CHAPTER 2 LITERATURE REVIEWS

2.1 Porter's Five Forces

Porter's Five-Forces Model of competitive analysis is widely used for developing strategies in many industries (David, 2013, p. 106). According to this competitive model, the nature of competitiveness is a given industry can be viewed as a composite of five forces as shown in Figure 2.1:

- 1. Rivalry among competing firms
- 2. Potential entry of new competitors
- 3. Potential development of substitute products
- 4. Bargaining power of suppliers
- 5. Bargaining power of consumers

The following three steps for using Porter's Five Forces Model can indicate whether competition in a given industry is such that the firm can make an acceptable profit:

- 1. Identify key aspects or elements of each competitive force that impact the firm.
- 2. Evaluate how strong an d important each elements is for the team
- 3. Decide whether the collective strength of the elements is worth the firm entering or staying in the industry.



Figure 2.1 The Five Forces Model of Competition

Source: (David, 2013, p. 106)

2.1.1 Rivalry among Competing Firms

Rivalry among competing firms is usually the most powerful of the five competitive forces. The strategies pursued by one firm can be successful only to the extent that they provide competitive advantage over the strategies pursued by rival firms. Changes in strategy by one firm may be met with retaliatory countermoves, such as lowering prices, enhancing quality, adding features, providing services, extending warranties, and increasing advertising.

According to (David, 2013, p. 108), the intensity of rivalry among competing firms tends to increase as the number of competitors increases, as competitors become more equal in size and capability, as demand for the industry's products declines, and as price cutting becomes common. Rivalry also increases when consumers can switch brands easily; when barriers to leaving the market are high; when fixed costs are high; when the products is perishable; when consumer demand is growing slowly or declines such that rivals have excess capacity and / or inventory; when the products being sold are commodities (not easily differentiated such as gasoline); when rival firms are diverse in strategies, origins, and culture; and when mergers and acquisitions are common in the industry. As rivalry among competing firms intensifies, industry profits decline, in some cases to the point where an industry becomes inherently unattractive. When rival firms sense weakness, typically they will intensify both marketing and production efforts to capitalize on the "opportunity."

2.1.2 Potential Entry of New Competitors

When the new firms can easily enter a particular industry, intensity of competitiveness among industry increases. Barriers to entry, however, can include the need to gain economies of scale quickly, the need to gain technology and specialized know-how, the lack of experience, strong customer loyalty, strong brand preferences, large capital requirements, lack of

adequate distribution channels, government regulatory policies, tariffs, lack of access to raw materials, possession of patents, undesirable locations, counterattack by entrenched firms, and potential saturation of the market (David, 2013, p. 108)

In order to enter the industry, new firm need higher-quality products, lower prices, and substantial marketing resources.

2.1.3 Potential Development of Substitute Products

In many industries, firms are in close competition with producers of substitute products in other industries. The presence of substitute products puts a ceiling on the price that can be charged before consumers will switch to the substitute product. Price ceilings equate to profit ceilings and more intense competition among rivals.

According to (David, 2013, p. 109), competitive pressures arising from substitute products increase as the relative price of substitute products declines and as consumers' switching costs decrease. The competitive strength of substitute products is best measured by the inroads into the market share those products obtain, as well as those firms' plans for increased capacity and market penetration.

2.1.4 Bargaining Power of Suppliers

According to (David, 2013, p. 109), the bargaining power of suppliers affects the intensity of competition in an industry, especially when there is a large number of suppliers, when there are only a few good substitute raw materials, or when the cost of switching raw materials is especially costly. It is often in the best interest of both suppliers and producers to assist each other with reasonable prices, improved quality, and development of new services, justin-time deliveries, and reduced inventory costs, thus enhancing long-term profitability for all concerned.

Some strategy a firm may use regarding its supplier:

- 1. Firms may pursue a backward integration strategy to gain control or ownership of suppliers. This strategy is especially effective when suppliers are unreliable, too costly, or not capable of meeting a firm's needs on a consistent basis.
- 2. Use outside suppliers of component parts when it is more economical rather than to self-manufacture the items.
- 3. Forging strategic partnerships with select suppliers in efforts to reduce inventory and logistics costs (e.g., through just-in-time deliveries); speed the availability of next-generation components; enhance the quality of the parts and components being supplied and reduce defect rates; and squeeze out important cost savings for both themselves and their suppliers.

2.1.5 Bargaining Power of Customers

According to (David, 2013, p. 109), the bargaining power of consumers can be the most important force affecting competitive advantage. Consumers gain increasing bargaining power under the following circumstances:

- If they can inexpensively switch to competing brands or substitutes
- If they are particularly important to the seller
- If sellers are struggling in the face of falling consumer demand
- If they are informed about sellers' products, prices, and costs
- If they have discretion in whether and when they purchase the product

2.2 Consumer Behavior Analysis

(Schiffman & Kanuk, 2010, pp. 23-26) Defines consumer behavior as the behavior that consumers display in searching for, purchasing, using, evaluating, and disposing of products and services that they expect will satisfy their needs. Consumer behavior focuses on how individual consumers and families or households make decisions to spend their available resources (time, money, effort) on consumption-related items.

