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Concept Development in an Innovating Company: Exploring the Role of Signals taking the Problem Solving Perspective

*Master of Science Thesis in the Master Degree Program, Management and
Economics of Innovation*

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ABSTRACT

Matching the needs of potential customer segments is vital for any product and service development of an innovating firm. Concept development and market signals are two significant phenomena through which customer communication is enabled so that a firm can better recognize customer demands, thereby, new business opportunities can be identified and exploited for creating better values for customers.

This research project attempts to identify how signals facilitate concept development and also to recognize how innovation opportunities are identified and exploited in the concept development.

Along with theoretical study, an empirical investigation of a company working on consumer product and service development and marketing has been performed. Drawing on six semi-structured interviews, the elements of signals and costly signals in the concept development process of an innovating firm have been realized. More specifically, it has been found that, to convey business intentions and gain information from the customers, signals such as commitment and accounting signals are being used. To undertake certain actions for the concept development project a number of signals such as building constant customer dialogue and making better value propositions have been exploited. Moreover, signals such as brand name and value perceptions have been used in order to motivate customers to contribute in the company's concept development project.

Apart from the signals, the company in focus also uses costly signals through conspicuous precision and conspicuous reputation to make the imitation of signals difficult/ impossible for its competitors.

Additionally, it has been also found that opportunity identification and exploitation in the concept development process is actually being performed according to problem solving perspective (PSP) approach. The PSP approach consists of seven steps including opportunity identification, information gathering, defining different opportunity areas, generating alternative concepts, evaluating, testing and selecting the best concepts, further development of selected concepts, and implementing the best concepts that often occur cyclically rather sequentially.

Conclusively, the limited empirical scope of this study is acknowledged, therefore further investigations mainly in other business contexts and other industries are required to ensure the reliability of the findings, and to generalize the results.

Key Words: Signal, Costly Signal, Concept Development, Opportunity identification and exploitation, and Problem Solving Perspective

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1 Introduction

1.1 Background

For creating better value propositions for customers and to satisfy their needs, the importance of customer involvement in the earlier phases of product/ service development has been repeatedly suggested in the literature for the innovating firms to attain competitive benefits. Concept development, known as one of the most important fuzzy front end activities, is one of the industrially applicable methods for customer involvement which takes into account the requirements and demands of the customers in the conceptual design phase so that the new developed product/ service of a firm can better satisfy customer needs and new business opportunities can be identified and utilized by an innovating firm (Burchill & Fine, 1997; Kaulio, 1998).

The necessity of innovation opportunity discovery and exploiting the opportunity for the innovator/ entrepreneur, which has been emphasized in the entrepreneurship literature, is to achieve competitive advantage and to create considerable value for the customers. This is because through detecting innovation opportunities, innovator/ entrepreneurs can identify new products/ services and classify new market segments (Dorf & Byers, 2008). Successful entrepreneurs recognize the opportunities which are based on either solving a valuable problem or satisfying a specific customer need. Therefore, opportunity discovery can be described as a matching process between identifying valuable problems and achieving solutions for them (Ardichvili et al., 2003; Nickerson & Zenger, 2004; Hsieh et al., 2007; Dorf & Byers, 2008).

For product/ service innovation market signal plays major role as through this customer perception can be gathered (Heil & Robertson, 1991). As it has been mentioned in the above that concept development enables customer communication, in this project recognizing the significance of both market signal and concept development, for the first time the notion of market signals will be exploited to distinguish how signals facilitate concept development process for assembling customer insights.

Market signal not only facilitates the receiving of knowledge regarding product/ service quality, reputation, etc. from customers or competitors but also assists to transmit information on the company's business intentions to the industry. In general terms, signal refers to the data through which assumptions or inferences can be made about the sender's behavior (Herbig, 1996).

Signaling is prevalent in various disciplines. For example, the academic and professional experiences of an employee acts as signals to potential employers through which attractive job offers can be made as it is difficult to assess the core competence of an individual before offering employment opportunity. The academic grades are considered as signals for admission opportunities in universities or credit card information and bank statements act as signals for banks and other financial institutions which help them to verify the eligibility of a person to receive loan from them (Herbig, 1996)

Along with all the mentioned fields, the phenomenon of signaling is particularly important and widespread in the marketing discipline. Market signaling refers to the act of sending market signals such as brand name, differentiation and diversification of product/ service, higher price of product/ service, social responsiveness of the firm, etc. by one firm to other firms of an industry. The signal receiving firms can be competitors, customers or suppliers or other interested entities such as government, stockholders and community. Through signals the business motives and commitments of a certain firm are communicated to the industry (Herbig, 1996). Additionally, customer information can be gathered and competitive preemption is accomplished by a signal transmitting firm which enables the firm to achieve competitive advantage (Heil & Robertson, 1991).

A lot has been written on market signals and how firms in an industry carry out various signaling activities to the competitors, customers, and suppliers. However, in this study it has been considered that firms should try to acquire *costly signals* to establish market leadership instead of sending signals only. This is because signals can either be considered truthful or bluffs by the customers and competitors due to the difficulty of interpretation, credibility of the signals, uncertainty surrounding signals and the commitment and expertise of the signal sender. Also it is quite common that firms may possibly lie while signaling to convey information to the customers/ competitors, influence market pricing or simply receive information from them based on their reactions (Heil & Robertson, 1991). Therefore, the customers and competitors remain uncertain about the credibility of signals. Apart from these, signals are easy to imitate which is outlined by Herbig (1996) drawing the empirical example of airline industry. Herbig (1996) describes that in airline industry if a new low fare was introduced by one carrier, the competitors

were used to signal their competence by offering new aligned prices to that of the signal sender, or by reducing fares drastically on some of the sender's more profitable routes.

The costly signaling concept states that the signals which are reliable, difficult for others to replicate and be trusted should be regarded as costly signals. The significant features that provide the basis for a hard-to-fake costly signal are highly observable expenditure of resources and time spent or care taken showing the signal sender's ability and willingness to waste those resources and the marketing and branding activities for a product/ service (Miller, 2009).

1.2 Project Aim and Research Questions

From the preceding section it has been revealed that concept development and signaling are the most noteworthy phenomena through which communication with potential customer segments is facilitated. Concept development has been investigated in the product and service innovation literature. Signals, on the other hand, have been analyzed in evolutionary psychology and increasingly in marketing discipline but are still an ignored topic in the innovation area as no significant research has been carried out in this field. Therefore, acknowledging the importance of signals and costly signals in the innovation field, particularly in the field of concept development, this project aims to identify the elements of signals and costly signals in the concept development process of an innovating firm from innovation opportunity perspective through empirical investigation. Based on this aim, the following research questions have been formulated:

***RQ 1:** What elements of signals and costly signals are included in the concept development process of an innovating firm?*

***RQ 2:** How innovation opportunities are identified and exploited in the concept development process of an innovating firm?*

1.3 Project Scope

The scope of this thesis project has been limited to analysis of the earlier phases of innovation of a firm and this report wants to validate whether market signals facilitate better communication between customers and companies working in the context of concept development. More specifically, through investigating theoretically and empirically, in this project the elements of signals and costly signals and process of opportunity identification and exploitation are examined

in the concept development phase which is one of the earliest phases in any product/ service development. Therefore, the target audience for this thesis work is considered to be the innovators / entrepreneurs.

1.4 Outline

The report is organized into seven sections. In the introductory section, the project background, aim and scope are described. Literature review is presented in Section 2 which includes market signals, signaling activities carried out by firms, benefits of signals, evolutionary view of signal, costly signals, concept development, utilizing PSP for innovation opportunity identification and the problem solving perspective (PSP). Section 3 presents the elements of signals in interactive marketing communication triangle. In Section 4 the methodology is described which is followed by the presentation of empirical results in Section 5. The next section provides the analysis of the empirical results in accordance to the research questions and ends with a section containing conclusions and recommendations for future research.

2 Literature Review

This section is divided into five parts: “Signals and Costly Signals”, “Concept Development”, “Entrepreneurship and Innovation Opportunities”, “Using Problem-solving for identification and exploitation of innovation opportunities”, and “The Problem Solving Perspective”. For each of the topics the authors have described the core idea and related concepts. The literature review on signals, costly signals and concept development will be done in this section since these topics are relevant to the first research question mentioned in Section 1.2 and the purpose which is to identify signal and costly signal elements in the concept development process of an innovating firm. Literature review on the rest of the topics will be performed as it is very important for an innovating firm to discover innovation opportunities and exploit them based on either solving a valuable problem or satisfying a specific customer need.

2.1 Signals and Costly signals

In this section the overview of market signals, types of signals and their benefits, various signaling activities carried out by firms and the evolutionary view of signals and costly signals will be described.

2.1.1 Market signal

Market signals are defined by Herbig (1996) as the information provided by one firm to other entities in an industry. The signal receivers can be competitors, customers, suppliers, or other interested parties such as government, stockholders and community. According to Porter (1980) market signals refer to any action undertaken by a competitor firm presenting a direct or indirect indication of its business goals and intentions. Price reduction, advertising, building brand images are some of the examples of signaling activities/ actions carried out by a firm. Information regarding product quality, reputation and intentions is communicated through market signals. Through the market signals sent by one firm, the competing firms in the market place can assume a particular firm’s motives. Heil and Robertson (1991) state that market signals influence the competitive behavior of the firms acting in the industry. From the perspective of competitive market practice they define “*competitive market signals are announcements or previews of potential actions intended to convey information or to gain information from competitors*” (Heil and Robertson, 1991, pp. 403).

2.1.2 Signal types

According to Porter (1980) there are two types of market signals and those are: preannouncements of market actions and the market actions themselves. Market signals are categorized into two kinds by Herbig (1996). The categories are *overt* signaling and *covert* signaling. The conscious communication made by a firm to establish its reputation in the market place to other competitors is referred to as the overt signaling. Firms undertake overt signaling through a number of ways such as press releases for new product launching, press announcements and public statements. Covert signaling refers to the actions taken by a specific firm instead of any communication.

2.1.3 Benefits of signals

Competitive preemption and development of competitive norms of conduct are the two significant benefits of signals outlined by Heil & Robertson (1991). Because of the transmitted market signals by a specific firm to accomplish market leadership, competitors in an industry are discouraged to embark on certain actions. The authors describe that to do so, firms need to develop barrier to the entry e.g. sole access to a resourceful distribution system and signing private contracts with efficient suppliers. There is also need to converse high level of commitment such as noteworthy investment in product manufacturing by the firm for its anticipated actions.

Market signals play vital role investigating the competitive norms of conduct related to pricing level, advertising etc. for industry. Through market signals competitive policies can be developed and these policies can guide the competitive behavior of the firms in an industry. Additionally, managers of firms can further improve the effectiveness of their transmitted market signals with the help of the policies. Maintaining the competitive norms of conduct is usually carried out by the dominant firm in the marketplace (Heil & Robertson, 1991).

