The finance treasury division of Apple Inc. provides the financial policy to company. This department is responsible to handle the international capital transactions of company, liquidity guaranteeing and risk management. In Apple Inc.

the role of the financial manager is crucial for the strategic management. The capital required for the R&D is raised by the Finance division which maintains the innovation position of the Apple Inc. Internal problems of Apple Inc. were in the form of the sales force accessing directly to corporations.

The hierarchy in Apple's organizational structure supports strong management control in the organization. Theoretically, hierarchy empowers top leaders like Tim Cook to control everything in the organization. Through the hierarchy, business functions and product-based groups are effectively controlled through the decisions of the CEO and other top executives. This advantage of Apple Inc.'s corporate structure facilitates rapid and effective strategic management implementation, and helps in establishing coherence throughout the entire organization.

Apple's corporate structure has the downside of low flexibility. Hierarchy typically prevents lower levels of the structure to flexibly respond to current business needs and market demands. For example, the company's product-based divisions must wait for directives from the CEO or other top executives to proceed in implementing changes that address trends in the market for consumer electronics. However, Tim Cook has already made slight improvements by increasing collaboration among different parts of the firm. Such collaboration improves organizational flexibility. Still, Apple's organizational structure does not support rapid changes because everything must go through Tim Cook and the top management.

10 Decision Areas of Operations Management of Apple:

1. Design of Goods and Services. Apple's processes in the design of its products are handled through a number of organizational components and officials. For example, the development and production of Macs involve a Senior VP for Mac Hardware Engineering and a VP for Mac Software Engineering. This coordination reflects the nature and characteristics of the corporate structure of Apple Inc. In this decision area of operations management, these VPs coordinate with the company's Senior VP for Operations. The system of interactions ensures that the outputs in this

operational area are successful in making Apple excel in the design of its technological products.

2. Quality Management. This decision area of operations management emphasizes quality standards and controls. Apple Inc.'s Senior VP for Operations coordinates with eight other Senior VPs to ensure compliance with the company's quality standards. The company is known for high quality standards that permeate different areas of the business, including product design and development, retail, marketing, online sales, industrial design, and human resource management. Thus, Apple has a holistic approach in ensuring quality to address this decision area of operations management.

3. Process and Capacity Design. Apple's human resource management strategies include support to maximize workforce capacity for product development and design. In addition, the company works with suppliers to ensure efficient processes and adequate capacity in this decision area of operations management. For instance, suppliers are given directives for process design, as well as the Apple Supplier Code of Conduct to optimize their human resource management. Moreover, Apple Inc. strives for innovation in its facilities to optimize capacity and process efficiency. Thus, the company has a comprehensive approach for this decision area of operations management.

4. Location Strategy. Apple Inc.'s location strategy is selective, involving limited authorization of sellers. However, most authorized sellers are located in urban centers to maximize foot traffic and brand exposure. At present, the company has hundreds of stores in more than 20 countries around the world. Despite this limited approach to seller authorization, the company is now among the most profitable in the world, and Apple Stores have the highest revenue per square foot of retail space in the United States. Thus, Apple's selective location strategy successfully satisfies this decision area of operations management.

5. Layout Design and Strategy. Apple's layout design and strategy emphasize customer expectations. For example, company-owned and authorized-seller stores are spacious with minimal décor to ensure focus on Apple products. In the company's

other facilities, this decision area of operations management is addressed through innovative office layouts that encourage creativity and efficiency of workflows. Creativity is a critical factor among employees involved in product design and development processes at Apple Inc.

6. Job Design and Human Resources. This decision area of operations management requires job design and human resource strategies specific to the trends in relevant HR management needs. In Apple's case, job design and HR strategies are based on Steve Jobs' original emphasis on excellence. However, the company has been gradually changing its HR strategies under Tim Cook to reflect a more sociable workplace for optimum employee morale. Apple Inc. has mastered job design and human resource strategies to ensure continued support for its industry leadership.

7. Supply Chain Management. Apple's supply chain is among the most efficient and streamlined in the world. To address this decision area of operations management, the company uses automation of processes and regular monitoring of suppliers. This monitoring evaluates supplier capacity and productivity, as well as compliance with the Apple Supplier Code of Conduct. The automation aspect serves as the main strength of the corporation's approach to supply chain management.

8. Inventory Management. In this decision area of operations management, Apple Inc. uses different methods of inventory management, such as the serialized method for effective tracking and control of products. The company also uses the first in, first out (FIFO) method, which ensures that most old-model units are sold before new Apple product models are released to the market. Apple Store managers also handle the inventory management of their respective stores.

9. Scheduling. Apple Inc. applies this decision area of operations management through a combination of automation and manual processes. Automation is used for scheduling activities in the supply chain and production processes. On the other hand, manual scheduling is used for individual Apple Stores and in some aspects of the company's offices. The main aim of the firm in this decision area of operations management is to maximize the capacity utilization of facilities, equipment and human resources.

10. Maintenance. Apple Inc. addresses maintenance needs through dedicated maintenance teams. For example, the company has different maintenance teams for its various facilities. Apple's IT teams also function as maintenance teams for the firm's servers and other IT assets. The VP for Human Resources ensures that the company's personnel are always at adequate capacity to maintain high performance at the company's facilities. Thus, Apple effectively addresses this decision area of operations management.

Dynamics cash generated by operating activities in 2015-2019 (Fiscal year is October-September) are shown in Figure 2.5.

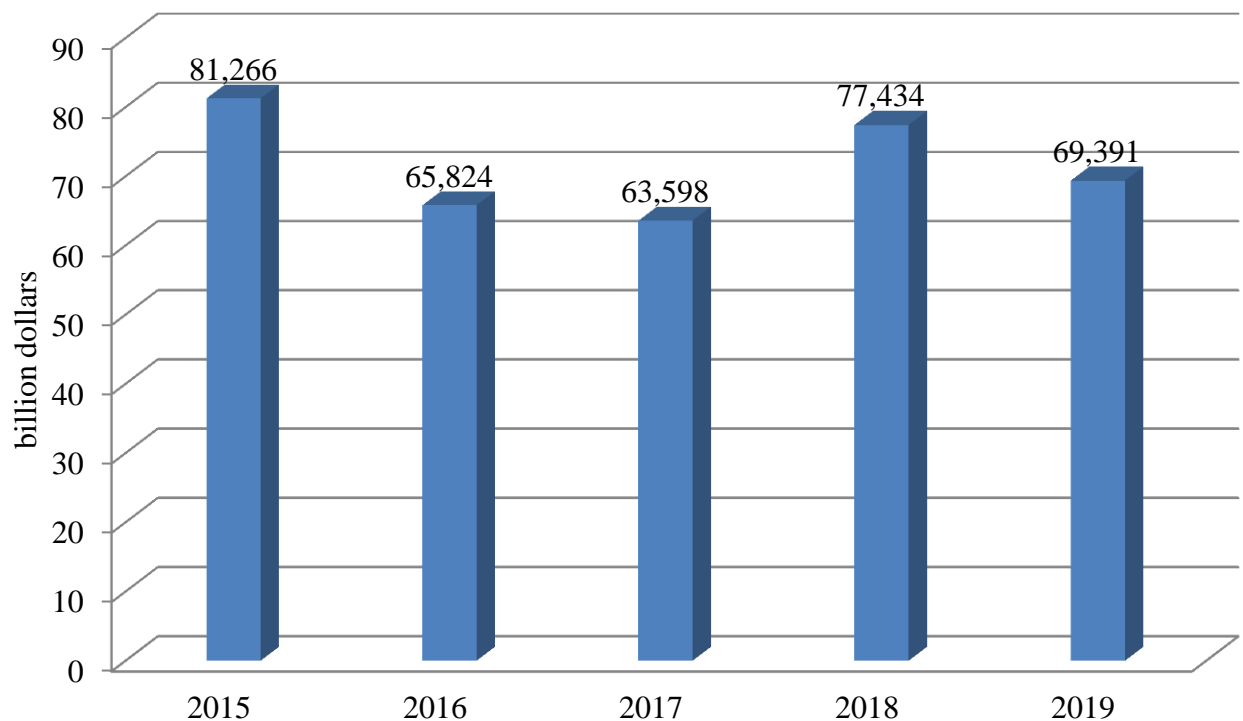


Figure 2.5 - Dynamics of Cash generated by operating activities in 2015-2019 (Fiscal year is October-September), billion dollars