Customer behavior borrowed heavily from concepts developed in other scientific disciplines, such as psychology (the study of the individual), sociology (the study of groups), social psychology (the study of how an individual operates in groups), anthropology (the influence of society on the individual), and economics to form the basis of this new marketing discipline (Schiffman & Kanuk, 2010, p. 36)

2.2.1 The Sources and Collection of Data

New researchers often want to draft question immediately, and their enthusiasm makes them reluctant to go through the preliminaries that make for successful surveys (Cooper & Schindler, 2014, p. 296). Figure 2.2 is suggested flowchart for instrument design.

The procedures followed in developing an instrument very form study to study, but the flowchart suggests three phases:

- Revisiting the research question hierarchy a.
- b. Constructing and refining the measurement questions
 - Investigative Prepare Preliminary Questions Analysis Plan Phase 1 Measurement Questions Revise Phase Pretest Individual Questions Revise Instrument Pretest Survey Development Phase Instrument Ready for Data Collection
- Drafting and refining the instrument. c.

Figure 2.2 Flowchart for Instrument Design

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Source: (David, 2013, p. 296)

2.2.1.1 Sampling

The sampling decision flow form two decisions made in the formation of the management-research question hierarchy: the nature of the management questions and the specific investigate questions that evolve from research questions. These decision are influenced by requirements of the project and its objective, level of risk researcher can tolerate, budget, time, available resources, and the culture (Cooper & Schindler, 2014, p. 341).

The members of a sample are selected using probability or non-probability procedures. Non Probability sampling is arbitrary and subjective; it is usually do with pattern or scheme in mind (E.g., only talking to young people or only talking with women). Each member of the population does not have a known chance of being included. And probability sampling is based on the concept of random selection- a controlled procedure that assures that each population element is given a known nonzero chance of selection. This procedure is never haphazard. Only probability samples provide estimates of precision. When a researcher is making a decision that will influence the expenditure of thousands, if not millions, of dollars, an estimate of precision is critical. Also, only probability samples offer the opportunity to generalize the finding to the population of interest from sample population.

2.2.2 Data Processing Method and Analysis

2.2.2.1 Validity Measurement

Validity measurement is characteristic of measurement concerned with the extent that a test measures what the researcher actually wishes to measure; and that differences found with a measurement tool reflect true differences among participants drawn from a population (Cooper & Schindler, 2014, p. 257). Validity measurement here is to measure a correlation value (r) on each question with total score. Validity measurements on this study are using Microsoft Excel 2013 and IBM SPSS Statistics 20.0.

2.2.2.2 Reliability Measurement

Reliability measurement is characteristics of measurement concerned with accuracy, precision, and consistency; a necessary but not sufficient condition for validity (if the measure is not reliable, it cannot be valid (Cooper & Schindler, 2014, p. 260). Reliability measurement here is using *Alpha Cronbach's* technique, and this validity measurement on this study is using IBM SPSS Statistics 20.0.

2.2.2.3 Importance Performance Analysis

Importance Performance Analysis consist two components: quadrant analysis and gap analysis, with a quadrant analysis can be known consumer response to attributes that were plotted based on order of importance (perceptions) and performance of (expectations) of the attribute (Tileng, Utomo, & Latuperissa, 2013). Average of results overall assessment of consumer then be described in Importance Performance Matrix or often called the Cartesian diagram. Average of level of performance is used as a delimiter of high performance and low performance. Average of interests' rate is used as a delimiter high level of importance with a low interest of rate. Importance Performance Matrix is divided into four quadrants based on importanceperformance measurement result as shown in the figure below:



Figure 2.3 Importance Performance Analysis Chart

Source: (Tileng, Utomo, & Latuperissa, 2013)

The *Cartesians Diagram* will be pictured as matrix of importance performance analysis with four quadrants. As seen on Figure 2.3, there are four quadrants that might help this study to mapping the business strategy as follows (Linda & Lai, 2010):

1. Quadrant I (Concentrate Here)

Scores in this quadrant indicate that the respondents consider these attributes important. However, respondents consider the performance of such attributes to be low. This quadrant is a critical area that decision – makers should concentrate on improving.

2. Quadrant II (Keep up the Good Work)

This quadrant represents the area where both importance and performance values are considered high. Service providers already manage these attributes well and should maintain current efforts and performance.

3. Quadrant III (Low Priority)

Attributes in this quadrant reflect low importance and performance ratings. Service providers can pay less attention to these items.

4. Quadrant IV (Possible Overkills)

This area represents low importance scores coupled with high performance scores. Attributes in this quadrant are seen as unimportant to respondents, yet users feel well-serviced. Service providers can possibly reallocate or shift their efforts and resources based on the needs identified in other quadrants.

(Martilla & James, 1977) Suggest several tips on using Importance Performance Analysis:

1. Determining attributes to measure

Development of the attribute list should begin with identifying key features of the marketing mix, previous research in the same or related areas, varies qualitative research techniques, such as focus groups and unstructured personal interviews and managerial judgement.

- 2. Separating the importance measure and the performance measure By grouping all of the importance measures in one section and all of the performance measures in a later section, the respondent moves in a natural progression from general to more specific questions with distinct separation between his ratings for each attributes.
- Positioning the vertical and horizontal axes on the grid The value of this approach lies in identifying relative, rather than absolute, levels of importance and performance.
- Median Values as a measures of central tendency Median values are theoretically preferable because a true interval scale may not exist.
- 5. Analyzing the importance-performance grid Particular attention should be given to extreme observations since they are indicates the greatest disparity between importance and performance may be key indicators of customer dissatisfaction.
- Difference between loyal and disloyal customer ratings This may reveal importance strategy implications as well as provide validity checks.