Since through signals information regarding a firm's motives and business goals are transmitted to the existing competitors, customers or suppliers, thereby inferring the provided market signals the competitors of an industry are able to improve their choice of actions. When the market signal is credible, that is when market signal transmits the intended information efficiently, then

assessment of these signals will be timely by the competitors and the reactions /responds will be much quicker (Herbig, 1996).

2.1.4 Signaling activities found in literature

2.1.4.1 Product price and advertising

Price and advertising are used as signals for the initially unobservable quality of a newly introduced product/ service (Milgrom & Roberts, 1986). Advertising attracts customer choice. Advertisements transmit information about the high quality level of a product and customers who have not used the product before, start to buy that one because of advertising. In the same way superior product quality can be assumed by the consumers from the price level of the product. Customers are persuaded to buy high quality goods while advertising remains in the interest of customers. The authors claim that if high quality brands get more advertisements from firms, customers will positively respond to the advertising. Thereby, initial sales and repeated purchases are increased. Thus, firms spend money in advertising to signal the higher quality level of their products (Milgrom & Roberts, 1986).

2.1.4.2 Higher product price

Product price endows the customers with quality information of a product (Gerstner 1985). Increased demand for a high quality product or increased production cost related to the high quality product can be revealed through the higher product price. The general belief of the consumers is that superior quality is signaled through the high price level of the product. High price level may sometimes reveal higher selling cost rather than superior product quality. However, based on the empirical findings, Gerstner states that higher prices appear to provide poor signals of superior quality for many products (Gerstner 1985).

2.1.4.3 Brand name

According to Rao and Ruekert (1994) brand names signal product quality and transmit quality information about a specific product. Brand is defined as “*a name, term, sign, symbol, design or combination which is intended to identify the goods and services of one seller or one group of sellers and to differentiate them from those of competitors*” (Kotler, 1997, p. 443). Consumers are assured of a product’s estimated quality due to the presence of brand name. Therefore, without the presence of strong brand names customers cannot rely on the product features and sellers also face problem to communicate the product functionalities to the consumers. Since

through the brand names the consumers get to know the manufacturer of the product, if a certain product does not perform according to its promised quality level then that product will lose customer loyalty and eventually manufacturers will lose money (Rao & Ruekert, 1994).

In this regard Erdem and Swait (1998) describe that brand names signal product positions and attributes. Brands as market signals improve the confidence level and awareness of the customers. Firms convey the signals of product quality and positions through various marketing strategies and activities such as particular marketing messages, expensive sellers, and delicate packaging.

Brand names are characterized by their clarity, credibility and consistency. Clarity is defined as the absence of any vagueness in the information conveyed by that particular brand. Clarity is influenced by consistency which refers to the degree to which each marketing activity reflects the overall intention of the brand. The prominent characteristic of brand signal is the credibility which verifies whether the brand as market signal transmits the intended information efficiently. Credibility increases when customers find the product performance is consistent with the claims of the product. Therefore, firms must remain truthful to manufacture products with the promised quality. When the market structure is featured by imperfect and asymmetrical information, the transmitted information, product positions and attributes will not create any value as long as the brand signal is not credible (Erdem & Swait, 1998).

2.1.4.4 Brand alliances

Brand alliance refers to the integration of two or more branded products such as IBM and Intel (Rao & Ruekert, 1994). The resulted signal created from brand alliance provides more powerful way of conveying product quality and position information compared to the quality information of a single brand. Moreover, in the case where quality cannot be signaled by a single brand, then it is signaled more effectively through brand alliances. Such alliances result in improved product sales due to the enrichment of brand market image, access to proprietary technology and expertise by the firms (Rao & Ruekert, 1994).

2.1.4.5 Product/ service compatibility

Network externalities refer to the phenomenon where the value of a specific product or service raises with the increasing number of users who utilize compatible products or services. Network externalities are observed in a number of industries such as telecommunication industry,

computer industry etc. Compatibility of a product/ service or the compatibility of a new technology with the existing one acts as a signal of quality to attract consumers. Based on strategic decisions firms undertake efforts in order to produce a product/ service which is compatible with the present products. In this way firms try to lock-in the consumers and establish/sustain market leadership (Kim, 2002).

2.1.4.6 Product warranty service

Warranty terms which guarantee that any specific product/ service is reliable, free from defects and can be changed within a certain time period, act as signals of the reliability. Consumers are encouraged to buy a product/ service, providing improved warranty protection in terms of protectable item and duration of the protection. In this regard, products/ services offering less warranty protection are not chosen by the consumers since they consider those as less reliable. In order to signal reliability which ultimately allows for product/ service differentiation, firms need to undertake substantial investment to increase product/ service quality and offer warranty terms covering a significant product/ service life time (Kelley, 1988).

Warranties as reliability signals also help to motivate the purchasing decision of the customers. When customers are satisfied with the warranty period services and terms, they are inspired to buy other products/ services offered by the firm. However, signaling effect due to warranty terms is decreased when there is discrepancy between the offered warranty terms and time period by the firm and the actual warranty service experienced by the customer (Kelley, 1988).

2.1.4.7 Signals indicating hostility, consequences and commitment

Heil and Walters (1993) describe while a number of market signals are related to the launching of new product in the market place, three signals are of particular importance and those are: signals indicating hostility, signals indicating consequences and signals indicating commitment. In the perspective of marketing activities hostility is shown to the competitor firms by a particular firm. Some firms undertake certain market activities that may seem hostile to the others. One example of these hostile activities is offering a harsh price reduction in a price stable marketplace. Consequences refer to the interpretation of the anticipated effect of the competitor firm's launching of new product on the business performance of the reacting firm. Lastly, commitment refers to the extent to which a particular firm is determined to carry out various marketing activities.

2.1.4.8 Accounting, institutional and strategy signals

Market signals play significant role for a firm competing in the market place for achieving reputation. Through the achieved reputation the social status of the firm increases and acts as a signal to reflect the offered product/ service range and overall business prospectus of the firm in the marketplace. Stakeholders judge the activity level of a specific firm through the market signals provided by the firm. In this regard firms provide three types of signals: market and accounting signals such as accounting data and profitability, financial statements and resource allocations which reflect the business performance of firm, institutional signals such as firm's equity among institutions and social responsiveness reflecting the compliance of firm to existing social customs and rules, and strategy signals such as differentiation and diversification reflecting the strategic position of the firm (Fombrun & Shanley, 1990).

2.1.5 The evolutionary view of signals and costly signals

Gad Saad (2007) begins his description on evolutionary psychology with a quotation from Salmon and Symons (2003) on how the psychology has an evolutionary base in relation to biology. As a branch of biology, psychology will be evolutionary just like how biology is. Evolutionary psychology explains how human mind in the same manner as bodily organs of humans, has evolved via what Darwin has first introduced as *natural and sexual selection*. Darwin's theory, viewed as a building block in biology field, was basically used in explaining animals' behaviors. Then at early 1990s, evolutionary psychology was founded which increased the application of Darwin's principles as a means for investigating human behavior in fields such as human ethology, human behavioral ecology or sociobiology. The approach suggests that a set of "*domain-specific*" Darwinian modules were evolved in human minds as adoptive solutions to solve specific survival problems (Saad, 2007, pp.5). Furthermore the mental mechanisms that reveal themselves today are in fact the adaptations to some survival problems faced by ancient people. In fact the difference between evolutionary psychologists and other Darwinists lies in this notion that while the former believe that today's behaviors are adaptations to past generations' environments, the latter interpret current behaviors as adaptations to current environments.

The evolutionary psychology in business schools have been mainly applied by mathematical modelers or game theorists. Other applications of evolutionary theories in business fields which were relatively rare have been in organizational behavior and management, human resource

management and organizational life (Saad, 2007; Miller, 2009). In the fields of consumer behavior and marketing there have been few researchers who have applied Darwinian principles and more specifically evolutionary psychology. For instance Colarelli and Dettman(2003), have presented so many examples on the importance of evolutionary psychology in marketing and consumption (Saad, 2007). One of the latest books in marketing which takes the Darwinian evolutionary perspective for consumption is recently written by Geoffrey Miller (2009) in which he clarifies the lack of evolutionary insights for understanding consumer behaviors:

“Since the late 1990s the marketing professor Gad Saad[...]has been developing this new field of evolutionary consumer psychology almost single-handedly”. (Miller, 2009, pp. 26-27)

In 1899 the term *Conspicuous Consumption* was applied by Thorstein Veblen in his *theory of Leisure Class* to those purchases acquired by rich people to signal their wealth and high status social class (Saad, 2007). In his theory Veblen (1899) presented that such consumption should be wasteful in individual level which provided a dilemma for the theory of “indexes” defined as the perfectly honest and reliable signals that are not necessarily costly (Miller, 2009). Although the theory of index was overtaken by the life history theory which always allocates a plenty of rooms for faking, the final explanation that assumes a wasteful nature for conspicuous consumption was not achieved until recently. This theory is inspired from a combination of sexual selection and Zahavian signaling, introduced by Amots Zahavi. What Zahavi addresses in 1975 (i.e. the handicap principle) suggested that a trait, in order to represent the fitness of an organism, should be difficult to imitate (Saad, 2007). Around 1990 biologists understood that Zahavi’s principle can guarantee the reliability of a signal which led to rise of **costly signaling theory** addressing how animals including humans can send reliable, difficult to imitate signals that can be trusted (Miller, 2009). If the signal is so costly to acquire, it creates a barrier to entry for the imitators/cheaters who desire to show their ability to acquire the same signal, which is really impossible for them to make (Saad, 2007). Costly signals are designed to benefit both signal creators and receivers by fulfilling two conditions; first, they must create honest information about the variation in the quality subjected to advertise. This quality can be the competitiveness of the signal creator, recourse control, etc. Second, the signal’s cost for the signal creator is related to the quality being advertised. When these two conditions are met, both signal creator and signal receiver can take benefit from its reliability according to the arena that the signal is

created in, including competition for status, recourse access, or mates (Smith & Bliege Bird, 2000). Miller (2009) uses the term “fitness indicators” instead of costly signals and assigns three parameters for an indicator to become attractive: costliness, being hard to produce and hard to fake (Miller, 2009, p. 91). Consequently, those which are too cheap, simple and easy to counterfeit are ignored.