Productivity at Apple Inc. Apple Inc.'s operations management monitors and evaluates productivity through various criteria. The company's global size and diverse activities translate to different standards, benchmarks and criteria for productivity in different business areas. The following are some of the productivity criteria in Apple's operations management:

- 1) revenue per Square Foot (productivity of Apple Stores);

- 2) product Units per Time (productivity of suppliers and the supply chain);
- 3) Milestone per Time (productivity of employees in product development).

Research and Development

Because the industries in which the Company competes are characterized by rapid technological advances, the Company's ability to compete successfully depends heavily upon its ability to ensure a continual and timely flow of competitive products, services and technologies to the marketplace. The Company continues to develop new technologies to enhance existing products and services, and to expand the range of its offerings through R&D, licensing of intellectual property and acquisition of third-party businesses and technology.

Intellectual Property

The Company currently holds a broad collection of intellectual property rights relating to certain aspects of its hardware devices, accessories, software and services. This includes patents, copyrights, trademarks, service marks, trade dress and other forms of intellectual property rights in the U.S. and a number of foreign countries. Although the Company believes the ownership of such intellectual property rights is an important factor in its business and that its success does depend in part on such ownership, the Company relies primarily on the innovative skills, technical competence and marketing abilities of its personnel.

The Company regularly files patent applications to protect innovations arising from its research, development and design, and is currently pursuing thousands of patent applications around the world. Over time, the Company has accumulated a large portfolio of issued patents, including utility patents, design patents and others. The Company also holds copyrights relating to certain aspects of its products and services. No single intellectual property right is solely responsible for protecting the Company's products. The Company believes the duration of its intellectual property rights is adequate relative to the expected lives of its products.

Many of the Company's products are designed to include intellectual property obtained from third parties. It may be necessary in the future to seek or renew licenses relating to various aspects of the Company's products, processes and

services. While the Company has generally been able to obtain such licenses on commercially reasonable terms in the past, there is no guarantee that such licenses could be obtained in the future on reasonable terms or at all. Because of technological changes in the industries in which the Company competes, current extensive patent coverage and the rapid rate of issuance of new patents, it is possible that certain components of the Company's products, processes and services may unknowingly infringe existing patents or intellectual property rights of others. From time to time, the Company has been notified that it may be infringing certain patents or other intellectual property rights of third parties.

Foreign and Domestic Operations and Geographic Data

During 2018, the Company's domestic and international net sales accounted for 37% and 63%, respectively, of total net sales. Gross margins on the Company's products in foreign countries and on products that include components obtained from foreign suppliers, can be adversely affected by foreign currency exchange rate fluctuations and by international trade regulations, including duties, tariffs and antidumping penalties.

Business Seasonality and Product Introductions

The Company has historically experienced higher net sales in its first quarter compared to other quarters in its fiscal year due in part to seasonal holiday demand. Additionally, new product introductions can significantly impact net sales, product costs and operating expenses. Product introductions can also impact the Company's net sales to its indirect distribution channels as these channels are filled with new product inventory following a product introduction, and channel inventory of a particular product often declines as the next related major product launch approaches. Net sales can also be affected when consumers and distributors anticipate a product introduction. However, neither historical seasonal patterns nor historical patterns of product introductions should be considered reliable indicators of the Company's future pattern of product introductions, future net sales or financial performance.

Warranty

The Company offers a limited parts and labor warranty on its hardware products. The basic warranty period is typically one year from the date of purchase by the original end user. The Company also offers a 90-day limited warranty on the service parts used to repair the Company's hardware products. In certain jurisdictions, local law requires that manufacturers guarantee their products for a period prescribed by statute, typically at least two years. In addition, where available, consumers may purchase APP or AC+, which extends service coverage on many of the Company's hardware products.

Backlog

In the Company's experience, the actual amount of product backlog at any particular time is not a meaningful indication of its future business prospects. In particular, backlog often increases immediately following new product introductions as customers anticipate shortages. Backlog is often reduced once customers believe they can obtain sufficient supply. Because of the foregoing, backlog should not be considered a reliable indicator of the Company's ability to achieve any particular level of revenue or financial performance.

CHAPTER 3

RECOMMENDATIONS FOR IMPROVING OF OPERATIONAL MANAGEMENT AT THE APPLE INC

3.1 The main directions of solving operational management problems at the company

There are multiple challenges that Apple's operations managers face on a daily basis including the following five: globalization, sustainability, ethical conduct, ineffective communication, and system design.

Globalization. Globalization is a process of interaction and integration among the people, companies, and governments of different nations. It is driven by a reduction in trade barriers, advancements in information technology, and transportation technology. Operation managers face competition from the company across the street, as well as, from across the country and across the world. Companies who compete with others abroad will have to improve quality while lowering prices to remain competitive. This falls on the operations manager as he is the one who engages in the four functions of planning, organizing, leading, and controlling to ensure that the product or service remains competitive in the market. The operations manager must tap into their creative skills as innovation will be a key factor of success as will knowledge about international business and the myriad cultures of the businesses around the globe.

Sustainability. Business operational sustainability is a method of evaluating whether a business can maintain existing practices without putting future resources at risk. When discussing the concept of sustainability, it is often referred to as the Three Pillars of Sustainability which are social, environmental, and economic. Operations managers must concern themselves with the outcomes of each of the pillars including how their work affects safety, welfare, communities, the environment and economic sustainability. Effective operations managers must implement best practices with a

concern for all three pillars of sustainability. They also need to initiate and verify corrective action when any outcome of one of the three pillars becomes jeopardized.

Ethical Conduct. Ethics is defined as a subset of business ethics that is meant to ensure that the production function and/or activities are not damaging to either the consumer or the society. In particular organizations should consider the effects new technologies, services, and business deals have on people, safety, and the environment.

Being ethical across all business functions such as accounting, human resource management, marketing and sales, and production are clearly within the purview of the operations manager. Unethical behavior, regardless of its origin, becomes a stain on the company as a whole.

Effective Communication. Being consistent and effective when communicating can be difficult anyone in any position within an organization. The challenge for the operations manager is to be able to communicate effectively with all internal and external stakeholders. He must be able to effectively communicate their message as well as process the messages being directed to them. Mastering oral, written, and non-verbal communication is integral to making day-to-day operations run smoothly. Effective and efficient communication is also necessary for building employee morale and deepening trust with management. Operations managers who take the time to be self-reflective, the initiative to be authentic, and the effort to work on their communication skills are bound to be both productive and successful. The development of these skills are frequently the most requested of upper level management of their new and mid-level managers and required to be successful in any company.

System design. Organizations must develop systems capable of producing quality goods and services in demanded quantities in acceptable time frames. Designing the system, planning the system, and managing the system present a wide variety of challenges to even the most savvy operations managers.