Based on (Kitcharoen, 2004) dimensions of service quality in the SERVQUAL based on the multi-items scales that are designed to measure customer expectations and perceptions as well as the gap between them in 5 service quality dimensions:

- 1. Reliability covers capabilities provide the promised services with immediately, an accurate, and satisfactorily (the consistency of service as promised).
- 2. Responsiveness that is the wish of the staff to help customers and provide service with responsiveness (the ability to update, adjust, or customize the contents and delivery of the service).
- 3. Assurance covers the knowledge; capabilities, courtesy, and trustworthiness are owned by the staff, free of the dangers, risk, or doubt (the capailities of the service provider).

- 4. Empathy that is: ease of doing relationships, good communication, personalized attention, and understanding of customer needs (a caring and customer centered soft environment)
- 5. Tangible covers the physical facilities, equipment, personnel and communication facilities (the hardware infrastructure).

This importance performance analysis is using 4 levels of *Likert's scale* to measure the importance and satisfaction level with the distribution score as follows:

Importance		Satisfaction		
Statement Score		Statement	Score	
Very Important 4		Very Satisfied	4	
Important	3	Satisfied	3	
Less Important	2	Unsatisfied	2	
Not Important 1		Very Unsatisfied	1	

Table 2.1 Importance Performance Measurement using Likert's Score

In this data analysis, two variables are representing with X and Y, X represent the satisfaction attribute of PT. KCJ information services and Y represent the importance attribute of PT. KCJ information services.

Equation 2.1 Degree of Respondents

$$DRi = \frac{Xi}{Yi} \times 100\%$$

DRi = Degree of Respondent

- Xi = Weight of Satisfaction Score for each attribute (i) of information service
- Yi = Weight of Importance Score for each attribute (i) of information service

Weight importance performance measurement can picture what respondents really feel for each attribute on PT. KCJ information service. The satisfaction of Commuter Line Jabodetabek information service is fulfilled if the DRi > 100%. Meanwhile, if DRi < 100% means that commuter line users are not satisfied with the information services. To map the measurement result into *Cartesian diagram*, each attribute will be plotted in diagram where the averages of satisfaction level (X) are measured in X-axis and the averages of importance level (Y) are measured in Y-axis.

Equation 2.2 Average Degree of Respondents

$$\bar{X}i = rac{\sum Xi}{N}$$
 dan $\bar{Y}i = rac{\sum Yi}{N}$

- $\overline{X}i$ = Average Satisfaction Score for each attribute (i) of information service
- $\overline{Y}i$ = Average Importance Score for each attribute (i) of information service
- $\sum X t$ = Total Satisfaction Score for each attribute (i) of information service for all respondents
- $\sum Y i$ = Total Importance Score for each attribute (i) of information service for all respondents

N = Total Respondents

The attributes of information services quality by Commuter Line Jabodetabek by PT. KCJ is shown on Table 2.2 (Attribute statements are delivered in Bahasa Indonesia).

Table 2.2 Attributes of Information Service Quality of Commuter Line Jabodetabek based on SERVQUAL

No.	Attributes				
REL	RELIABILITY				
1	Ketersediaan informasi berkaitan dengan jadwal KRL				
	(Information availability related to KRL Jabodetabek timetable)				
2	Ketersediaan informasi berkaitan dengan tarif angkutan KRL				

	(Information availability related to KRL Jabodetabek fare)
3	Ketersediaan informasi berkaitan dengan rute dan transit KRL
	(Information availability related to KRL Jabodetabek map, route, and
	transit)
RESI	PONSIVENESS
1	Ketepatan dalam memberikan informasi yang dibutuhkan oleh konsumen
	(The accuracy of information provided that customer need)
2	Kemudahan mengakses informasi kereta di berbagai perangkat smartphone /
	HP
	(The convenience of information access in all smartphone devices)
3	Layanan informasi KRL yang komunikatif (dapat berhubungan sosial)
	(Communicative information services (Social Information Service))
ASSU	JRANCE
1	Jaminan ketersediaan informasi waktu kedatangan dan keberangkatan kereta
	(Assurance of information availability related KRL Jabodetabek timetable)
2	Jaminan ketersediaan akses informasi kereta di berbagai perangkat
	(Assurance of information access availability on all devices)
3	Jaminan ketersediaan informasi tarif kereta
	(Assurance of information availability related KRL Jabodetabek fare)
EMP	НАТУ
1	
1	Kemampuan memberikan informasi secara lengkap

	(Ability to provide detailed information)
2	Kemampuan memberikan informasi estimasi waktu tempuh perjalanan
	(Ability to provide information related to KRL Jabodetabek traveling time estimation)
3	Kemampuan memberikan estimasi biaya perjalanan
	(Ability to provide information related to KRL Jabodetabek fare cost estimation)
TAN	GIBLE
1	Ketersediaan Peta Jalur Kereta
	(Availability of KRL Jabodetabek Route Map)
2	Tabel jadwal kedatangan dan keberangkatan KRL
	(KRL Jabodetabek Timetable display)
3	Ketersediaan Peta informasi denah stasiun
	(Availability of Ground Plan on Each Station)

2.2.3 Marketing Concept

The strategic and applied field of customer behavior is rooted in three philosophically different business orientations (production orientation, sales orientation and marketing orientation) that lead up to an extremely important business orientation known as the marketing concept. The key assumption underlying the marketing concept is that in order to be successful, a company must determine the needs and wants of specific target markets and deliver the desired satisfactions better than the competition. Moreover, within the context of the marketing concept, a satisfactory profit is envisioned as an appropriate reward for satisfying consumers' needs, not as a right of simply being in business. To identify both customers' unsatisfied as well as their unrecognized needs, it is often important for companies to continuously conduct marketing research studies to monitor consumers' needs and preferences with respect to the products and services that they currently market, and those they possibly would wish to develop in the future. The term consumer research represents the process and tools used to study consumer behavior.