Costly signaling expands Veblen’s theory to the biology field with demanding a “*conspicuous waste*” for providing a reliable signal (Miller, 2009, p. 115). Miller (2009) defines this term as any significant expenditure of resources, signaling the ability and desire of its sender to waste those resources. However, for a signal to become costly, it is not necessarily limited to expenditure of monetary recourses. Geoffrey Miller adds “*conspicuous precision*” and “*conspicuous reputation*” as other features that provide a hard-to-fake signal. The former is defined as any significant expenditure of time or care, signaling the ability and desire of its sender to waste those resources. Signals relying on the design and complexity of a product fit in this category. Finally, conspicuous reputation represents those products, in which signaling to a great extent is relying on the elements of marketing and branding (Miller, 2009). In most observable and reliable signals, both conspicuous waste and conspicuous precision are in high level (Miller, 2009, p. 93). Most of the human-designed products have a combination of the three types with different proportions. In some products the focus on conspicuous precision is heavier while some others show less conspicuous precision and more conspicuous waste. For example Hummer H1 SUV is to a greater extent a conspicuous waste (because of its weigh and fuel consumption) while Lexus LS 460 shows less conspicuous waste and more conspicuous precision (because of its features, reliability and luxury) (Miller, 2009, pp. 115-116). Moreover Miller (2009) introduces two more features that reflect the reliability of a signal; “*conspicuous rarity*” as in ancient paintings or pink diamonds, and “*conspicuous antiquity*” as in Gutenberg Bibles. However the latter two forms are mostly observed in unique luxury items rather than in mainstream consumer products.

Conspicuous waste has been introduced as the simplest and the most popular type of costly signaling. However in twenties century, the focus from conspicuous waste was shifted to conspicuous precision in design, form and function (e.g. Apple computers). Conspicuous precision requires rapid proliferation in product features and functions which is usually created

through minor technical innovations. The shift from conspicuous waste to conspicuous precision shows a growing dematerialization of consumption which is even more reflected in the third type of costly signals; conspicuous reputation. In this type, the reliability of a signaled product is no more depended on the capital invested in its production or the design and manufacturing of the product. Rather it depends on marketing and branding of the product. The reputation or brand equity of a product is in the minds of its consumers and signal receivers who are just reachable through marketing means such as advertising (Miller, 2009).

2.2 Concept Development

One of the earliest and important tasks in any product/ service development is concept development. Concept development has also been referred in the literature as concept generation, concept engineering and concept testing (Acito & Hustad, 1981; Scheuing & Johnson, 1989; Burchill & Fine, 1997). For both new product/ service development concept generation is recognized as one of the most vital fuzzy front end activities occurring in the initial phase of the development process (Urban & Hauser, 1993). Firms can achieve competitive advantage through understanding and improving the front end activities which eventually lead to the better utilization of organizational resources and superior performance of the newly developed product/ service (Reid & Brentani, 2004).

Concept can be defined as a description of a prospective new product/ service (Scheuing & Johnson, 1989; Burchill & Fine, 1997). Concept development refers to a structured process for incorporating product/ service requirements into ordered design activities for the purpose of developing product/ service concepts (Burchill & Shen, 1992). The main purpose of concept development is to verify the market potential and commercial viability of a concept before developing a product/ service. Through the evaluation of concepts, the preferences and dislikes of customers can be identified so that the essential amendments and improvements can be made. In this way, concept development works as a diagnostic process to authenticate customer inclinations (Page & Rosenbaum, 1992). The practical explanation of a potential product/ service is explicated in this process through written descriptions, nonworking models, drawings and sometimes promotional advertisements (Acito & Hustad, 1981).

Concept development is particularly significant for a number of reasons. For example, customer requirements and opinions for the prospective product/ service can be gathered early prior to

actual development through concept generation (Acito & Hustad, 1981). Firms do not need to create prototypes of a product, as the concept can be explained through descriptions and models. As the viability of the generated concepts is tested on the customers, the need for major design change or extension can be prevented through concept development. When the test result and customer feedback are not positive enough, the development plan can be cancelled before substantial investment is made. Furthermore, the design change can be performed at lower cost for the development process when it is required since concept testing occurs in the beginning of the development phase (Acito & Hustad, 1981).

According to Burchill and Fine (1997) and Scheuing and Johnson (1989) the process is carried out by the product/ service development team of an organization in order to-

- Understand and gather relevant data regarding customer necessity
- Understand the urgency level of the necessity
- Define the reasons why the new product/ service will be developed
- Describe how the necessities will be included in the product/ service concept
- Describe the benefits of the new product/ service

As broadly outlined by Liu and Bligh (2003), there are two steps in concept generation and these are: divergent step where a wide number of concepts are generated and convergent step where the generated concepts are evaluated and few concepts are selected for further improvement. According to Burchill and Fine (1997), there are five stages of concept development process, presented in Figure 2.2, known as:

- Understanding customer environment
- Converting understanding into requirements
- Operationalizing what has been learned
- Concept generation
- Concept selection

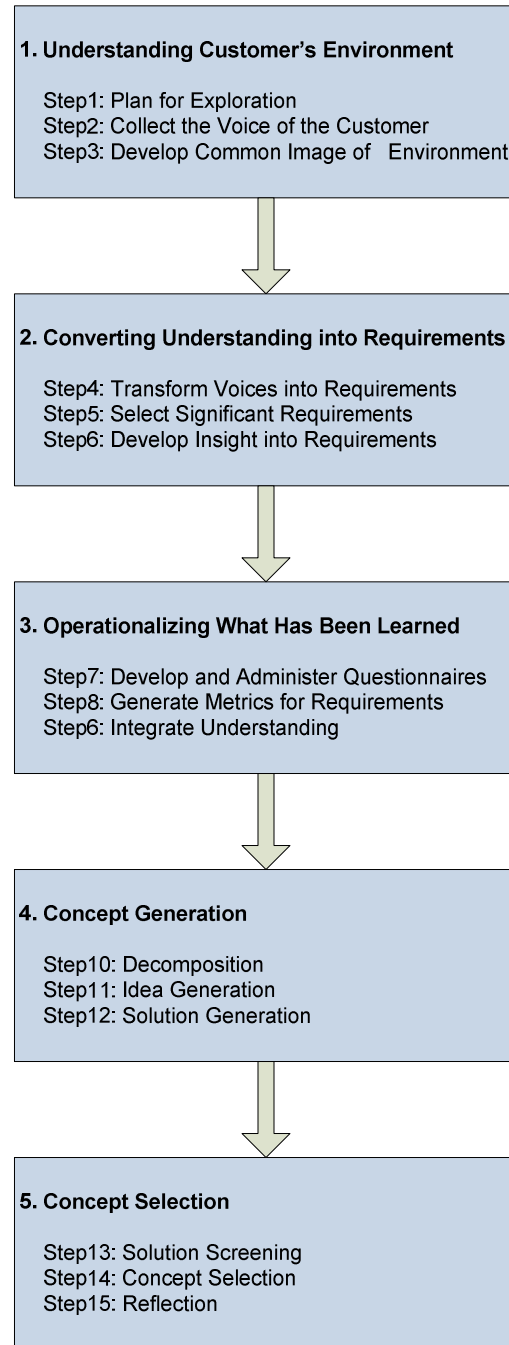


Figure 2.2: The stages of concept development process Source: (Burchill & Fine, 1997)

In stage 1, through visiting customer sites the environment of the product/ service usage is being investigated by the development team. For conducting this stage, one good method that is being used to analyze the environment of the usage is KJ diagram (Kawakita, 1991). In stage 2, the understanding of customer requirements is transformed into well established customer

requirements. To verify the consistency of user requirements with the actual usage environment, the image developed through KJ diagram is used as a mapping tool in this stage.

The purpose of stage 3 is to make sure that the formulated user requirements are consistent with the actual necessities which are verified through customer participation and feedback. After the verification, the requirements are defined in operationally measurable terms and communicated clearly to the development team. In the concept generation stage, the development team generates solution concepts in order to solve the customer requirements/ defined problems. Usually for each of the requirements a large number of concepts are generated which are then reviewed and improved.

Finally, in the concept selection stage a few numbers of concepts are selected for downstream development. The selection is performed in accordance with customer requirements and the capability of organization after testing all the generated concepts. Specifically during concept testing, the responses of customers for a product/ service are examined (e.g. whether the idea of the product/ service is logical to the customers and whether the customers believe that the new offer will satisfy their demands) (Scheuing & Johnson, 1989).

2.3 Entrepreneurship and Innovation Opportunities

According to Section 2.2, concept development integrates customers' requirements and insights for the prospective product/ service early prior to actual development and those insights help the company to identify business opportunities in the form of different concepts potential for further development. Since opportunity identification is inseparable with creation of new innovations and these theories are to a great extent elaborated in entrepreneurship literature, a review on entrepreneurship literature has been made in this part.

Opportunity discovering and exploitation are from the main tasks that any entrepreneur/ innovator should deal with. Involvement of all the activities related to discovery or creation, and pursuing opportunities in the process of entrepreneurship is highlighted in most literature (e.g. Shane & Venkataraman, 2000; Shane, 2000; Eckhardt & Shane, 2003; Buenstorf, 2007). Opportunity has been used as a frequently cited unit of analysis in entrepreneurship research (Hsieh et al., 2007).

An opportunity can be defined as “*a favorable juncture of circumstances with a good chance for success or progress*” (Dorf & Byers, 2008, p. 6). Great opportunities can create considerable value for the customers. The process of entrepreneurship has been viewed as requiring entrepreneurial opportunities. Shane and Venkataraman (2000, pp.218) explain that the field of entrepreneurship involves “*the study of sources of opportunities; the process of discovery, evaluation and exploitation of opportunities; and the set of individuals who discover, evaluate and exploit them*”. According to Shane (2003) with the aim of providing value to the customers, entrepreneurs identify opportunities and organize resources to formulate a strategy for exploiting them. In the process of discovery or identification of opportunities, individuals or the firms recognize a previously unknown or unseen way of creating new goods, services, raw materials, markets or organizing methods. In the exploitation process, they acquire resources and take the necessary actions to provide sufficient information about the characteristics of the opportunity in the market (Eckhardt & Shane, 2003).

There are two historical views of entrepreneurship each representing a different type of entrepreneurial opportunity. First is the Schumpeterian view that has a belief that opportunities are created rather than discovered. Schumpeter emphasizes more explicitly on the notion of innovations or what he calls “new combinations” created by the entrepreneurs which has been interpreted as the creation of entrepreneurial opportunities by Buenstorf (2007, pp.325). In Schumpeter’s perspective, opportunities, arising from disequilibrating forces, are very innovative and involve creation of new knowledge due to their disconnection to the existing knowledge (Schumpeter, 1934). Second is the Kirzner’s perspective which views opportunities to be derived from imperfect knowledge according to circumstances of time and place, and from differences of access to existing knowledge. In contrast to Schumpeterian view, in Kirzner’s perspective opportunities are discovered rather than created based on the existing system therefore they are less innovative (Buenstorf, 2007; Min and Saarelainen, 2009). According to the nature of identification and exploitation of opportunities involved in each perspective different types of innovation are expected to arise leading to innovative products and services; in Schumpeterian perspective radical innovations which have the same needs of breaking the equilibrium and changing the market are more involved whilst in Kirzner’s view incremental innovations are discovered and exploited by the alert entrepreneurs (Min & Saarelainen, 2009).