As operations managers work in multidisciplinary environments, they must be aware of and effectively respond to the challenges presented by globalization,

sustainability, ethical conduct, effective communication, and system design. Doing this calls for operations managers to excel in the business, technical, and interpersonal aspects of their work as they actively support the mission and vision of their organization.

Apple Inc. should improve the Retail Strategy. Apple should continue penetrating in different market via online store and retail stores. They must aggressively promote this to the potential customers, as it will save the cost of supply chain management, ultimately results in low cost products that will help Apple to reduce their prices further to compete in the market more efficiently.

3.2 Recommendations concerning improvements of Distribution at the organization

The company can use its strengths to expansion of its distribution network. The Company's customers are primarily in the consumer, small and mid-sized business, education, enterprise and government markets. The Company sells its products and resells third-party products in most of its major markets directly to consumers and small and mid-sized businesses through its retail and online stores and its direct sales force. The Company also employs a variety of indirect distribution channels, such as third-party cellular network carriers, wholesalers, retailers and resellers. During 2018, the Company's net sales through its direct and indirect distribution channels accounted for 29% and 71%, respectively, of total net sales.

The Company believes that sales of its innovative and differentiated products and services are enhanced by knowledgeable salespersons who can convey the value of the hardware and software integration and demonstrate the unique solutions that are available on its products. The Company further believes providing direct contact with its targeted customers is an effective way to demonstrate the advantages of its products over those of its competitors and providing a high-quality sales and after-sales support experience is critical to attracting new and retaining existing customers.

To ensure a high-quality buying experience for its products in which service and education are emphasized, the Company needs to build and improve its distribution capabilities by expanding the number of its own retail stores worldwide. The Company's retail stores are typically located at high-traffic locations in quality shopping malls and urban shopping districts. By operating its own stores and locating them in desirable high-traffic locations the Company is better positioned to ensure a high-quality customer buying experience and attract new customers. The stores are designed to simplify and enhance the presentation and marketing of the Company's products and related solutions. The retail stores it is advisable to involve experienced and knowledgeable personnel who can provide product advice, service and training, and offer a wide selection of third-party hardware, software and other accessories that complement the Company's products.

An expanded distribution network can help Apple reach more customers in the global market. In relation, the company has the opportunity to increase its sales volumes through aggressive marketing, especially for mobile products. This opportunity is linked to the rising demand for mobile access. Furthermore, the company has the opportunity to explore new product lines. Its current product lines are highly successful. However, with further innovation, the company can develop and introduce new products, like what it has already achieved with the Apple Watch. Developing new product lines can support business growth in the international market. Thus business has major opportunities for further growth despite aggressive competition.

To cope with international market demand, Apple Inc also need to through the traditional ways or modes of marketing and explore the synergies between its brands to reduce marketing risks, while streamlining and optimizing distribution channels that facilitate targeted customers.

3.3 Recommendations concerning improvements of innovative activity at the organization

It is necessary to consider the innovative activity of Apple Inc as a factor and a consequence of hierarchical changes in related levels and fields that allows a researcher to deepen into the selected area and develop it in more detail from the chosen position. The presence of innovative activity leads to technological shifts that are carried out by using technologies of another technological mode. In such conditions, the innovative activity of enterprises, which serves a basis for sustainable development of the economy, is an important component and prerequisite for sustainable economic development of Apple Inc.

Moreover, the company can use its strong brand image and rapid innovation processes to successfully develop and launch new product lines. However, Apple faces the significant threats of aggressive competition and imitation, which are major challenges affecting players in the global market for consumer electronics, computer hardware and software, and online digital content distribution services.

All of the products Company create have to be intuitive and easy to understand and learn. As technology has become more intricate and users want more features, the task of keeping things simple is sometimes difficult. And Apple creates tools for power users and rookies, which can mean a broad range of ease-of-use issues. But even with that, Apple is the only company I deal with where ease of use is more important than the product itself. Apple makes this a critical goal of its approach to creating anything for the market. Recommendation is to continue the aggressive and rapid innovation involved in developing the company's products. Such innovation reduces the adverse effects of imitation on revenues. Also, it is recommended that the company further enhance the automation of its production processes, and support the automation of its contract manufacturers, as a way of addressing the rising labor costs involving Apple product manufacturers.

Apple Inc.'s organizational structure contributes to effective and rapid innovation, which is a critical success factor of the business in the information technology, online services, and consumer electronics industries. Apple Inc.'s success

is linked to innovation and the leadership of Steve Jobs, and its corporate structure is partly responsible for ensuring support for such leadership. Now, under Tim Cook's leadership, Apple has made some small changes in its organizational structure to suit current global market and industry demands.

Apple's organizational structure is effective in supporting business performance to ensure leadership in the industry, especially with regard to competing against Google, Microsoft, IBM, Intel, Amazon.com, Sony, PayPal, and many other firms. The Porter's Five Forces analysis of Apple Inc. determines that these competitors impose the strong force of competitive rivalry in the company's external environment. Still, through the effective use and evolution of its corporate structure, Apple can to improve its capabilities and competitive advantages, especially in the area of rapid and creative innovation and product design for competitive products in the international market.

Globalisation has increased complexity of supply chains that need to span several countries with diverse cultures, laws and regulations, and time zones. However, with increasing pressure on the need to conserve non-renewable sources of energy and to mitigate the impact of operations on the environment, globalisation is a process likely to reverse in the not so far future. Apple must prepare for this through innovative strategies in organisation and distribution.

We recommend a strategy that simultaneously looks at lean when addressing use of resources and agile manufacturing in addressing customer needs, to meet competition on both, cost and product differentiation, fronts. In looking at lean manufacturing, we strongly recommend moderation in implementation to preserve flexibility and agility.

The lifespan of a Apple's typical corporate innovation group is not measured in decades but in years that can usually be counted on one hand. Then a business downturn comes, or a new CEO with a different strategy and mindset, or a corporate re-org, or the leader of the corporate innovation group gets frustrated and quits, or any one of a myriad of other events happens. The innovation system that has been painstakingly put in place is eliminated and the focus becomes immediate results.

Eventually, the company realizes they need more than sustaining innovation and a new innovation initiative is undertaken. Persistent innovation of Apple is about long-term commitment and the development, over years, of deeply ingrained behaviors and mindsets. To be persistent requires sustained efforts to build and evolve an innovation system that will last.

Apple's innovative activity is an indicator of an enterprise movement towards the formation of competitive advantages, since it is the implementation of innovations under the conditions of the rapidly changing external world and the limited resources that determine the further corporate development. Innovation at the present stage is becoming one of the most important systemic factors of economic growth, increasing the competitiveness of domestic products and ensuring the national economic security. When studying corporate innovation activity, management is an integral part of that, as management becomes an increasingly important tool for enhancing the competitiveness of various economic entities, an effective source of their successful operations, increasing profitability and investment attractiveness and growing market attractiveness. The emphasis on competitiveness, innovation and efficiency is an important part of the current economic situation at Apple Inc.

The decisive condition for effective innovative management is a well-established system of performance indicators for the development of timely, informed decisions at various levels of the management hierarchy, enabling to identify the effectiveness of the measures taken and that of innovative management in general. It seems expedient to make decisions taking into account the available technological capabilities of the enterprise and the possibility of implementing innovative products on the market. Therefore, in the authors' opinion, when choosing a way of assessing the opportunities of innovative activity, identifying the direction of innovative development in the strategic plan, it is expedient to base on the distinctive feature of the innovative potential, manifested in the synergetic effect due to internal interactions of the system's elements.