(Schiffman & Kanuk, 2010, pp. 43-65) Organizes research process into six steps (see Figure 2.4):

1. Developing Research Objectives.

A carefully thought-out statement of research objectives helps to insure that the information needed is secured, and that costly errors are avoided.

2. Collecting secondary data.

Secondary data is already existing information that was originally gathered for a research purpose other than the present research. If secondary research can in part or full answer the question, either net primary research can be cut back or even avoided altogether. Secondary consumer-related data can be secured from either internal sources within the company or organization, or external sources.

3. Designing primary research.

There are two categories of primary consumer research: qualitative research (i.e., focus groups and depth interviews, and specific associated research approaches), and quantitative research (i.e., observational research, experimentation, and survey research, and their associated research approaches for collecting information from consumers). If the purpose is to get new ideas (e.g., for positioning or repositioning a product), then a qualitative study is often undertaken;

alternatively, if descriptive and quantitative information is sought, then some form of a quantitative study is likely to be undertaken.

4. Designing and Conducting Quantitative Research.

In qualitative research, the researcher usually analyzes the responses received. In quantitative research, the researcher supervises the analysis: Open-ended responses are first coded and quantified (i.e., converted into numerical scores); then all the responses are tabulated and analyzed using sophisticated analytical programs that correlate the data by selected variables and cluster the data by selected demographic characteristics.

5. Preparing a report of the findings.

The research report includes a brief executive summary of the findings; recommendation (may or may not be included). The body of the report includes a full description of the methodology used and, for quantitative research, also includes tables and graphics to support the findings, a sample of the questionnaire is usually included in the appendix to enable management to evaluate the objectivity of the findings.



Figure 2.4 Consumer Research Process

Source: (Schiffman & Kanuk, 2010, p. 43)

Due to the high degree of diversity among consumers, market and consumer researchers seek to identify the many similarities and differences that exist among the peoples of the world. The three elements of this strategic framework are *market segmentation*, *targeting* and *positioning*. Market segmentation is the process of dividing a market into subsets of consumers with common needs or characteristics. Market targeting is the selection of one or more of the segments identified for the company to pursue. Market targeting is needed due to limited resources company possesses. Positioning refers to the development of a distinct image for the product or service in the mind of the consumer, an image that will differentiate the offering from competing ones and faithfully communicate to the target audience that the particular product or service will fulfill their needs better than competing brands.

2.2.4 Consumer Decision Making

As seen on Figure 2.5, the process of consumer decision making can be viewed as three distinct but interlocking stages (Schiffman & Kanuk, 2010, pp. 36-37):

- 1. The *input* stages influences the consumer's recognition of a product need and consists of two major sources of information: the company's marketing efforts (the product itself, its price, its promotion and where it is sold) and the external sociological influences on the consumer (family, friends, neighbors, other informal and noncommercial sources, social class, and cultural and subcultural memberships).
- 2. The *process* stage of the model focuses on how consumers make decisions. The psychological factors inherent in each individual (motivation, perception, learning, personality, and attitudes) affect how the external inputs from the input stage influence the consumer's recognition of a need, pre-purchase search for information, and evaluation of alternatives. The experience gained through evaluation of alternatives affects the consumer's existing psychological attributes.

The *output* stage of the consumer decision-making model consists of two closely related post decision activities: purchase behavior and post purchase evaluation. The trial purchase is the exploratory phase of purchase behavior in which the consumer evaluates the product through direct use. A repeat purchase behavior usually signifies product adoption.



Figure 2.5 Consumer Decision Making Model

Source: (Schiffman & Kanuk, 2010, p. 36)

2.3 Business Model Canvas

Business model describes the rationale of how an organization creates, delivers, and captures value (Osterwalder & Pigneur, 2010). The business model is like a blueprint for a strategy to be implemented through organizational structures, processes, and systems.

Business model canvas is a shared language for describing, visualizing, assessing, and changing business models (Osterwalder & Pigneur, 2010). Business model can best be described through business model canvas' nine basic building

blocks that show the logic of how a company intends to make money (see Figure 2.6). The nine blocks cover the four main areas of a business: customers, offer, infrastructure, and financial viability.