2.4 Using Problem-Solving for Identification and Exploitation of Innovation Opportunities

Integration of Problem solving with innovation field has been developed in some literature either implicitly or explicitly; Cyert and March (1963) have highlighted the necessity of formulating and solving innovation-related problems when the innovating firm is developing a new product or service. These problems consist of all the problems that the firm faces during the process of innovation (Von Hippel, 1994; Terwiesch & Xu, 2008). On the other hand, by taking a more explicit view on innovations, Bjorkdahl and Holmen (2010) argue that managers should economize problem-solving in their innovation processes by finding, prioritizing and relating problems. Along with this purpose, they focus on innovation audits by introducing a problem-finding innovation audit that satisfies the shortcomings of prior audits. However, as they clarify innovation audits are more helpful to the innovating firms in finding the problems that are obstacles to innovation rather than identifying potential opportunities for creation of new innovations. In this part the aim is to provide another aspect of integration between innovation and problem solving, this time with the role of opportunity identification and exploitation as a vital approach taken by entrepreneurs and more specifically innovating firms, early in new product or service development.

As discussed in Section 2.3 critical for the entrepreneurs is the discovery of opportunities with identification of valuable products, services and markets. Successful entrepreneurs recognize the opportunities which are based on either satisfying a need in the market, solving a problem or filling a niche in an appropriate time. Great opportunities are usually viewed upon as difficult problems. In fact another way to describe good opportunities is to describe a need for a solution to a problem (Dorf & Byers, 2008). Several literature have related the process of opportunity discovery to problem-solving (Ardichvili et al., 2003; Nickerson & Zenger, 2004; Hsieh et al., 2007; Dorf & Byers, 2008). Either problem-solving has been described as a type of opportunity or opportunities have been presented as pairs of problem-solution.

Ardichvili et al. (2003) views opportunities from two perspectives; opportunities can be seen from the perspective of prospective customers, which is called “*value sought*” or arisen from underutilized and unemployed resources representing “*value creation capability*”(Ardichvili et al., 2003, pp. 108-109). Prospective customers may be totally able to express their needs and

problems or at least they may still be able to see the values inherent in a new product or service for them. Underutilized and unemployed resources may include new technologies or inventions when there is no market yet defined for them or no ideas for a product or a service utilizing them. A Matrix containing four types of opportunities can be defined as in Figure 2.4 differentiating between opportunities based on known/ unknown *value sought* and known/ unknown *value creation capability*. An identified market need represents a known *value sought* and a defined *value creation capability* (i.e. general specifications of physical, human, intellectual, financial and all other resources) represents a known *value creation capability*. To make it more simple in this matrix *value sought* can represent problems and *value creation capability* can represent solutions. Furthermore Ardichvili et al. (2003) defines problem-solving as an opportunity type in which *value sought* is known and *value creation capability* is unknown (problem is known and solution is unknown). In this case the goal is usually to design a new product or service to satisfy the expressed market need. In this kind of situation structured problem solving occurs. Three other types of opportunities can be identified as they are stated in matrix below:

		Value Sought	
		Unknown	Known
Value Creation Capability	Unknown	Dreams	Problem Solving
	Known	Technology Transfer	Business Formation

Figure 1.4: Opportunity types

Source: (Ardichvili et al., 2003)

The upper left cell describes such situations in which the associated entrepreneurs are interested in moving proprietary knowledge by their creativity and pushing the technology to pass its current limits. In the lower left cell (Technology Transfer) problems are unknown but solutions are defined. Here opportunity arises by finding an appropriate application for an available capability. Finally, the lower right cell, refers to those situations in which both problem and

solution are known and opportunity development deals with matching the needs and resources by new business formations (Ardichvili et al., 2003).

In another perspective Hsieh et al. (2007) suggests that opportunities equate to valuable problem-solution pairs. A valuable problem is a problem that if solved will create value as new knowledge and ultimately will improve the firm's performance (Nickerson et al., 2007). Entrepreneurs discover an opportunity by knowingly selecting or even unknowingly stumbling on a problem and then seeking a valuable solution which is again discovered by luck or organized search. Or sometimes a set of decisions and options are found after which entrepreneurs seek for the problems. Therefore opportunities are distinguishable with respect to the different problems, solving by a particular set of solutions, as well as with respect to different solutions solving a single problem. Therefore opportunity discovery can be described as a matching process between valuable problems and solutions (Hsieh et al., 2007).

For conducting such a problem-solving approach in order to identify and exploit opportunities, Problem Solving Perspective (PSP) is presented in the coming section to be used as a method for identification and exploitation of entrepreneurial opportunities.

2.5 The Problem Solving Perspective

In order to find sources of achieving a sustainable competitive advantage for a firm, most literature have been recently focused on understanding how a firm can *create* and *capture* value (Lepak et al., 2007; Nickerson et al., 2007; Pisano & Teece, 2007). Despite highlighting the importance of rapid value creation by scholars, the challenges and strategies for continuous value creation has been underemphasized strongly. Nickerson et al. (2007) emphasizes that with the purpose of creating and increasing value, the strategies undertaken by the firm play the central role. These strategies should facilitate the organization for readily identifying new value opportunities and at the same time taking a position that delivers sustainable competitive advantage.

Value creating firms recently discover and solve strategic problems dealing with customers, suppliers or even within their own firms (Nickerson et al., 2007). This attempt by firms has its roots in PSP which merely is a way for creating new knowledge in the firm. The basic assumption in PSP is that accumulating and protecting valuable new knowledge is a key task for

every manager (Nickerson & Zenger, 2004). However, choosing new knowledge to acquire is a challenge for the managers because most of the times the desired knowledge does not yet exist. Therefore what managers do instead is to identify valuable problems that if successfully solved result in desired knowledge which can be the basis for innovations and increased profits for the firm.

Pounds (1969) provides a general explanation for a problem, defining that a problem is characterized by the differences between the existing situation and the desired situation. As mentioned earlier one way to create and protect new knowledge is to identify valuable problems, search for possible solutions, and try to solve the problems successfully. Thus the first stage of problem solving is problem discovery and identification. Problem identification which is also described as “*searching for an unknown unknown*” is to a great extent influenced by creative imagination; more difficult problems require greater creativity (Nickerson et al., 2007, p. 214; Chakravorty et al., 2008). After identification, problems need to be evaluated and prioritized according to the organization’s importance, capability and resource allocation since it is not possible to solve all identified problems at the same time (Bjorkdahl & Holmen, 2010). Solving the novel identified problems thereafter can lead to opportunities for entrepreneurship and innovations. This means that the focus of the manager should be on identifying and selecting valuable problems rather than on knowledge creation per se (Bjorkdahl & Holmen, 2010). The value of a problem argued by Nickerson & Zenger (2004) depends on two factors; the values of the array of possible solutions and the costs of identifying a particularly valuable solution.

Two main classifications of processes by which problems are identified have been introduced as *analytic* and *synthetic* processes. In an Analytic process solving the identified problem incrementally reduces the costs and wastes in specific parts of value chain. Therefore the result of this process is value creation by creating incremental innovations. Motorola, Toyota and General Electric have benefited strongly from thorough implementation of analytic processes. Synthetic processes, on the other hand, are more dealt with discovering novel problems which at the end of the day can lead to radical innovations. Competitors’ challenge is related to the quality of their analytic and synthetic processes. The more effective the process is, the greater opportunities will be for value creation and capture (Nickerson et al., 2007).

An important problem observed in conducting PSP is that sometimes there is a gap between what PSP models suggest and what actually happens while trying to solve the problems in reality. Chakravorty et al. (2008) identified that most of the time, this inharmony between theory and reality happens when the problem is difficult and not clearly identified. Hence Managers often prefer to skip or abbreviate the formulation of problems (Björkdahl & Holmen, 2010; Nutt, 1984). In that case PSP proceeds in a so called “*cyclical*” and apparently irrational manner which increases the time assigned to problem solving as well as production costs (Chakravorty et al., 2008, p. 44). The authors thereby introduce a technique for sequential problem solving which consists of five steps: *problem identification, information gathering, generating alternative solutions, evaluating solutions and finally implementing the best solution(s)*. The model is presented in Figure 2.5.1 below.

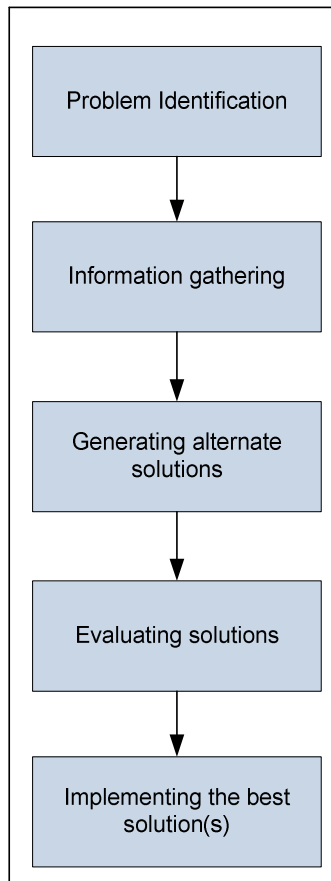


Figure 2.5.1: The Five-Step Sequential Model; Source: (Chakravorty et al., 2008)

The aim of taking these steps sequentially is to decrease production costs resulted from reduced time assigned for solving the problems. In sequential technique *problem identification* is usually run through creative thinking which requires different times for discovering the root causes in relation to the complexity of the problem. *Information gathering* can be accomplished through sources such as interviews, published material, discussions and observations. *Generating alternative solutions* is usually done through brainstorming. It is noteworthy that generation of solutions should be performed separately from their evaluation. Otherwise the creative process is restrained. One way for *evaluating solutions* is to design experiments which facilitates comparing different alternatives. How to implement the last step, *implementing the best solution(s)*, has gathered contradictory beliefs. Some scholars think that little creativity is needed for this step while at the same time another group of scholars assign the greatest need for creativity to this step. Scholars of the latter group defend their belief by suggesting that for implementing more radical ideas, the need for departing from traditions is greater, thus the resistance to change would be greater. Therefore extraordinary force would be necessary for overcoming resistances (Chakravorty et al., 2008).

As mentioned earlier sometimes problem-solving occurs in a cyclical manner. In this way, the performer of the PSP approach may not be able to start a step just after the completion of the previous step. For example, while running *generating alternative solutions* the participant may feel a need for further *information gathering* in order to complete the *problem identification* step. The cyclical five-step model is presented below.