It is advisable for company to use complex methods to assess the effectiveness of innovation. Such an assessment, therefore, should employ the principle of continuity, the availability of stable indicators and allow to adequately assessing the state and readiness for innovative changes, to objectively predict factors and prospects for innovative development to form objective recommendations for the development of innovation strategy and mechanisms for its implementation. To fulfill the tasks of innovative management, it is required to provide its objective, reliable, operative, structured information base, including qualitative and quantitative characteristics of the management system, encompassing all interconnected areas that directly or indirectly affect the effectiveness of innovation activity of Apple.

An important construction necessary for further research is the consideration of innovative potential as a prerequisite and one of the most important conditions for creating effective management of this activity. This is because the development of the innovative activity of the enterprise assumes the existence of certain conditions and such an innovative potential that can generate high innovative activity aimed at creating new organizational and managerial structures, technologies, goods and services in the long-term run. The problem of the formation of an effective system for managing the innovative activity of the Apple Inc., the mechanism for its activation capable of combining, reproducing and using product and process innovations to increase the pace of economic development, acquires special significance in the modern economy.

In the emerging scenario for Apple three trends evident are the deployment of technology and effort towards lean and green manufacturing, quality management (TQM) and the impact of globalisation on the processes of business.

One of the main differences between TQM and lean is that TQM strongly emphasises investigation of customer requirements while lean does not emphasise this as strongly. Lean manufacturing implies a constant focus on reducing waste of all types, i.e. waste of materials, time, equipment, space, inventories, and human effort across the entire supply chain. This focus leads to management of operations in such

a way that helps improve quality, reduce costs, and improved service to customers located all over the globe.

The many similarities in the two systems of TQM and lean. Both see quality as the responsibility of senior management and focus on removing the human factor to reduce errors. This requires management to concentrate on analysing and improving processes and training people to achieve better quality and cost reduction. Both also focus on continuous improvement through learning with a small difference, TQM looks to stimulate creativity and learning for the individual and quality a result of individual efforts while lean emphasises standardisation of work and collective learning. Both TQM and lean see the importance of supplier and internal worker team participation through long-term partnerships.

In implementing greener manufacturing firms need to look beyond mere cost efficiencies because such initiatives deliver benefits difficult to quantify into money earned, but are substantial nevertheless. Lean and green initiatives improved financial performance and earned them respect from customers. This respect translates to customer preference to buy from environmentally responsible firms and pay a price premium, which can finally influence the bottom line positively. However, having considered that going green holds a number of potential benefits for the firm; it is understandable that global suppliers, not into retailing. In intensely competitive markets, the firm has the option of choosing to distinguish itself on price or on product differentiation, and the choice of operations management must align with the chosen strategy. Lean management is good where the firms aims at cost leadership where processes are repetitive, require adherence to predetermined schedules, a steady flow through the production process. Conversely, where high customisation, changing variety of products, and agility to introduce new products is the determinant of competitive strategy, the firm should choose agile manufacturing. Examining the internal and external factors these researchers (ibid) use a comprehensive review of literature that lean and agile manufacturing differ in the results, one helps cost leadership and the other can significantly raise costs to obtain agility. Examining the case of Apple, it is evident that the correct strategy must

consist of agile manufacturing. However, we do not agree with Hallgren and Olhager (2009) that lean and agile are mutually exclusive strategies. In this, we find support in the earlier work of Katayama and Bennett (1999) who proposed that a combination of lean and agile is mandatory for long-term competitiveness. These writers see the need for a firm to think lean when addressing resources and agile when looking to build capabilities to meet customer requirements. We recommend this strategy to Apple.

Chen et al (2009) discuss lean concepts and point to potential pitfalls that an overzealous implementation can cause. They emphasise that lean management aims to eliminate waste, effectively manage personnel, distribute design among entities that are best at each stage, work with the supply chain, manage customers, and wisely manage the organization's finances. Their (ibid) paper draws attention to the fact that in addressing elimination of waste the firm may risk elimination of creative time that is so essential for innovation. Focussing on short-term value creation through cost reductions may threaten competitive ability that can only come through radical and disruptive innovations. Similarly, when a company focuses on building a lean supply chain they risk disruptions of the processes that late or faulty shipments and failure of any of the links in the supply chain. In these warnings, we see echoes of the very strengths that Apple relies on to lead competition.

Using the recommendations, we can see that in order to derive maximum benefit from lean operations Apple needs to maintain a high flexibility and agility in its design and manufacturing capabilities linked to the innovative spirit exemplified in its motto – 'Think Different'. However, this does not imply that Apple has no use of the concept of lean; it is through careful and moderate application of its principles that the company can build strength to meet the stress of economic and political disruptions, and most vitally meet the growing competition brought about by rapid globalization.

CHAPTER 4

SPECIAL PART

4.1 Current trends in the field

The statistic depicts the forecast total unit shipments of smartphones worldwide from 2009 to 2017 with a forecast for 2018 and 2022. In 2017, smartphone shipments amounted to around 1.46 billion units.

Shipments for smartphones are expected to amount to around 1.45 billion by 2018, a tenfold increase from the amount of shipments in 2009. This means that by 2017, an estimated 31 percent of the world's population will have a smartphone, a figure that was at less than 10 percent in 2011. This upturn in the smartphone market has developed it into a multi-billion dollar industry with revenue projected to reach almost 429 billion U.S. dollars in 2016.

The global success of this industry can be attributed to the growing popularity of several key operating systems, namely Android and iOS. By the end of 2016, these two companies held over 95 percent of the global smartphone market share, with Android alone controlling over 80 percent. This amounted to 352.67 million Android units and 77.04 million iOS units being shipped in the final quarter of 2016. The domination in the market from Android looks set to continue with the shipment of Android phones in 2016 expected to hit around 680 million units.

However, despite both Apple and Android being based in the U.S., it is the Chinese smartphone industry that looks set to dominate the market in the coming years. Forecasts predict that China will control just under a third of the smartphone market in 2017, in comparison to the U.S.'s estimated share of 12.1 percent.

GlobalSmartphone Market2019report provides key statistics on the market status of the Smartphone Manufacturers and is a valuable source of guidance and direction for companies and individuals interested in the Smartphone Industry. The Smartphone industry report firstly announced the Smartphone Market fundamentals:

type applications and market overview; product specifications; manufacturing processes; cost structures, raw materials and so on.

Smartphones have become a basic necessity and an integral part of the lives of almost all individuals worldwide. A smartphone is a mobile phone that functions like a computer. It typically has a touchscreen interface, Internet access, and an OS that can run application software or apps that are integrated with other devices and sensors to provide users information on a real-time basis. Smartphones can be used to perform applications, including making calls, instant messaging, taking pictures and videos, browsing the Internet, carrying out financial transactions, creating presentations, and analyzing data.

Smartphonemarket competition by top manufacturers/ Key player Profiled: Apple, Samsung, Huawei, OPPO, Vivo, Xiaomi, Lenovo, LG Electronics, Sony, ZTE, ASUSTeK Computer, BlackBerry, Gionee Communication Equipment, Google, Micromax, Microsoft, Nokia, OnePlus, Panasonic, and other. Market for Smartphone is expected to grow at a CAGR of roughly 20% over the next five years. Objective of Studies of market:

- to provide strategic profiling of key players in the market, comprehensively analysing their core competencies, and drawing a competitive landscape for the market.

- to provide insights about factors affecting the market growth. To analyse the Smartphone market based on various factors- price analysis, supply chain analysis, porter five force analysis etc.