Figure 2.6 Business Model Canvas

Source: (Osterwalder & Pigneur, 2010, pp. 18-19)

2.4 Customer Segments

The Customer Segments Building Block defines the different groups of people or organizations an enterprise aims to reach and serve. Customers comprise the heart of any business model. Without (profitable) customers, no company can survive for long. In order to better satisfy customers, a company may group them into distinct segments with common needs, common behaviors, or other attributes. A business model may define one or several large or small Customer Segments. An organization must make a conscious decision about which segments to serve and which segments to ignore. Once this decision is made, a business model can be carefully designed around a strong understanding of specific customer needs. (Osterwalder & Pigneur, 2010, p. 20)

2.4.1 Value Prepositions

The Value Propositions Building Block describes the bundle of products and services that create value for a specific Customer Segment. The Value Proposition is the reason why customers turn to one company over another. It solves a customer problem or satisfies a customer need. Each Value Proposition consists of a selected bundle of products and/or services that caters to the requirements of a specific Customer Segment. In this sense, the Value Proposition is an aggregation, or bundle, of benefits that a company offers customers. Some Value Propositions may be innovative and represent a new or disruptive offer. Others may be similar to existing market offers, but with added features and attributes. (Osterwalder & Pigneur, 2010, p. 21)

A Value Proposition creates value for a Customer Segment through a distinct mix of elements catering to that segment's needs. Values may be quantitative (e.g. price, speed of service) or qualitative (e.g. design, customer experience). Here are some elements which can contribute to customer value creation:

1. Newness

Creating value by introduce an entirely new set of needs that customers previously didn't perceive because there was no similar offering.

2. Performance

Create value by improving product or service performance.

3. Customization

Tailoring products and services to the specific needs of individual customers or Customer Segments create values.

4. "Getting the job done"

Create value simply by helping a customer get certain jobs done.

5. Design

Create value by offering superior product design.

6. Brand/status

Customers may find value in the simple act of using and displaying a specific brand.

7. Price

Offer similar value at a lower price. This is the most common used method to create value especially to price-sensitive customer segments.

8. Cost reduction

Create value by helping customer reduce their cost.

9. Risk Reduction

Customers want to reduce the risks they incur when purchasing product or services. Selling a guaranteed product could also create value for customers.

10. Accessibility

Making products and services available to customers who previously lacked access to them is another way to create value. This can result from business model innovation, new technologies, or a combination of both.

11. Convenience/usability

Making things more convenient or easier to use could also create a substantial value.

2.4.2 Channels

The Channels Building Block describes how a company communicates with and reaches its Customer Segments to deliver a Value Proposition (Osterwalder & Pigneur, 2010, pp. 26-27). Communication, distribution, and sales Channels comprise a company's interface with customers. Channels are customer touch points that play an important role in the customer experience. Channels serve several functions, including:

- 1. Raising awareness among customers about a company's products and services
- 2. Helping customers evaluate a company's Value Proposition
- 3. Allowing customers to purchase specific products and services
- 4. Delivering a Value Proposition to customers
- 5. Providing post-purchase customer support

Channels have five distinct phases. Each channel can cover some or all of these phases. Channels can be distinguished between direct channels and indirect ones, as well as between owned channels and partner channels.

Channel Types		nnel Types	Channel Phases				
		Sales force	1. Awareness How do we raise aware- ness about our company's products and services?	2. Evaluation How do we help custom- ers evaluate our organiza- tion's Value Proposition?	3. Purchase How do we allow custom- ers to purchase specific products and services?	4. Delivery How do we deliver a Value Proposition to customers?	5. After sales How do we provide post-purchase customer support?
Own	Direc	Web sales					
		Own stores					
ner	Indirect	Partner stores					
Part		Wholesaler					

Figure 2.7 Channel Type and Channel Phases

Source: (Osterwalder & Pigneur, 2010, p. 27)

2.4.3 Customer Relationships

The Customer Relationships Building Block describes the types of relationships a company establishes with specific Customer Segments (Osterwalder & Pigneur, 2010, pp. 28-29). A company should clarify the type of relationship it wants to establish with each Customer Segment. Relationships can range from personal to automate. Customer relationships may be driven by the following motivations:

- 1. Customer acquisition
- 2. Customer retention
- 3. Boosting sales (upselling)

The Customer Relationships called for by a company's business model deeply influence the overall customer experience. Customer Relationships can be distinguished into several categories, which may co-exist in a company's relationship with a particular Customer Segment:

• Personal assistance

This relationship is based on human interaction. The customer can communicate with a real customer representative to get help during the sales process or after the purchase is complete. This may happened onsite at the point of sale, through call centers, by e-mail, or through other means.

• Dedicated personal assistance

This relationship involves dedicating a customer representative specifically to an individual client. It represents the deepest and most intimate type of relationship and normally develops over a long period of time.

• Self-service

In this type of relationship, a company maintains no direct relationship with customers. It provides all the necessary means for customers to help themselves.

• Automated services

This type of relationship mixes a more sophisticated form of customer self-service with automated processes. Automated services can recognize individual customers and their characteristics, and offer information related to orders or transactions.

• Communities

Increasingly, companies are utilizing user communities to become more involved with customers/prospects and to facilitate connections between community members. Many companies maintain online communities that allow users to exchange knowledge and solve each other's problems. Communities can also help companies better understand their customers.

• Co-creation

More companies are going beyond the traditional customer-vendor relationship to co-create value with customers. They invites customer to be involved in the process of value creation.

2.4.4 Revenue Streams

The Revenue Streams Building Block represents the cash a company generates from each Customer Segment (costs must be subtracted from revenues to create earnings) (Osterwalder & Pigneur, 2010, pp. 30-33). If customers comprise the heart of a business model, Revenue Streams are its arteries. A company must ask itself, for what value is each Customer Segment truly willing to pay? Successfully answering that question allows the firm to generate one or more Revenue Streams from each Customer Segment. Each Revenue Stream may have different pricing mechanisms, such as fixed list prices, bargaining, auctioning, market dependent, volume dependent, or yield management.