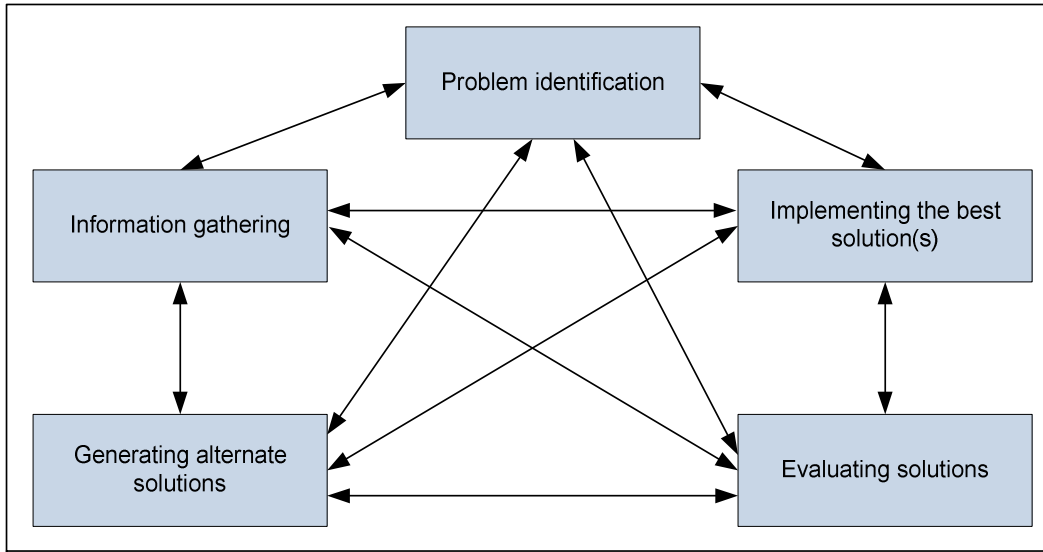


Figure 2.5.2: The Five-step cyclical model; Source: (Chakravorty et al., 2008)

Usually the process of problem-solving in cyclical manner takes more time and performers would try many alternatives for solution which are chosen randomly or by their intuition. However, despite being more time consuming and more costly, the cyclical problem-solving has become important for organizational learning as well as knowledge creation.

In a classification for knowledge, *explicit knowledge* is a form of knowledge which is openly expressed and is feasible for being documented or stored. On the other hand, *tacit knowledge* is not openly expressed and not feasible for being documented or stored. Instead it is derived from the experiences or intuitions of people. For fulfilling the need of an organization for continuous learning, *tacit knowledge*, generated in cyclical problem solving should be converted to *explicit knowledge* (Chakravorty et al., 2008).

3 Framework Creation: Relation of Signals and Costly Signals with Interactive Marketing Communication

Described in Section 2.1, by producing signals and costly signals, innovating companies can better communicate with their customers or competitors. Thereby, the company can influence their perceptions to trust the reality of what they perceive. Along with signals and costly signals and their benefits, Christian Grönroos (2007) also highlights the importance of “*reality as customers perceive it*” which in writers’ perception can be another statement for what creates a costly signal (Grönroos, 2007, p. 304). This time communication has been used as an essential element of marketing process which can reveals *reality* for customers in interactive marketing process. Interactive marketing communication is different from what usually happens in traditional marketing. The information communicated through advertising which is a conventional way of traditional marketing are not always trustworthy; thereby has an impact on the *expected* service that the consumers can receive from the advertising firm in the future.

According to Grönroos’s definition *integrated marketing communication* is a true and total communication approach that integrates both direct and traditional communication media and other communication messages derived from separate sources. Presented by Grönroos (2007) five main sources of communication messages that have been extracted from literature¹ are as follows:

- ***Planned messages:*** These types of messages originate from any planned marketing communication media for example Internet, direct mail, radio and television advertising, etc. and these messages have the least level of trustworthiness.
- ***Product messages:*** Messages about the firm’s offerings of physical products; these messages can be based on product features such as appearance, design, functionalities and usefulness.
- ***Service messages:*** Any communicated message related to service processes; e.g. interaction between employees and customers, the behavior of service employees, service delivery, customer claims handling etc. To some extent service messages are perceived to be more trustworthy than the former two messages.

¹ The first four types are communication messages presented in Grönroos (2007) are obtained from Duncan and Moriarty (1997) and the last one (absence of communication) is suggested by Henrik Calonijs (1989).

- ***Unplanned messages:*** The most trustworthy type of communication messages are the unplanned messages since they are sent by the fellow customers. These types of messages are newspaper articles, TV programs and references.
- ***Absence of communication:*** In critical situations such as occurrence of unexpected events, the lack of communication from the product offering firm always has a negative effect on customers' perceptions on the quality of the offered product or service.

Grönroos (2007) emphasize that the real challenge for firms is to manage the mentioned sources of messages and all kinds of communication media in an integrated way as these messages and the communication efforts act as signals regarding offered product/ service quality for the customers.

The sources of communication messages or, from the perspective of this study, sources of signals shaping three statements have been organized in the integrated marketing communication triangle. These statements are “*what the firm says*” (including planned messages, e.g. sales, advertising, sales promotions, web sites, etc.) , “*what the firm does*” (including product and service messages, e.g. deliveries, production processes, service processes, etc.), and “*what others say and do*” (unplanned messages e.g. customer impact on service processes, word of mouth, TV programs references etc.) (Grönroos, 2007, p. 306).

Along with Grönroos (2007), the importance of integrated marketing communication has been outlined by Vargo and Lusch (2004). Having summarized the evolution of marketing over past 100 years, Vargo and Lusch (2004) describe that marketing has shifted from product dominant view where the focus was on physical products and has exchanged to service dominant view which defines that marketing is both a social and economic process and being customer centric, firms strive to offer improved value propositions than their competitors. In addition, service dominant view emphasizes that for all time customer is a co-producer and firms must put effort to ensure the involvement of customer to offer personalized offerings to better fit their demands.

Vargo and Lusch (2004) explain that, having recognized customers as the co-producers, firms can achieve competitive advantage if they develop and coordinate resources to provide customized services to customers, make better value propositions than competitors, maintain a constant dialogue with customers, for better customer relationship customer equity management

which refers to the attempts taken by a company to gain more customers and increase revenue, establish resource networks, outsource required knowledge and skills to the network and focus on customer relationship management processes which is analogous with the theme of service messages, “*what the firm does*” as outlined by Grönroos (2007). Also, firms should manage network relationships to outsource knowledge and skills. In relation with the statement of “*what the firm says*” by Grönroos (2007), Vargo and Lusch (2004) argue that the service dominant view of marketing grounded by integrated marketing communication will emphasize the promotional activities such as advertising. Lastly, in relation with the statement of “*what others say and do*”, it has been argued that for increased relationship with customers, service dominant view recognizes the utilization of brand names, value perceptions which refers to the process for customer awareness and understanding for a company’s products and services, role of social and relational norms in co-production which means the efforts taken by a company to involve people in the delivery of the product/ service, and repeat patronage which refers to the activities taken by a firm that generate a long term relationship with the customers and also influence them to purchase that company’s offerings repeatedly.

Understanding the correlation of integrated marketing communication with signaling activities and the considerations taken in service dominant view, signaling activities and elements of service dominant view that have been described earlier can be organized through the integrated marketing communication triangle as below.

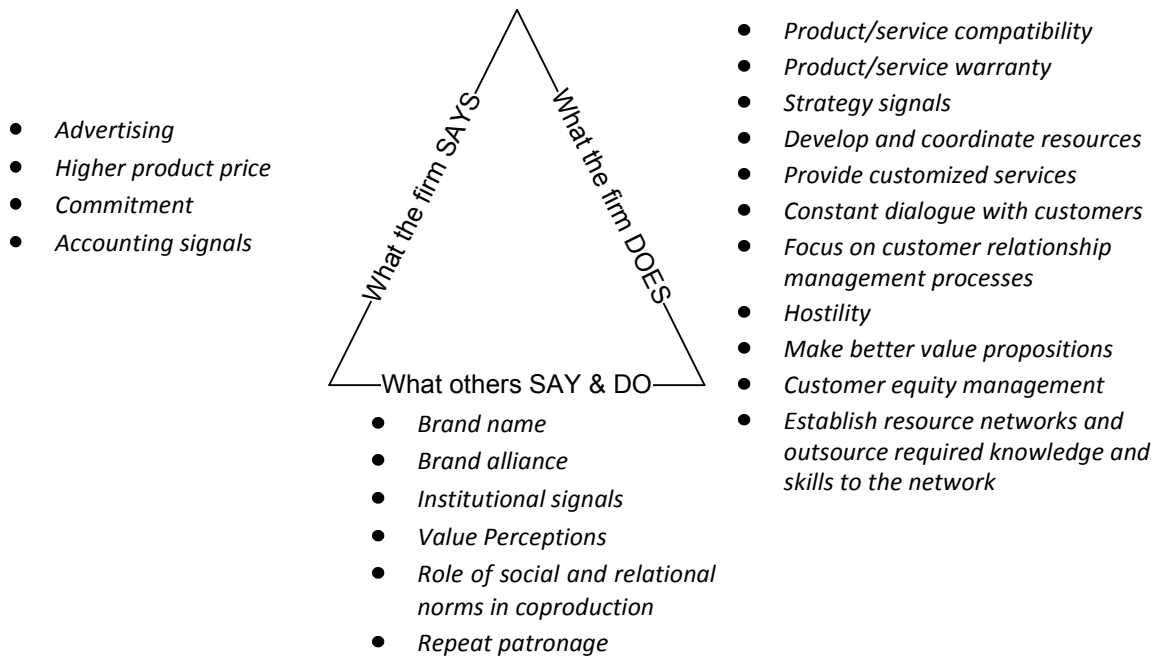


Figure 3: Elements of signals and service dominant view according to integrated marketing communication triangle

From signal perspective advertising, higher product price, commitment which is expressed by a particular firm to its competitors and accounting signals such as promoting profit data and financial statements can be related with *what the firm says* as these are the result of planned marketing communications. On the other hand, product/ service compatibility which refers that the offered products/ services of a company are compatible with existing products/ services/ technology, product/ service warranty which ensures the customers that the way a product/ service and its underlying technology work is reliable and built of protectable item, hostility such as offering a harsh price reduction, and strategy signals such as offering products/services with different functional features and coming up with diversified range of products and services can be related with *what the firm does*. Lastly, brand name which has great positive impact on the customers regarding product quality, brand alliance which provides more powerful way of conveying product quality and institutional signals such as firm's equity among institutions and social responsiveness reflecting the compliance of firm to existing social customs and rules can be related with *what others say and do*.