- to provide detailed analysis of the market structure along with forecast of the various segments and sub-segments of the Global Smartphone market.

- to provide country level analysis of the market with respect to the current market size and future prospective.

- to provide country level analysis of the market for segment by application, product type and sub-segments.

- to provide historical and forecast revenue of the market segments and sub-segments with respect to four main geographies and their countries- North America, Europe, Asia, and Rest of the World.

- to track and analyse competitive developments such as joint ventures, strategic alliances, new product developments, and research and developments in the Global Smartphone market.

4.2 Company policy in the market

To a considerable degree, and as a device manufacturer, Apple has been providing part of the infrastructure consumers need in order to access and use technology – through its laptops, smartphones, and tablet computers, to name a few. In establishing iTunes and the App Store, Apple could better control the ecosystem in which its devices operated. For example, apps that could be used by its devices would be vetted by Apple, and in a similar way, iTunes provided a means for music, movie, podcasts, and other content to be safely accessed in the Apple ecosystem.

In now offering Apple Arcade and Apple TV+, it appears that the company is moving into the content creation space. With regard to Apple Arcade, it is partnering with several developers to provide games for that subscription service. On the other hand, and for Apple TV+, the company has been bank-rolling the creation of original television series and similar content for that new service. Ultimately, and through the launch of those two new services, it appears that Apple is broadening its role from device manufacturer and ecosystem regulator, to now include content creator.

It could be argued that content creation is not a natural progression for a device manufacturer, but the fact of the matter is that in this day and age, content is where much of attention is placed. Once it is in place, the hardware and infrastructure tends to be overlooked, and content – what we are viewing and doing on our devices – comes to the fore.

Further, with consumers holding on to their devices for longer, at least two years, it means that after the initial one-time purchase, Apple is unlikely to see the

majority of its customers buying a new device for perhaps three years. Subscription services offer an excellent way for the company to remain connected to its customers, generate a recurrent revenue stream, whilst also fostering continuing brand loyalty.

CHAPTER 5

RATIONALE FOR RECOMMENDATIONS

5.1 Statement for recommendations at Company

The importance of operational management to the business firm: Reputation, Goodwill and Image. Operational management helps the firm to satisfy its customers. This increases the firm's reputation, goodwill and image. A good image helps the firm to expand and grow.

Helps to introduce new products: operational management helps to introduce new products in the market. It conducts Research and development (R&D). This helps the firm to develop newer and better quality products. These products are successful in the market because they give full satisfaction to the customers.

Supports other functional areas: operational management supports other functional areas in an organisation, such as marketing, finance, and personnel. The marketing department will find it easier to sell good-quality products, and the finance department will get more funds due to increase in sales. It will also get more loans and share capital for expansion and modernisation. The personnel department will be able to manage the human resources effectively due to the better performance of the production department.

Helps to face competition: operational management helps the firm to face competition in the market. This is because production management produces products of right quantity, right quality, right price and at the right time. These products are delivered to the customers as per their requirements.

Optimum utilisation of resources: operational management facilitates optimum utilisation of resources such as manpower, machines, etc. So, the firm can meet its capacity utilisation objective. This will bring higher returns to the organisation.

Minimises cost of production: operational management helps to minimise the cost of production. It tries to maximise the output and minimise the inputs. This helps the firm to achieve its cost reduction and efficiency objective.

Expansion of the firm: The operational management helps the firm to expand and grow. This is because it tries to improve quality and reduce costs. This helps the firm to earn higher profits. These profits help the firm to expand and grow.

The importance of operational management to customers and society:

Higher standard of living: operational management conducts continuous research and development (R&D). So they produce new and better varieties of products. People use these products and enjoy a higher standard of living.

Generates employment: operational activities create many different job opportunities in the country, either directly or indirectly. Direct employment is generated in the production area, and indirect employment is generated in the supporting areas such as marketing, finance, customer support, etc.

Improves quality and reduces cost: operational management improves the quality of the products because of research and development. Because of large-scale production, there are economies of large scale. This brings down the cost of production. So, consumer prices also reduce.

Spread effect: Because of production, other sectors also expand. Companies making spare parts will expand. The service sector such as banking, transport, communication, insurance, BPO, etc. also expand. This spread effect offers more job opportunities and boosts economy.

Creates utility: operational activity creates Form Utility. Consumers can get form utility in the shape, size and designs of the product. Production also creates time utility, because goods are available whenever consumers need it.

Boosts economy: operational management ensures optimum utilisation of resources and effective production of goods and services. This leads to speedy economic growth and well-being of the nation.

CHAPTER 6

OCCUPATIONAL HEALTH AND SAFETY AT THE ENTERPRISE

6.1 The aim of occupational health

The aim of occupational health is to further the joint efforts of employers, employees and occupational health care professionals concerning the health of employees, plus work and functional capacity at different stages of working life preventing work-related diseases and accidents the health and safety of work and the working environment the functioning of the work community.

Occupational health should aim at: the promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations; the prevention amongst workers of departures from health caused by their working conditions; the protection of workers in their employment from risks resulting from factors adverse to health; the placing and maintenance of the worker in an occupational environment adapted to his physiological and psychological capabilities; and, to summarize, the adaptation of work to man and of each man to his job. Employers must arrange preventive occupational health care for employees. Employers may arrange occupational health services themselves or procure them from a health centre, private medical clinic or other service provider.

Municipalities must organise occupational health services locally for employers who request them. Entrepreneurs and other self-employed people may arrange occupational health services themselves. Employers may organise nursing care voluntarily.

The ILO Occupational Health Services Convention defines "occupational health services" as services entrusted with essentially preventive functions and responsible for advising the employer, the workers and their representatives in the undertaking on the requirements for establishing and maintaining a safe and healthy working environment which will facilitate optimal physical and mental health in relation to work and the adaptation of work to the capabilities of workers in the light

of their state of physical and mental health.

Provision of occupational health services means carrying out activities in the workplace with the aim of protecting and promoting workers' safety, health and well-being, as well as improving working conditions and the working environment. These services are provided by occupational health professionals functioning individually or as part of special service units of the enterprise or of external services.

Occupational health practice is broader and consists not only of the activities performed by the occupational health service. It is multidisciplinary and multisectoral activity involving in addition to occupational health and safety professionals other specialists both in the enterprise and outside, as well as competent authorities, the employers, workers and their representatives. Such involvement requires a well-developed and well-coordinated system at the workplace. The necessary infrastructure should comprise all the administrative, organizational and operative systems that are needed to conduct the occupational health practice successfully and ensure its systematic development and continuous improvement.

The most elaborate infrastructure for occupational health practice is described in the ILO Occupational Safety and Health Convention, 1981 (№. 155) and the Occupational Health Services Convention, 1985 (№ 161). The establishment of occupational health services according to the models advocated by the Convention No. 161 and its accompanying Recommendation No. 171 is one of the options. It is however evident that the most advanced occupational health services are in concordance with the ILO instruments. Other types of infrastructures may be used. Occupational medicine, occupational hygiene and occupational safety may be practised separately or together within the same occupational health service. The occupational health service may be a single integrated entity or a composite of different occupational health and safety units unified by a common concern for workers' health and well-being.

The most important features of the international consensus on occupational safety and health are:

- a focus on occupational health and safety for all workers irrespective of the

sector of the economy, the type of employment (salaried worker or self-employed), the size of the enterprise or company (industry, public sector, services, and so on);

- the responsibility of governments for the establishment of appropriate infrastructures for occupational health practice through legislation, collective agreements or any other mechanism acceptable to the government after consultation with employers' and workers' representative organizations;

- the liability of governments for the development and implementation of occupational safety and health policy in tripartite collaboration with employers' and workers' organizations;

- the primary responsibility of the employer for the provision of occupational health services at the enterprise level, who must involve competent occupational health professionals to implement the provisions stipulated by the national legislation or the collective agreements;

- the prevention of work accidents and occupational diseases and control of workplace hazards as well as the development of a work environment and work conducive to workers' health are the main purpose of occupational health services.