A business model can involve two different types of Revenue Streams:

- 1. Transaction revenues resulting from one-time customer payments
- Recurring revenues resulting from ongoing payments to either deliver a Value Proposition to customers or provide post-purchase customer support

There are several ways to generate Revenue Streams:

1. Asset sale

The most widely understood Revenue Stream derives from selling ownership rights to a physical product.

2. Usage fee

This Revenue Stream is generated by the use of a particular service. The more a service is used, the more the customer pays.

3. Subscription fees

This Revenue Stream is generated by selling continuous access to a service.

4. Lending/renting/leasing

This Revenue Stream is created by temporarily granting someone the exclusive right to use a particular asset for a fixed period in return for a fee. For the lender this provides the advantage of recurring revenues. Renters or lessees, on the other hand, enjoy the benefits of incurring expenses for only a limited time rather than bearing the full costs of ownership.

5. Licensing

This Revenue Stream is generated by giving customers permission to use protected intellectual property in exchange for licensing fees. Licensing allows rights holders to generate revenues from their property without having to manufacture a product or commercialize a service.

6. Brokerage fees

This Revenue Stream derives from intermediation services performed on behalf of two or more parties.

7. Advertising

This Revenue Stream results from fees for advertising a particular product, service, or brand.

Each Revenue Stream might have different pricing mechanisms. The type of pricing mechanism chosen can make a big difference in terms of revenues generated. There are two main types of pricing mechanism: fixed and dynamic pricing.

Pricing Mechanisms

Predefine	Fixed Menu Pricing d prices are based on static variables	Dynamic Pricing Prices change based on market conditions		
List price	Fixed prices for individual products, services, or other Value Propositions	Negotiation (bargaining)	Price negotiated between two or more partners depending on negotiation power and/or negotiation skills	
Product feature dependent	Price depends on the number or quality of Value Proposition features	Yield management	Price depends on inventory and time of purchase (normally used for perishable resources such as hotel rooms or airline seats)	
Customer segment dependent	Price depends on the type and characteristic of a Customer Segment	Real-time-market	Price is established dynamically based on supply and demand	
Volume dependent	Price as a function of the quantity purchased	Auctions	Price determined by outcome of competitive bidding	

Figure 2.8 Pricing Mechanism

Source: (Osterwalder & Pigneur, 2010, p. 33)

2.4.5 Key Resources

The Key Resources Building Block describes the most important assets required to make a business model work (Osterwalder & Pigneur, 2010, pp. 34-35). Every business model requires Key Resources. These resources allow an enterprise to create and offer a Value Proposition, reach markets, maintain relationships with Customer Segments, and earn revenues. Different Key Resources are needed depending on the type of business model.

Key resources can be physical, financial, intellectual, or human. Key resources can be owned or leased by the company or acquired from key partners. Key Resources can be categorized as follows:

1. Physical

This category includes physical assets such as manufacturing facilities, buildings, vehicles, machines, systems, point-of-sales systems, and distribution networks.

2. Intellectual

Intellectual resources such as brands, proprietary knowledge, patents and copyrights, partnerships, and customer databases are increasingly important components of a strong business model. Intellectual resources are difficult to develop but when successfully created may offer substantial value.

3. Human

Every enterprise requires human resources, but people are particularly prominent in certain business models.

4. Financial

Some business models call for financial resources and/or financial guarantees, such as cash, lines of credit, or a stock option pool for hiring key employees.

2.4.6 Key Activities

The Key Activities Building Block describes the most important things a company must do to make its business model work (Osterwalder & Pigneur, 2010, pp. 36-37). Every business model calls for a number of Key Activities. These are the most important actions a company must take to operate successfully. Like Key Resources, they are required to create and offer a Value Proposition, reach markets, maintain Customer Relationships, and earn revenues. And like Key Resources, Key Activities differ depending on business model type. Key Activities can be categorized as follows:

1. Production

These activities relate to designing, making, and delivering a product in substantial quantities and/or of superior quality.

2. Problem solving

Key Activities of this type relate to coming up with new solutions to individual customer problems. This kind of business models call for activities such as knowledge management and continuous training.

3. Platform/network

Business models designed with a platform as a Key Resource are dominated by platform or network related Key Activities. Networks, matchmaking platforms, software, and even brands can function as a platform. Key Activities in this category relate to platform management, service provisioning, and platform promotion. Examples: eBay's business model requires that the company continually develops and maintains its platform which is the Web site at eBay.com; Visa's business model requires activities related to its Visa® credit card transaction platform for merchants, customers, and banks.

2.4.7 Key Partnerships

The Key Partnerships Building Block describes the network of suppliers and partners that make the business model work (Osterwalder & Pigneur, 2010, pp. 38-39). Companies forge partnerships for many reasons, and partnerships are becoming a cornerstone of many business models. Companies create alliances to optimize their business models, reduce risk, or acquire resources.

Partnership can be distinguished into four different types:

- 1. Strategic alliances between non-competitors
- 2. Coopetition: strategic partnerships between competitors
- 3. Joint ventures to develop new businesses
- 4. Buyer-supplier relationships to assure reliable supplies

2.4.8 Cost Structures

The Cost Structure describes all costs incurred to operate a business model (Osterwalder & Pigneur, 2010, pp. 40-41). This building block describes the most important costs incurred while operating under a particular business model. Creating and delivering value, maintaining Customer Relationships, and generating revenue all incur costs. Such costs can be calculated relatively easily after defining Key Resources, Key Activities, and Key Partnerships.