From the perspective of costly signals, each of the elements can be a costly signal if a significant expenditure of cost, precision or reputation is used for creating them. However, the elements of each of the three triangle edges are more expected to become costly through a specific type of costly signaling activity. The category *what the firm says* has its explicit correlation with conspicuous waste. For example the wasteful expenditures of the firm's resources on advertising in this category is a conspicuous waste, leading to awareness of people on what the firm is trying to say. Another example is for higher product price in this category which requires more spent of monetary resources on producing and launching the product. Conspicuous reputation on the other hand can be generated through *what the others say and do*. Factors such as brand name or brand alliance in this group are essential for emphasizing the relation of this edge to conspicuous reputation. Finally, conspicuous precision can be determinately extracted from *what the firm does* (its products and services). As mentioned earlier signals depending on the design and complexity of a product reflect conspicuous precision. *What the firm does* depends on the deliveries and product messages as well; Factors such as product warranty or product compatibility reflect high level of precision and care from their providers. However, conspicuous waste can be also correlated with *what the firm does* to some extent (e.g. R&D expenditures for production and service processes).

4 Methodology

In this part the whole methodology of this work from identification of the research questions to the exploration of conclusions will be presented. The aim is to highlight how the research was carried out, more specifically for collecting the necessary data and then analyzing the result, in order to answer the research questions. The methodology can be divided into different basic steps which are presented in Figure 4 below. Moreover the terms of reliability and validity have been taken into consideration and are evaluated and explained.

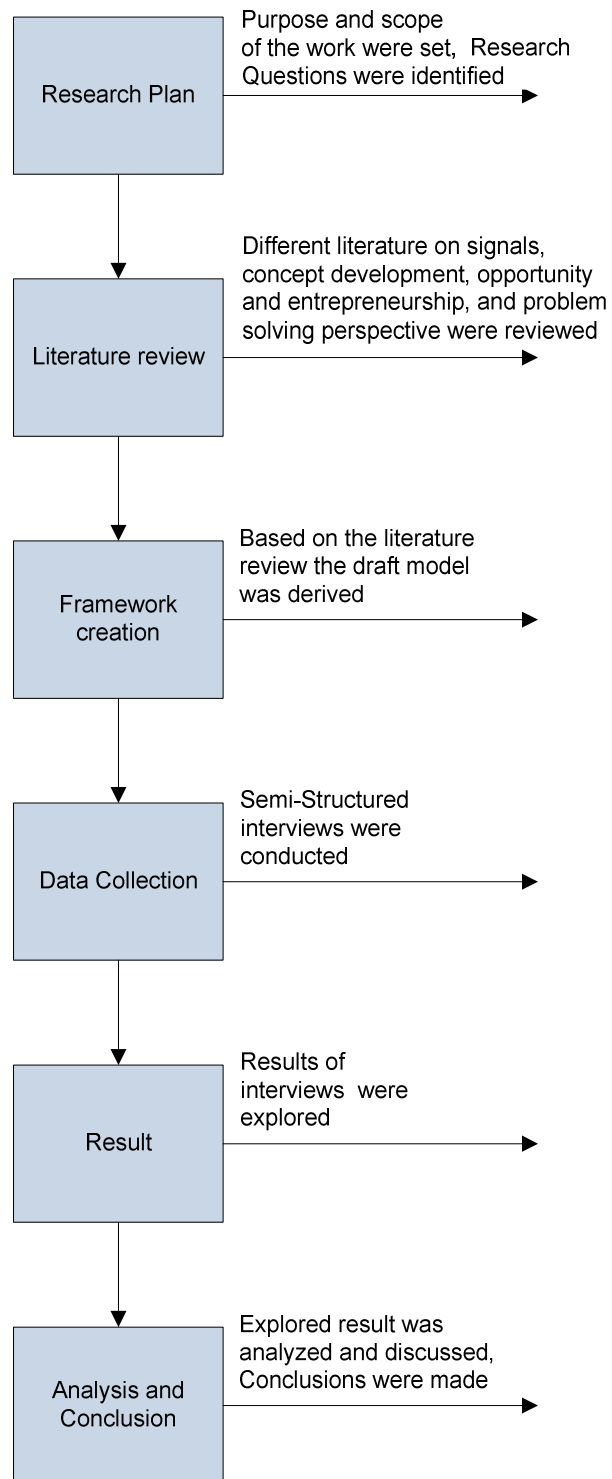


Figure 4: Flow-diagram of the methodology

4.1 Research Plan

The project was started first by identification of signaling and costly signaling as potential fields of study in innovation-related literature. The lack of knowledge upon these terms in innovation literature was confirmed by the supervisor of this thesis and the potential of introducing the elements of signaling and costly signaling in relevant literature became interesting to investigate. Therefore some basic literature research on the nature of these elements, their purpose, their types, etc. was conducted. Moreover in order to define the research area more specifically, concept development and PSP were chosen as important tools compatible with signaling activities that could help in shaping the theoretical framework. Thereafter it became possible to set the objective of the project and the main research questions based on the preliminary studies. Finally the scope of the project, whom to address and the limitations were defined and the research design and method for carrying out the empirical section were formulated.

4.2 Literature Review

The research was started by reviewing different literature addressing terms of signal and costly signal. For this purpose, marketing and management literature were studied carefully. The definition of signals, the aims of signaling activities, their different identified types and their benefits were in-depth investigated and highlighted in the report. The evolutionary view on costly signals and their types was also studied from marketing and management literature.

Meanwhile prior research on concept development conducted in early phases of New Product Development (NPD) was essential in order to better understand such processes recently carried by many large firms with the aim of fulfilling the needs of the customers more by involving them earlier in the creation of future products and services. The necessary information for this part was generally achieved from product innovation and management literature.

Since the project was chosen to be focused on opportunity identification and exploitation phase in firms aiming to create sustainable competitive advantage, the other branch of literature that this project was centered on was opportunity identification and its importance in entrepreneurship and making innovations. This study was mainly carried out from accessible literature on entrepreneurship and management.

The last but not the least part of the literature review was on PSP after the identification of the common view on problems and opportunities. Problem-solving was investigated in depth for

measuring the abilities of taking it as a way for opportunity identification processes in the firms. Two major ways of handling problem solving were identified in literature named as sequential versus cyclical approaches. Searching for relevant literature in problem solving was more conducted in accessible literature on strategy, organization and management.

4.3 Framework Creation

In a literature on management and marketing, management of interaction between different sources for communication found to be a challenging issue for firms which are aiming their messages to be perceived real in their customers' perceptions (Grönroos, 2007). Therefore, the same approach to what was suggested in that literature was taken, this time to introduce different sources of signaling and costly signaling activities. The signaling activities derived from different literature were addressed in the framework considering both products and services elements since the scope of the project covers both of them. The activities were divided in three main categories forming a triangle to be investigated further in a real case.

4.4 Data Collection

In this part the decisions taken for research strategy, research design and research method of this project will be described along with explanations of what is meant by each of these research factors.

4.4.1 Research strategy

Defined by Bryman and Bell (2007), research strategy simply deals with the general orientation that a research has. There are two distinct types of research strategy explained by the authors- qualitative and quantitative research. The main distinction between the two types is where it comes to the connection between theory and research, the epistemological orientation, and the ontological orientation of each strategy.

Qualitative research tends to be concerned with words in data collection and analysis. Centering on the three characteristics mentioned above therefore this research strategy is emphasizing an inductive approach for connecting theory and research which can be simply explained as an approach that is focused on the generation and development of theories. The orientation of epistemology in this strategy is on interpretivism and the ways individuals can interpret the social world. Moreover this strategy takes constructionism for its ontological position believing that social reality is continuously being created by social actors (Bryman & Bell, 2007).

On the other hand, quantitative research is described as involving the collection of numerical data and analyzing them based on mathematical methods. This research strategy takes a deductive approach for relating theory and research by which theories are tested and revised. It also takes the epistemological position of positivism in applying natural science model and the ontological position of objectivism which asserts that social reality has an independent existence from social actors (Bryman & Bell, 2007).

In this study the qualitative research strategy was employed since it was more helpful in shaping the theories of how the terms of signaling and costly signaling can be used in an opportunity identification process. In other words, the purpose was to create a framework rather than to test something which is out there. Moreover quantitative strategy was not applicable due to the lack of sufficient prior literature in innovation and entrepreneurship that address signaling and costly signaling terms. Furthermore, the limitations of conducting extensive empirical studies in different industries and possibly comparing them were other major reasons which made conducting a quantitative research impossible.

4.4.2 Research design

“A research design provides a framework for the collection and analysis of data” (Bryman & Bell, 2007, pp.40). The choice of research design can vary in different research sets and is to a great extent dependent on the nature of the research questions (Yin, 1993, cited by Min & Saarelainen, 2009). Five different types of research designs are:

- Experimental design
- Cross-sectional design
- Longitudinal design
- Case study design
- Comparative design

In this project Case study design was implemented in order to analyze a single case more intensively. With the purpose of investigating elements of signaling and costly signaling in early phases of concept development process, conducting case study design was more beneficial since it focuses on creating more specific and in-depth data. Therefore a single case was investigated for the elements of signal and costly signal, and for identifying the opportunity identification

process in such a firm that is running a concept development project. With the findings of this study, theory can be generated on how signaling activities are currently performed or can be undertaken by firms which are using concept development in order to identify suitable opportunities.

4.4.3 Research method

Simply defined by Bryman and Bell (2007) research method is a technique for data collection. For each of the research strategies there are different types of research methods for conducting the research. Since the research strategy of this project was qualitative, methods for conducting qualitative strategy were taken into consideration.

Semi-structured interviewing was the main method for this project by which data was gathered. For conducting a semi-structured interview, the researcher should have a list of questions on specific topics that are needed to be covered. The interview process is flexible and the respondent is allowed to speak open-mindedly. Questions are not necessarily followed in the same way as they are outlined in the interview guide and asking follow-up questions based on interviewee's answers to some questions are allowed to happen. The wordings of the questions and the ways they are asked should be the same for all the interviewees and interviewees' perceptions and understandings on each question should be the same (Bryman & Bell, 2007).

An interview guide was prepared which contained three main branches of questions. The first branch was asking some background questions aiming to get necessary information on the interviewees while the remaining two branches were each asking around one of the research questions of the project. The questions were formulated in different forms; some questions were completely open ended and for some the interviewee was asked to answer by making a selection between some presented alternatives. The interview guide was sent to the interviewees beforehand so that they can discuss the agenda by being fully prepared.