Main provisions that are relevant to occupational health practice include:

- the development of a coherent overall prevention policy at the enterprise level covering the working environment, technology, organization of work, working conditions and social relationships;

- the responsibility of the employer to ensure the safety and health of workers in every aspect related to the work, including prevention of occupational hazards, provision of information and training, as well as provision of the necessary work organization, control measures and means that occupational health activities should be carried out in collaboration between employers and workers;

- that workers should receive health surveillance adequate for the health risks they incur at work;

- that workers have the right to receive all the necessary information concerning the safety and health risks as well as preventive and protective measures in respect of both the enterprise in general and each type of workstation and work

practice;

- that the planning and introduction of new technologies should be subject to consultation with the workers and/or their representatives, as regards the choice of equipment, working conditions and the working environment for the safety and health of workers;

- that the general principles of prevention should include the elimination of occupational hazards; evaluation of hazards which cannot be avoided; combating the risks at the source; adapting the work to the individual, especially as regards the design of workplaces, the choice of equipment and working and production methods; adapting to technical progress; replacing dangerous substances by non-dangerous or less dangerous ones; giving collective protective measures priority over individual protective measures; giving appropriate instructions to the workers.

The principles as objectives of occupational health practice are:

- protecting workers' health against hazards at work (the protection and prevention principle);

- adapting work and the work environment to the capabilities of workers (the adaptation principle);

- enhancing the physical, mental and social well-being of workers (the health promotion principle);

- minimizing the consequences of occupational hazards, accidents and injuries, and occupational and work-related diseases (the cure and rehabilitation principle)

- providing general health care services for workers and their families, both curative and preventive, at the workplace or from nearby facilities (the general primary health care principle).

Functions and Activities of Occupational Health Services.

To protect and promote the health of workers, an occupational health service has to meet the special needs of the enterprise it serves and the workers employed in it. With the enormous range and scope of industrial, manufacturing, commercial, agricultural and other economic activities, it is not possible to lay down a detailed programme of activity or pattern of organization and conditions of operation for an

occupational health service which should be suitable for all enterprises and in all circumstances. The prime responsibility for health and safety of workers rests with the employers. The functions of an occupational health service are to protect and promote the health of workers, improve working conditions and the working environment and maintain the health of the enterprise as a whole by providing occupational health services to workers and expert advice to the employer on how to achieve the highest possible standards of health and safety in the interests of the particular working community of which it is a part.

ILO Convention №161 and its accompanying Recommendation №171 envisage occupational health services as multidisciplinary, comprehensive and, although essentially preventive, also allow for carrying out curative activities. The WHO documents calling for services for small-scale enterprises, the self-employed and agricultural workers encourage the provision of services by primary health care units. National laws and programmes recommend a stepwise implementation so that the occupational health activities can be adjusted to the national and local needs and the prevailing circumstances.

Ideally, an occupational health service should establish and act in accordance with a programme of activities adapted to the needs of the enterprise where it operates. Its functions should be adequate and appropriate to the occupational hazards and health risks of the enterprise it serves, with particular attention given to the problems specific to the branch of economic activity concerned. The following represent the basic functions and most typical activities of an occupational health service.

If occupational health services have not been previously provided or when new occupational health service staff members are recruited, a preliminary orientation to the occupational safety and health situation of the enterprise is needed. This involves the following steps:

- Analysis of the type of production will indicate the types of hazards typical for the economic activity, work or occupation which therefore may be expected to be encountered in the enterprise and can help identify those that may call for special

attention.

- Review of problems that have been identified by occupational health professionals, management, workers or other specialists, and occupational health measures that have previously been undertaken at the workplace will indicate the perception of the problems by the enterprise. This should include examination of reports of occupational health and safety activities, industrial hygiene measurements, biological monitoring data and so on.

- Review of the characteristics of the workforce (i.e., numbers by age, sex, ethnic background, family relations, occupational classifications, work history and, if available, related health issues) will help to identify vulnerable groups and those with special needs.

- Available data on occupational diseases and accidents and sickness absenteeism grouped, if possible, by department, occupation and type of work, causative factors and the type of injury or disease should be examined.

- Data on working methods, chemical substances handled at work, recent exposure measurements and the numbers of workers exposed to special hazards are needed for the identification of the priority problems.

- The knowledge by employees of occupational health problems, the extent of their training in emergency measures and first-aid, and the prospects for an effective occupational safety and health committee should be explored.

- Finally, pending plans for changes in production systems, installation of new facilities, machinery and equipment, introduction of new materials and changes in the organization of work should be examined as a basis for changing the occupational health practice in the future.

Surveillance of the working environment

The quality of the working environment through compliance with safety and health standards has to be ensured by surveillance at the workplace. According to ILO Convention No. 161, surveillance of the working environment is one of the main tasks of the occupational health services.

On the basis of the information obtained through the preliminary orientation to

the enterprise, a walk-through survey of the workplace is conducted, preferably by a multidisciplinary occupational health team supplemented by employers' and workers' representatives. This should include interviews with managers, foremen and workers. When needed, special safety, hygiene, ergonomic or psychological checks can be performed.

The future development of occupational health services depends on a number of factors in the world of work and on national economies and policies as well. The most important trends in industrialized countries include ageing of the workforce, increase of irregular employment patterns and working schedules, distant work (telework), mobile workplaces and the steady increase in small-scale enterprises and the self-employed. New technologies are introduced, new substances and materials are used, and new forms of work organization appear. There is pressure for simultaneously increasing productivity and quality, resulting in the need to maintain strong motivation for work in the face of the increasing tempo of change, and the need to learn new work practices and methods grows apace.

While measures to combat traditional occupational hazards have been successful, particularly in industrialized countries, these hazards are not likely to totally disappear in the near future and they will still represent danger even though for smaller populations of workers. Psychological and psychosocial problems are becoming dominant occupational hazards. The globalization of the world economy, the regionalization and the growth of multinational economies and enterprises are creating an internationally mobile workforce and resulting in the exportation of occupational hazards to areas in which protective regulations and constraints are weak or non-existent.

With regard to further development of occupational health services, the following emerging issues will have to be met in the future:

- universal development of occupational health for all in order to equalize the conditions of work and health in all parts of the world;
- developing better predictive methods for assessing in advance health risks of exposures and providing health and safety criteria for industrial planners, designers

and engineers;

- improving the integration of occupational health services with other services of the enterprise;

- developing improved systems for providing occupational health services to small enterprises, agricultural workers and the self-employed;

- accelerating and improving the assessment of the potential hazards introduced by new technologies, materials and substances;

- strengthening the strategies and methodologies applicable in dealing with the psychosocial aspects of work, with special attention to controlling hazards and preventing their adverse effects;

- improving the capability for preventing and controlling musculoskeletal disorders, cumulative strain injuries and occupational stress;

- increasing attention to the needs of ageing workers and improving the methods for their adaptation to work and the maintenance of work capacities;

- developing and enhancing programmes for maintaining the work capacities of the unemployed and facilitating their re-employment;

- increasing the numbers and competence of professionals in many disciplines involved in occupational health and safety and recognizing the need for involvement of such new disciplines as the science of work organization, quality management and health economics.