Naturally enough, costs should be minimized in every business model. But low Cost Structures are more important to some business models than to others. Therefore it can be useful to distinguish between two broad classes of business model Cost Structures (many business models fall in between these two extremes):

1. Cost-driven

Cost-driven business models focus on minimizing costs wherever possible. This approach aims at creating and maintaining the leanest possible Cost Structure, using low price Value Propositions, maximum automation, and extensive outsourcing.

2. Value-driven

Some companies are less concerned with the cost implications of a particular business model design, and instead focus on value creation. Premium Value Propositions and a high degree of personalized service usually characterize value-driven business models.

Furthermore, Cost Structures can have the following characteristics:

1. Fixed costs

Costs that remain the same despite the volume of goods or services produced.

2. Variable costs

Costs that vary proportionally with the volume of goods or services produced.

3. Economies of scale

Cost advantages that a business enjoys as its output expands.

4. Economies of scope

Cost advantages that a business enjoys due to a larger scope of operations.

2.5 System and Information System

2.5.1 Cross-Platform Application

When developing an application for the desktop, such as Microsoft Word or Adobe Photoshop, application developers create their core application in a language such as C++ and share that core code across platform, but then use platform-specific APIs to access the file-system and develop the User Interface. In the 1990s, a number of cross-platform desktop frameworks emerged, making it easier for companies to develop a single codebase that they could compile for each target platform (Typically just Mac and Windows). For Mobile application, this is a bigger challenge; there are six major operating systems in the market: Symbian, RIM Blackberry, Apple iPhone, Windows Mobile, Goggle Android, and Palm WebOS. And for these operating systems, there is a native development language which is required to develop optimally for that platform, as illustrated in Table 2.3. Besides the differences in languages, the software development kits (SDK) and paradigms for developing applications are different across platform. While the device capabilities are most identical, such as geo-location, camera, access to contact, and offline storage, the specific APIs to access these capabilities are different of each platform.

Tabl	e 2.3	Smartphone	Operating	Systems and	Languages
------	-------	------------	-----------	-------------	-----------

OS	Symbian	RIM	Apple	Windows	Google	Palm
		Blackberry	iPhone	Mobile	Android	WebOS
Language	C++	Java	Objective	C#	Java	JavaScript
			С			

Users will install native apps from the platform's app store or other platformprovided installation means. They receive an app that, by its very nature, has the look and feel of the platform. In contrast to separate native development, cross-platform approaches allow developers to implement an app as a single

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code base that can be executed on more than one platform (Heitkotter, Hanschke, & Majchrzak, 2013).

According to (Heitkotter, Hanschke, & Majchrzak, 2013), by structuring the UI of the mobile application such as a web application, the coding can be simplified. By actually using Web UI controls, the implementation of the user interface can be created with a single source that renders and behaves appropriately across platforms. Also, it is much easier to hire designers and UI developers who are familiar with HTML and CSS than for any specific mobile platform, let alone finding developers who can develop a UI across multiple platforms using native toolkits.

Cross-platform development approaches emerged to address this challenge by allowing developers to implement their apps in one step for a range of platforms, avoiding repetition and increasing productivity. On the one hand, these approaches need to offer suitable generality in order to allow provision of apps for several platforms. On the other hand, they still have to enable developers' to capitalize on the specific advantages and possibilities of smartphones.



Figure 2.9 Cross Platform Illustration

Source: (BrainVire, 2013)

2.5.2 Cloud Computing

Cloud computing is a term used to describe both a platform and type of application. A cloud computing platform dynamically provisions, configures, reconfigures, and deprovisions servers as needed. Servers in the cloud can be physical machines or virtual machines. Advanced clouds typically include other computing resources such as storage area networks (SANs), network equipment, firewall and other security devices (Boss, Malladi, Quan, Legregni, & Hall, 2007)

Cloud computing infrastructures can allow enterprises to achieve more efficient use of their IT hardware and software investments. They do this by breaking down the physical barriers inherent in isolated systems, and automating the management of the group of systems as a single entity. Cloud computing is an example of an ultimately virtualized system, and a natural evolution for data centers that employ automated systems management, workload balancing, and virtualization technologies.

2.5.2.1 Software as a Service (SaaS)

The software-as-a-service (SaaS) service-model incorporates the cloud provider installing and maintaining software within the cloud and users operating the software from their cloud clients over the Internet (or Intranet). The users' client devices do not need installation of any application-specific software, meaning all cloud applications run on the server in the cloud. SaaS is scalable and server system admin may load the applications on a number of servers. For the user or enterprise, SaaS is normally charged as a monthly or annual fee (cloudcomputing.net, 2015)

2.5.2.2 Development as a Service (DaaS)

Development as a service is usually web-based, collectively pooled development tools. This is comparable to locally installed development tools in the traditional (non-cloud computing) provisioning of development tools.

2.5.2.3 Platform as a Service (PaaS)

Platform as a service is cloud computing service which offers the users with application platforms and databases as a service. This is comparable to middleware in the traditional (non-cloud computing) provisioning of application platforms and databases.