The main industry/firm to focus on was chosen by constant meetings and discussions with the supervisor of this project. The decision of working with the chosen firm was confirmed by the help of the contact person at that company and finally six face-to-face interviews were conducted. Each interviewee had a different role and background in the concept development project since the aim was to include different perspectives on how the concept development is

implemented. The duration of the interviews was on average 70 minutes and all the interviews were audio-recorded. After each interview the recording file was listened to and the answer on each question was summarized and documented.

4.5 Result

In this section the empirical results gathered from the interviews are presented. The process of conducting the concept development for identification of business opportunities and addressing the identified opportunities is studied and summarized in a figure. Based on the actions taken in each step of the concept development process, signaling and costly signaling activities are investigated and described further in the analysis section.

4.6 Analysis and Conclusion

In this section the outcome of empirical results is further analyzed and discussed according to the literature review and the framework. The analysis part is created centering on the two research questions. First the signaling and costly signaling activities that are used in the concept development process of the studied case were identified according to the list of the elements presented in the framework. These activities were either implicitly addressed by the interviewees during the interviews or discovered by the authors of this thesis through reviewing the process of concept development taken by the company.

For answering the second research question, the results of the case study revealed how new opportunities are identified by understanding customers' requirements and market trends in the concept development process. On the other hand by accepting problem-solving as a method for addressing innovation opportunities suggested in different literature, a model was built on how an entrepreneur/innovator can go through the process of opportunity creation by taking problem solving perspective as the method. The model was further validated by the empirical results and modified based on the essential steps for conducting the concept development process.

4.7 Reliability and Validity

The measures of reliability and validity were evaluated for this project, which are presented below:

The reliability of a research is the extent that the results of that research are repeatable (Bryman & Bell, 2007). In this work this measure was assured by using a single interview guide for all the

interviews. Therefore a consistent approach was taken for running all the interviews. Moreover by audio-recording the interviews and listening to them again, the risk of missing an important point during the interview was minimized. The documented summaries of all interviews were another help, in case there was a need to go back to an interview and revising the information gathered.

Validity which in many ways is the most important measure of research concerns the integrity of conclusions generated from a research (Bryman & Bell, 2007). This factor can be evaluated through different types. The validity types relevant for this work were internal validity, external validity and ecological validity.

Internal validity in this work was assured through designing the interview guide in a way that no predetermined answer was forced to the interviewees. Almost all the questions were open-ended and the interviewees were able to direct their answers in a way they desired. For example, while asking about the elements of signaling, the interviewees were supposed to describe what was happening in the process, and then their answers were compared to the definitions of signaling activities to conclude which elements were addressed explicitly by the interviewees. The interview guide is presented in Appendix at the end of this report.

Regarding external validity, it should be clarified that the results of this study are not suitable to be generalized beyond this research context since this work was mainly focused on one consumer product and service producing firm and only one concept development project of that firm centered on one specific consumer segment. Therefore, in the part related to the usability of signaling and costly signaling elements in concept development process, the findings cannot be generalized. However, it is assumed that the process of opportunity creation in the concept development project can have similar approach in other industries due its major compatibility with literature.

Finally, ecological validity was assured to a great extent. Except one, all the interviews were held in interviewees' offices which were comfortable for them and moreover they have the chance to access any document that they needed for answering, if they were not sure on the answer of a question. Furthermore, there was no time rush for finishing each question and the interviewees had the chance to think deeply at first and answer after.

5 Empirical Results

The empirical study was centered on investigating a concept development project titled 'X' of a specific consumer product and service developing and marketing company which has a global reputation. For confidentiality reasons the company name, project name and detailed information of the interviewees have been kept anonymous in this report. The business of this specific company is conducted worldwide and produces a wide range of products enhancing the health and quality of life for consumers all over the world. This firm strives to achieve new consumer segments through creating new values for customers and consumers. For new value creation, the firm develops and sales new products at high rate. In this section, the results from empirical investigation in relation to the project theme will be presented.

To gain knowledge on the concept development project and its processes, six face to face interviews were conducted. Interviewees 1, 2, 4 and 5 were dedicated to contribute and manage the concept development project 'X' of the firm which is business to business (B2B) oriented. Moreover, other than the project 'X', a person (interviewee 3) responsible for the general concept development project of the firm was interviewed in order to understand the process as a whole and gain additional information. Interviewee 6 was the brand manager of a B2C centric concept development project.

Answering the question of what were the reasons and motives for this company to start concept development project, the interviewees said that the firm was motivated to go for the concept development project 'X' as it was observed in the industry environment that a certain market segment which is related to the improved health and life quality of the consumers is less developed, and not having adequate focus to be utilized for the firm's business growth though that particular market segment has huge business potential if addressed.

Furthermore, their company had two separate divisions namely: division A and division B having common customer segments. The product features developed by division A had a weak position in the market and they wanted to improve comparing to the developed product and service features of division B which had a strong market position. Additionally it was getting more difficult to differentiate based solely on product features because of the intense competition. Therefore both divisions were interested in creating novel values for the customers through new offerings in order to achieve competitive advantage. This was the starting point of

looking for concepts as new solutions. Although, traditionally concept development was related more with product improvements, recently the company has been more focused on new service development, and they are now searching for solutions that integrate both product and service solutions.

Based on this, the concept development project 'X' was initiated as a pilot project for the purpose of gaining deep insight regarding consumers. Concepts are used in the early phases of product/ service development when there is an idea that can be conceptualized and explained to customers in order to get their feedback to improve the development. Thereby, the major purpose of the project 'X' has two main dimensions; first, is to create a concrete concept through which current customer needs and future demands can be identified along with the development of enhanced offerings. Second, is how new business opportunities can be identified for increased growth and larger market share of the company.

For fulfilling the purposes of the mentioned concept development project the first step taken by the company was to communicate with their customers. To better understand this, four members from project 'X' were asked about how they conveyed their business intentions and gained information from the customers. Interviewee 1 who was the leader of project 'X' answered that the company staffs communicated with their customers throughout Europe on a regular visit to know customer demands more clearly at this early stage of concept development. For the later phases when the best concepts are put into operation for the development of product/ service, advertising and developing the sales channel will be utilized. The reply of the interviewee 2 was similar to that of the first one. Both interviewee 4 and 5 replied that their company was in corresponding with their customers on a regular basis which was similar to the responses of previous respondents. Additionally, interviewee 4 and 5 answered that expressing their business intentions and receiving information from the customers were facilitated as the customers willingly cooperated at this stage. This is because the firm has a high level business performance and the customers perceive that the firm has always utilized customer knowledge for their innovative product and service development.

Regarding this subject interviewee 3 replied that for a concept development project a significant number of interviews are conducted by the company for customer communication across the globe for market research. In the own words of interviewee 3 *"We perform a lot of market*

research. Although we do have a long history working with the target audiences and have adequate knowledge, still the consumers' perception should be heard, gaps should be identified and the trends should be considered."

Interviewee 6 who was the brand manager of a B2C centric concept development project, replied that for the early phases of such a project the firm conducts significant research on customer demands through online surveys, focus groups and interactive WebPages in addition to face to face interviews and real time observation for gathering customer information. Interviewee 6 continued *"The aim is to get new products out in the market and know customer insights, to really find what their problems are and unlock the business potential"*. For the later phases, advertising and price are important. Furthermore, business performance of the company can play vital role if it is an environmental concept.

The participants were questioned that what actions are currently being undertaken or will be performed by the company for the concept development project 'X' and in this regard interviewee 1 said that so far the company has done investigation to understand their customer better through communicating with them as part of the early stages of the concept development project. A number of concepts have been generated for the purpose of facilitating production of a wide range of tailored products and services in the long term, along with superior, diversified and differentiated offerings of products and services that are well-suited to customer demands. He described *"Differentiation is the value creation through the solutions that really help customers."* Furthermore, developing resources and integration of essential knowledge will be performed by the company. The response of interviewee 2 was almost similar to the first one and she stressed the significance of offering tailored products and services in the long term while saying *"Our focus is to offer more customized service"*. Interviewee 4 said that for the project 'X' their purpose is to offer more diversified, differentiated, superior and tailored products and services in the long term which are similar to that of the previous respondents. It was added that, as part of the long term goal, strengthening affiliation with customers and synchronizing internal resources through integrating the staff from two divisions A, B to work together sharing their knowledge will be prioritized. Regarding this question interviewee 5 said that the main concern is to offer superior and tailored products and services in the long term along with new product and service development. Interviewee 3 replied that in general, the main principle of concept

development projects are to offer superior, diversified , differentiated and tailored offerings that are well-suited to customer demands along with developing resources and integration of essential knowledge. Finally, interviewee 6 said that *“Most of the time it is differentiation and diversification of offerings that we aim for”*. Along with these, importance of superior and personalized products/services and strengthening affiliation with customers were also emphasized.

Answering the question of what features of the company help the customers to contribute in the concept development project and how customers judged the credibility of the company’s business intentions, interviewee 1 answered that *“If you have a brand that stands for what you are talking about it helps a lot”*. In other words, the reputed brand image of a particular product and service of the company which has achieved significant customer satisfaction can motive customers to contribute in project ‘X’. Interviewee 6 also confirmed that *“Brand name is the most important element”*. Interviewee 2 also described the importance of brand image answering this question. Additionally, awareness of the customers for their product and service and customer loyalty were also focused. Interviewee 4 and 5 from project ‘X’ and interviewee 3 also emphasized the role of brand image, awareness of the customers for their product and service and customer loyalty which is similar to the reply of interviewee 2. Furthermore, interviewee 4 added that, their customers perceive that the endeavors of the firm are undertaken due to its social responsibility and from strong sense of sustainability.

Answering the question of how the company makes sure that the gathered information and activities mentioned above are hard /impossible to imitate by the competitors, it was highlighted repeatedly by the interviewees in different ways that the firm prioritizes to invest considerable amount of time for the research, utilize their well established industry reputation, strive for being the first mover in taking attempts and deploy significant number of resources to create a barrier for its competitors to make sure that the competitors do not utilize the same information and conduct the activities performed by the firm for concept development. As for example, interviewee 1 replied that *“Concept development processes are very hard to copy due to their complex, integrated nature and tacit knowledge. The competitors cannot copy how the company’s sales people are gathering information from customers unless they see it LIVE”*.