6.2 Organization of occupational health and safety at the enterprise

Company believe that every person who makes Apple products has the right to a safe and healthy workspace. To do business with Apple, suppliers must follow some of the toughest standards in the electronics industry. When it comes to handling chemicals and toxic substances, the standards that Apple set for its suppliers across the world — regardless of their location — meet or exceed respected U.S. safety standards such as those set by the National Institute for Occupational Safety and Health (NIOSH) and the American Conference of Governmental Industrial

Hygienists (ACGIH).

Apple's restrictions are set out in its Regulated Substances Specification. Apple sets an occupational exposure limit of 0.5 parts per million for benzene, as recommended by ACGIH, and 28 parts per million for n-hexane, in line with NIOSH. To ensure that suppliers follow strict requirements, last year Apple conducted nearly 200 factory inspections focused on hazardous chemicals — in addition to the 451 general supplier audits Apple completed.

Apple instructs the environmental health and safety managers in its supplier facilities in best practices that include hazardous chemical management, industrial hygiene and personal protective equipment. This program is raising the bar for EHS across its supply chain. Apple also provides extensive training.

Benzene and n-hexane are ingredients in many substances, such as paint strippers, industrial cleaning products, and household cleaners. Apple set out to catalog every use it could find, no matter how small, in its final assembly facilities.

At a Catcher Technology Co. manufacturing complex in the Chinese industrial city of Suqian, about six hours' drive from Shanghai, workers stand for up to 10 hours a day in hot workshops slicing and blasting iPhone casings for Apple Inc., handling noxious chemicals sometimes without proper gloves or masks.

These conditions show the downside of a high-tech boom buoying the world's second-largest economy. Chinese recruiters play up the chance to build advanced consumer electronics to attract the millions of typically impoverished, uneducated laborers without whom the production of iPhones and other digital gadgets would be impossible. Goggles and earplugs are not always available, a problem when some factory machines are noisy and spray tiny metallic particles or coolant, according to Bloomberg interviews with workers. CLW said the noise was about 80 decibels or more.

Catcher's factory-floor staff are mainly low-skilled laborers recruited through hiring agencies from rural areas across China.

One production line is required to crank out about 1,450 units during a 12-hour shift, which includes breaks for meals, according to CLW. In interviews with

Bloomberg, workers expressed concern about safety issues and a lack of training about the materials they come into contact with. Some have to quickly switch between at least four machines, increasing the risk of accidents, the workers said. One has to constantly work without stopping.

CLW's investigation found training for new staff lasted about four hours, versus Catcher's official 24-hour requirement for the factory. As workers fill out required tests after training, an instructor reads out the answers, CLW said. Some workers told Bloomberg they were asked to sign forms confirming they completed the full training, when they hadn't.

Catcher doesn't properly outline standard procedures, meaning workers aren't always aware of the best ways to protect themselves in a hazardous environment.

Apple's supplier code of conduct says suppliers should identify, control, monitor, and reduce noise generated by the facility that affects noise levels at the boundary of factories.

For sandblasting-workshop employees, Catcher provides one active carbon face mask a day to protect against fumes and dust. But the masks can quickly clog up. Supervisors hand out thicker 3M-brand face masks only when they expect an inspection, one of the workers told Bloomberg. High temperatures in the workshops make wearing the 3M masks unbearable, the worker said.

Rubber gloves — designed to shield hands from external fluids — are also in short supply and often don't last an entire shift, workers told Bloomberg. Some of the employees said they end up buying flimsy disposable plastic gloves — the type used in the kitchen — to protect themselves. CLW reported irritated and peeling skin on workers' hands.

In its supplier-responsibility report covering 2018, Apple said it conducted a record 705 comprehensive site audits.

Late last year, Apple said it found that interns at a factory operated by Hon Hai Precision Industry Co., part of Foxconn, were working illegal overtime on iPhone X assembly lines. Some interns worked overtime in violation of its policy, and said it would review the program to ensure similar incidents wouldn't happen again. In the

past, Apple has cut ties with other factories for violating overtime and child labor laws. Hon Hai Precision is still one of Apple's largest suppliers, data compiled by Bloomberg show.

Catcher facilities were the subject of scrutiny, when another investigation by CLW and Green America found 22 issues, including forced, unpaid overtime and improper handling of hazardous materials. At the time, Apple dispatched a team to investigate, and reiterated its commitment to ensuring safe and fair working conditions for everyone in our supply chain.

Catcher's manufacturing complex in Suqian is an isolated site on the city's western outskirts ringed by electrified and barbed-wire fences. It groups multistory workshops housing the computer-numerical-control machines that cut aluminum alloy plates into iPhone frames, as well as sand-blasting facilities that give the iPhone a brushed-metal look. It also makes components for other Apple devices, including MacBooks.

Air filters are installed on cutting machines to clear vapors produced by the process, but workers told Bloomberg that the system doesn't work fast enough. The filters clear the air when workers slice metal about once every 20 seconds, but that's too slow to meet the workers' production quotas, so they said they cut quicker despite the fumes.

Apple's supplier code of conduct says suppliers should "identify, evaluate, and manage occupational health and safety hazards through a prioritized process of hazard elimination, substitution, engineering controls, administrative controls, and/or personal protective equipment."

In all, the facilities violated 14 of Apple's supplier-responsibility standards, according to CLW, including a failure to communicate the risk of handling hazardous chemicals and forcing probationary workers to pay for uniforms.

"Supplier shall provide and maintain a safe work environment and integrate sound health and safety management practices into its business," Apple's supplier code of conduct states. "Workers must be treated with the utmost dignity and respect," it adds. "Workers shall have the right to refuse unsafe work and to report

unhealthy working conditions.”

Just as is the case within all other working environments, the ‘occupational emergency response plan’ is very relevant to the organization especially for such emergencies as injuries that would be sustained in the process of computer assembly as well as in operation of the machines during production. This paper therefore intends to develop an occupational emergency response plan for the Apple Inc organization as a mandatory and necessary tool within any working environment.

The Apple Inc has a commitment to providing safe and secure working environment to its employees and as such takes any possible way to eliminate any hazard at work places in order to protect all people and in the process reduce the cases of illnesses or injuries at work place. For instance, within the suppliers ‘code of conduct’ of the organization, the organization’s commitment is to ensure all working conditions within the supply chain are safe and that employees are treated in a dignified manner as well as environmental safety is maintained for the well being of all.

The EPA as well as the OSHA has taken an active role in ensuring that organizations adopt an active role towards ensuring the safety of the working conditions within which their employees are. They require that organizations develop such occupational emergency response frameworks through which resources as well as specific responses towards particular situations are outlined and which often are refined regularly. Basic elements that are expected in a good response plan are up to date contacts of persons responsible for various duties within an organization in case of an emergency as well as ensuring that all departments as well as facilities work as stipulated within the plan to avoid confusion . Besides, it is as well necessary to stipulate resources to be used in case of such an emergency at work place.

The Apple Inc is obligated to have thoroughly trained response team personnel who would be set to offer immediate response in case of any emergency. The plan should specifically outline the procedures and routes of escape in case of such an emergency as a fire, special assignments obligated on specific persons in response to any hazard and proper system through which employees will be accounted for after

such a hazard. Besides, the plan should have a well stipulated mechanism of detection and communication of such a hazard as a fire within the working plant and immediate response procedures such as switching off the power mains. Therefore, the key elements that must be represented in an emergency plan within any organization are management structure, emergency responsibilities and assignments for emergencies as well as general procedures that employees should follow in cases of emergencies. This is because the main aim in developing the plan is to ensure that safety for employees within the organization is guaranteed against any hazard that faces the organization.