2.5.2.4 Infrastructure as a Service (IaaS)

Infrastructure as a service is virtualizing all the physical hardware (all servers, networks, and storage and system management). This is comparable to infrastructure and hardware in the traditional (non-cloud computing) system operating within the cloud. Companies pay a fee (monthly or annually) to run virtual servers, networks and storage from the cloud which will diminish the requirement for a data center, environment setting and maintaining hardware at the local level. (cloudcomputing.net, 2015)



Figure 2.10 Cloud Computing Architecture

Source: (cloudcomputing.net, 2015)

2.5.3 System Development Life Cycle

According to (Dennis, Wixom, & Roth, 2012, pp. 10-15), building an information system using the SDLC follows a similar set of four fundamental phases:

a. Planning

The *planning phase* is the fundamental process of understanding *why* an information system should be built and determining how the project team will go about building it.

b. Analysis

The *analysis phase* answers the questions of *who* will use the system, *what* the system will do, and *where* and *when* it will be used. During this phase, the project team investigates any current system(s), identifies improvement opportunities, and develops a concept for the new system.

c. Design

The *design phase* decides *how* the system will operate in terms of the hardware, software, and network infrastructure that will be in place; the user interface, forms, and reports that will be used; and the specific programs, databases, and files that will be needed. Although most of the strategic decisions about the system are made in the development of the system concept during the analysis phase, the steps in the design phase determine exactly how the system will operate.

d. Implementation

The final phase in the SDLC is the *implementation phase*, during which the system is actually built (or purchased, in the case of a packaged software design and installed). This is the phase that usually gets the most attention, because for most systems it is the longest and most expensive single part of the development process.



Figure 2.11 The Systems Development Life Cycle

Source: (Dennis, Wixom, & Roth, 2012, p. 10)

One version of Software Development Life Cycle is *prototype model* where the model aims to counter certain limitations of the Waterfall model and it is developed starting from currently known requests. With the help of the prototype, the customer perceives more easily how the application functions because he or she can interact with it during the development cycle. The model is used in the case of large and complex systems (Pavaloaia, 2013).



Figure 2.12 The Prototyping Model

Source: (Computer Science Department Cal Poly San Luis Obispo, California, 2012)

The Advantage of using prototype model:

- a. Users are directly involved in development and they can better understand how the application functions by means of the prototype
- b. Errors can be detected in time
- c. The user's feedback is fast, which leads to better solutions
- d. Less Time and lower costs.

However, this model has several disadvantages:

- a. The model leads to an increase in the system's complexity, and it goes beyond the conditions established at first
- b. The project's analysis is insufficient
- c.Developers may become attached to a prototype, out of subjective reasons, running the risk to transform the prototype into a final product even though the basic architecture is not correct.
- d. It takes an excessive amount of time to implement the prototype

2.5.4 Mobile Application Development

Mobinex, a leading provider of mobile applications and on-device solutions, is committed to increase revenues of mobile operators, content provider, media companies and enterprises with compelling user experiences (Pavaloaia, 2013). The methodology was proposed in 2009 (updated in 2010) for the purpose of developing mobile applications. The main phases of methodology are represented in Figure 2.13.



Figure 2.13 Mobinex Mobile Application Development

Sources: (PavaloaiaVasile, 2013)

Explanation of each mobile app development by Mobinex is shown above (Mobinex, 2015) :

2.5.4.1 Needs Assessment

This phase should put forward the scenarios about how the application would be used in real life. In this phase the following questions would to be answered:

- Which user features, functions would be developed for which segments?
- Which services would be integrated to the application?
- How would the segmented users use the application in a real time?
- What are the usability scenarios for the application? (While walking, in the car, busy environment, working environment, etc.)
- Define Offline /Online information?
- Which platform would be supported?

• Decide application distribution method?

2.5.4.2 Storyboarding

This is used to determine the interface and other structural characteristics and the workflow of the application. It would answer the following questions:

- How would be the flow chart of the application?
- What kind of information would be included in which page?
- Which model would be used for content presentation?

In this phase, the following items have to be determined:

- a. The structures of the pages in application
- b. Navigations of the buttons and pages
- c. Flow of the pages in application scope

2.5.4.3 Server / Client UML Flow

Server /Client UML Flow indicate the operation on data resources and their usage. And also the diagram that define the resources that would provide the dynamic data.

2.5.4.4 Design UI

This is the visual design of the application interface. It would answer the following questions:

- a. What would be the "Brand Name" for the application? (E.g., Name of the application, Brand Name, Brand Image, etc.)
- b. How the segments would be designed?
- c. What are the visual and audio media that would be used in the application?
- d. What type of mobile would be used for this application?

2.5.4.5 Offline /Online Development

Flow phase from offline application to online version by integrated the dynamic data's.

- a. What are the success criteria for application performance?
- b. Which delivery method would be used for this application?

2.5.4.6 Testing Phase of the Developed Application

It would answer the following questions:

- a. What would be the Test Cases (Writing test cases should start at the beginning of the development and would evolve in each step)
- b. Does the application fulfill the established performance requirements?
- c. Which problems have occurred during test?
- d. Which problems can occur during application delivery?

2.5.4.7 Signing Process: Process of Encoding a Digital Certificate into the Application

Does the application meet the certain criteria such as functionality, visually and / or usability?

- 1. In which mobile platform, the signing process would be operated?
- 2. Does any changes in functionality, visually and/or usability in the application, after the signing process?

2.5.4.8 Application Distribution: Application Delivery to the Segmented Users

- 1 How would the application be delivered? (Wireless Application Protocol (WAP) downloads etc.)
- 2 How to avoid the difficulties during the application delivery?

2.5.4.9 Regular Updates

The organization structure required to do the periodic content updates of the application.

- 1. What would be the application update period?
- 2. Who would be responsible for updates?
- 3. What is needed for application update?