CHAPTER 7

ENVIRONMENTAL ISSUES

7.1 Environmental issues in the field

Everybody is affected by environmental issues. By developing sustainable practices within organization, Apple can help protect the planet for future generations.

As company consider what it's business can do to protect the environment, it's necessary to consider performing a sustainability audit. This is a process that reviews current policies and procedures, looking for areas in which company operates sustainably, and where it could use some changes or improvements. Completing a comprehensive audit can help company and it's team establish a realistic sustainability plan.

It is necessary to schedule regular sustainability audits to ensure ongoing compliance with external and internal environmental protection protocols. Doing so not only helps business meet its sustainability goals, it also prepares company for establishing sustainable practices to certification boards.

In response to environmental concerns, Apple, have made changes in their product materials, ingredients and packaging. Advances in technology have resulted in the production of more sustainable materials and production methods. Taking the time to learn about alternatives to current product formulas and components can help company revamp your current assortment and develop new products that are more sustainable.

Ownership of manufacturing standards and internal processes is just one aspect of developing sustainable business practices. Supply chain, which includes sourcing materials, manufacturing the products, and then distributing them to consumers, also has an impact on the environment.

Apple prides itself on being environmentally focused and is continuously working to reduce its environmental footprint. According to Apple's 2018

Environment Responsibility Report released today, the company is focusing on climate change, resources, and safer materials.

The biggest stride from over the past year is that Apple now runs all of its operations on 100 percent renewable energy.

Apple proved that 100 percent renewable is 100 percent doable. All Apple's facilities worldwide—including Apple offices, retail stores, and data centers—are now powered entirely by clean energy. But this is just the beginning of how Apple's reducing greenhouse gas emissions that contribute to climate change. The company's continuing to go further than most companies in measuring our carbon footprint, including manufacturing and product use. And Apple's making great progress in those areas too.

The company says that it uses a combination of renewable resources including solar and wind to reduce its footprint. Apple says approximately 66 percent of the renewable energy it produces is from projects that Apple created and manages itself. It also talks about what it plans to do in the future to sustain its 100% renewable energy efforts.

Beyond 2018, Apple will continue to innovate to expand our use of renewable energy as our electricity needs grow. The company'll continue to explore new markets and invest in energy storage—an essential element in our transition to renewable energy.

This extends to the products that Apple sells to customers as well. For example, the latest generation MacBook Pros use 61% less energy than the previous generation. The HomePod while playing music, consumes less power than the average LED lightbulb. And of course, Apple has been trying to reduce its footprint when it comes to the box your devices come in.

The company include all the energy used for shipping and recycling in carbon footprint. So Apple strive to make its packaging smaller or lighter so less fuel is consumed when Apple transport products by air and sea. Apple's also adjusting recycling practices. When collecting end-of-life products, Apple maximize the

environmental benefits of recycling by weighing the availability of recovery technology with the impacts of shipping materials.

Some other small tidbits include pushing the company's supply chain to become more environmentally friendly and that Apple's products are built for durability and recyclability.

7.2 Environmental factors

Pollution and other environmental side effects from manufacturing facilities are a growing concern. This could lead to increased regulation and higher manufacturing costs at some point in the future.

The company's revenue can be affected badly because of varied environmental factors such as disposal. Apple is facing huge issues while disposing of all the electronic junk that is not required anymore or not in the condition of usage. The biggest environmental issue facing Apple is the disposal of used or nonworking electronic devices. The expense of disposing of devices, particularly those containing lithium batteries, could be high. Apple could be forced to assume that expense because of concerns about such devices in landfills. As it involves environmental factors, Apple has to incur all the cost for disposal.

The growing pollution and environmental problems, as well as the various side effects of Apple, are forcing the company to make changes to its manufacturing process and equipment. To ensure a reduction in environmental issues in the process and facilities, the company needs to spend more money on future processes. This will lead to increases in expenses at a great level.

As global warming is increasing rapidly, Apple may face the issues regarding transoceanic shipping. It is pertinent to mention here that it is the crucial aspect of the supply chain of Apple. Dependability of Apple upon data centers and internet infrastructure makes it more susceptible to electricity rates. So, the company needs to carry out more expenses in the manufacturing processes.

Efforts to cut greenhouse gases and limit fossil fuel use could increase electricity rates and manufacturing costs for Apple. Concern about energy use and other side effects from data centers could lead to increased regulation and costs.

Apple is highly vulnerable to increases in electricity costs because of its dependence on data centers and other Internet infrastructure.

CONCLUSIONS

Operations management is the administration of business practices to create the highest level of efficiency possible within an organization. It is concerned with converting materials and labor into goods and services as efficiently as possible to maximize the profit of an organization. Operations management teams attempt to balance costs with revenue to achieve the highest net operating profit possible.

Operations management involves utilizing resources from staff, materials, equipment, and technology. Operation management is a process that involves planning, organizing, managing, controlling and supervising the production and manufacturing processes. The major aim of an operation manager is to ensure timely delivery of the products and to successfully turn the raw materials into the finished products (input to output). Operations management handles various strategic issues, including determining the size of manufacturing plants and project management methods and implementing the structure of information technology networks. Other operational issues include the management of inventory levels, including work-in-process levels and raw materials acquisition, quality control, materials handling, and maintenance policies.

The Apple Inc. designs, manufactures and markets mobile communication and media devices and personal computers, and sells a variety of related software, services, accessories and third-party digital content and applications. The Company is committed to bringing the best user experience to its customers through its innovative hardware, software and services. The Company's business strategy leverages its unique ability to design and develop its own operating systems, hardware, application software and services to provide its customers products and solutions with innovative design, superior ease-of-use and seamless integration.

Apple's revenue dynamics were characterized by a slight decline in the value of this indicator in 2016, then its grew in 2017 and 2018. In 2019, the company's revenue declined by \$ 5.84 billion from the previous year. iPhones accounted for the

largest share of Apple's revenue in Q4 2018 (59%). The share of services was equal 16%, Mac - 12%, iPad - 7%, other Products - 6%.

In 2016-2018 the company received the largest share of sales and operating income from the US segment and the smallest - from Rest of Asia Pacific. At the same time, Net sales and Operating income grew in all segments, except Greater China in 2017. Main Decision Areas of Operations Management of Apple are: design of Goods and Services, Quality Management, Process and Capacity Design, Location Strategy, Layout Design and Strategy, Job Design and Human Resources, Supply Chain Management, Inventory Management, Scheduling, Maintenance.

There are multiple challenges that Apple's operations managers face on a daily basis including the following five: globalization, sustainability, ethical conduct, ineffective communication, and system design.

To ensure a high-quality buying experience for its products the Company needs to build and improve its distribution capabilities by expanding the number of its own retail stores worldwide. By operating its own stores and locating them in desirable high-traffic locations the Company is better positioned to ensure a high-quality customer buying experience and attract new customers. The stores are designed to simplify and enhance the presentation and marketing of the Company's products and related solutions. The retail stores it is advisable to involve experienced and knowledgeable personnel who can provide product advice, service and training, and offer a wide selection of third-party hardware, software and other accessories that complement the Company's products.

The innovative activity of enterprises, which serves a basis for sustainable development of the economy, is an important component and prerequisite for sustainable economic development of Apple Inc. The company can use its strong brand image and rapid innovation processes to successfully develop and launch new product lines. However, Apple faces the significant threats of aggressive competition and imitation, which are major challenges affecting players in the global market for consumer electronics, computer hardware and software, and online digital content distribution services.

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