Interviewee 5 also described that *“Concept development process is very complex as it has interrelated processes, people, skills related, so it is very hard to copy.”*

Furthermore, a number of various intellectual properties e.g. trademarks, copyrights are deployed to maintain the novelty of the generated concepts and also plan for substantial investment of monetary resources for the actual development and patent protection for the developed product. The company also makes sure that the privacy of all interactions with its customers is retained with secrecy agreements. Interviewee 3 also confirmed that the measures taken by project ‘X’ are inline with the actions taken in general concept development projects in such a way” *When you find a good concept you have to make sure that you are legally protecting it through trademarks, copyrights or patents, When we talk to the customers, we always have confidentiality agreements as well.”*

Describing the overall concept development process of project ‘X’, firm representatives conducted constant interviews with the customers, observed them and in this way they were trying to get the complete image of what products/ services customers were using, what problems they have, how to improve the offering in a particular market segment and how new customer segments can be created. Interviewee 1 describes this *“We look more into achieving a learning experience together with our customers to know their demands more clearly and working on how to improve the offerings further”*. Firm representatives prepared questionnaire which is more like a checklist for this purpose. Other than the customers, the company also collected information on competitor activities and market trends at this stage.

In order to understand the actual market information, the company team visited the customers across many places of the world especially over Europe and had significant number of internal interviews with them. From interviewee 6 it was understood that in addition to face to face interviews and real time observation, the firm conducted significant research on customer demand through online surveys, focus groups and interactive WebPages. Looking at the whole end of customer market and based on the interviews, in the first workshop a large number of new business opportunities were identified through brainstorming. The opportunities were a combination of situations, needs, trends and competitor actions. After that, more information were gathered for the opportunities, their business viabilities and necessities were discussed irrespective of the company’s development capabilities. Later the identified business

opportunities were clustered into a number of specific opportunity areas through the first workshop since according to interviewee 4 and 5 it was confirmed that categorizing opportunity areas is very important in the concept development process to generate concepts that are specific to the opportunity areas. The second workshop was conducted to find out the concepts for each of the opportunity areas. Workshop was done through joint discussion and post-its. Various concrete concepts were created in that workshop incorporating the potential product/ service requirements which were obtained through customer communication and the company's available technical and resource capabilities. A final and third workshop was conducted to see if the concept development process is going right.

At present, the firm has completed creating a number of concepts and interviewee 1 said *“So far, it has been more the learning, gathering information and then sharing the created concepts with the customers”*. The interviewees informed us that in the next phase, all the generated concepts will be evaluated and tested on the customers in order to validate the market potential and commercial viability of a concept along with customer preferences. Interviewee 1 described *“We test the created concepts with our consumers and normally modifications happen. There is continuous increment and learning and through this it becomes better and better.”* Few concepts are thereafter selected based on the evaluation that fulfills all necessary constraints of the firm. In the next phase, additional progressions of the concepts are made taking into account customer necessities which was specifically highlighted by interviewee 4 and 5, and finally, the best concepts are put into operation for the development of product/ service and is performed by the Product Development New Innovation (PDNI) department.

It was mentioned by the interviewees that the process is not always taken sequentially. Based on the requirement for further clarification the steps are often performed repeatedly rather than sequentially. As for example, both interviewee 4 and 5 from project 'X' said that the steps of creating concepts which are specific to opportunities, market validation testing of the concepts, selection of the best concepts and additional progressions of the selected concepts are often performed back and forth since continuous learning is needed to select the best concepts and also to make the outcome quite concrete.

During the interviews, in addition to the concept development process, the interviewees were asked to compare the process with the five steps of PSP approach which were presented in the

interview guide. All the interviewees agreed that the five steps of PSP approach are the generic steps for a concept development process.

Interviewee 3 also confirmed that the other concept development projects of the company are usually run in the above mentioned ways and it was described in this way *“We collect large amount of data that from our customers to have good knowledge about them to see what could be the most important area to create concept and what needs should be fulfilled. With these purposes we develop concepts and later we test the concepts to see which one can be the best in the market before we ask PDNI (Product Development New Innovation) to develop such product/ service in reality”*.

To summarize, the overall concept development process is represented through the below figure.

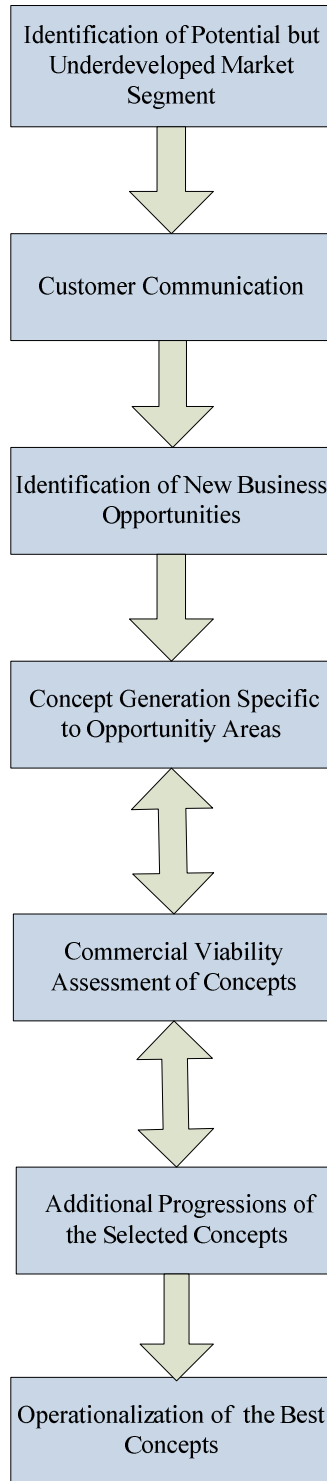


Figure 5: Concept development process of an empirically investigated firm

6 Analysis and Discussion

In this chapter the results from the empirical study, described in Section 5, will be analyzed and discussed according to the reviewed literature. This part will address two main issues:

- First, the elements of signals and costly signals identified in the process of concept development will be described. Moreover those elements that were not found in the project will be analyzed.
- Second, a PSP approach for conducting concept development according to the assumption of opportunities as problem-solution pairs will be suggested.

6.1 Signaling and Costly Signaling Activities Conducted by the Company during Concept Development Process

After conducting all the interviews and understanding the concept development process taken by the firm, it was strongly confirmed that the elements of signaling are actually taken by the firm during the process of concept development. Most of the signaling elements are covert signaling and a few are overt signaling elements. However, among the elements included in the triangle, some of them were more addressed by the interviewees, seemingly to have stronger effect in the process. In the following the elements of signaling which were used in the concept development project will be presented using the same categories of the communication triangle presented in Figure 3. For validating the arguments some quotes from the interviewees have been used after the arguments.

6.1.1 Signaling elements: what the firm does

All the interviewees had a common perspective in defining the most important motivation in conducting concept development projects, which was provision of *better value propositions*. As described in Section 5, the company has been focused on supplying superior product and service offerings in the area that they want to provide concept. Consistent with what Vargo and Lusch (2004) explain, the values are created by the company in the form of either products or services and then perceived by the customers when they use them. Consequently understanding the customers' perceptions on different offers can be facilitated through concept development. Moreover, different concepts are tested with the customers and their responses become integrated in the generation of future product/ service offers by the company. As a result, the

company will provide better value propositions for the customers by knowing what is perceived as a value for them.

The company is basically intended to conduct the improved value proposition through differentiation and diversification in products/services; what can be generalized as *strategy signals* defined by Fombrun and Shanley (1990). All the interviewees believed that in order to create the most possible differentiation for the customers, one should understand the needs and insights of the consumers deeply. Therefore concept development can be a great help in integrating the consumers' insights in the product/ service development from the very beginning.

"Recently it has been more difficult to differentiate on products. So we are trying to base the innovation work on customer insights". (Interviewee 1)

"First thing is to have good knowledge on your target customer. Therefore it should be clarified which knowledge is already available on the customer target and what is possibly required to get more information on." (Interviewee 3)

Consequently having a good knowledge-base among different markets, can help the company to a great extent to better decide which segment is more potential for conducting concept development (i.e. deciding which customer segment to focus on for finding better opportunities and addressing them by concepts). Developing resources and integration of essential knowledge as mentioned in Section 5 is what the company is doing in order to prepare the adequate knowledge-base for selecting the potential concept development areas. This action addresses another element of signaling which is *establish resource networks and outsource required knowledge and skills to the network* introduced by Vargo and Lusch (2004). Other than consumers' insights, this network of knowledge consists of the technological insights as well as market trends for both the company and its competitors.

"Normally we ask the markets about their key insights, the trends in the market and so on, to see where the biggest issues are at the moment. We also look on what the competitors are doing and what we believe will happen in the future." (Interviewee 6)

All these information are needed for defining such business opportunities intended to shape future product/ service developments that are well-suited consumers' needs and market trends,

and at the same time compatible with the existing offers of the company. Thus, with this intention, another element of signaling is taken by the company which is *product/ service compatibility* (Kim, 2002). Moreover the company is intended to fulfill as many needs and desires of its customers as possible. The aim is to finally come up with a portfolio of different offers according to the selected concepts which were more interesting for the customers. Therefore each customer company can be offered by a different package of products/services which they need the most. Hence the level of customization in this type of B2B project will be higher than the usual product development projects in which the improved features of a product are the same for all the customers regardless of their different needs and problems. It can be concluded that by the use of different concept ideas and later different customized offers through tailored and personalized products and services, the company is signaling more attention to the needs of its customers by *providing more customized services* for them. This is in harmony with positioning customization as one of the hallmarks in customer-interaction processes of service-centered companies, beginning with the definition of each individual customer's problems and then continuing with the development of a customized solution and delivery of that to the customer. The solution can include a product, a service or both (Vargo & Lusch, 2004).

"Differentiation is to have things that create value and to have many of them, and moreover to be able to match them with customer's needs and customize them." (Interviewee 1)

Of course customers' needs are not one hundred percent different from one another and the customization is not necessary for each individual customer.

On the other hand, the company is collecting the voices of customers by use of different methods based on the type of concept development project. All different methods have the same initial goal of creating *constant dialogue with the customers*; what can be characterized as a two-way communication process between the company and the customer segment rather than the historical one-way communication from the company to the market facilitated by the offered products (Vargo & Lusch, 2004). The process is more like a feedback process in which the company first understands the needs of the customers, generated some concept ideas, and then goes back to the customers with a prototype of the solutions for testing. Based on customers' feedbacks the company may make some modifications in the concepts and prioritize the alternatives.

The activities taken above in the long term have a great influence on strengthening affiliation with customers as it was described in Section 5. As a result another signaling activity is revealed through those actions which have a common outcome of building and sustaining a strong relationship with the customers; this element is *focusing on customer relationship management*.

Finally, one element was identified in specific relation to project 'X' since in this project the company is synchronizing its internal resources through integrating the staff from two divisions A and B. This action is in harmony with the element of *developing and coordinating resources*. This cooperation among different divisions was not common in all concept development projects conducted by the company but it was worth to mention in this section.

Based on the characteristics of the signaling elements, all the signals in this group can be categorized as the covert signals since they refer to the actual market actions.

6.1.2 Signaling elements: what the firm says

This part is analyzing the elements of signals addressed while the company is communicating with the customers for understanding their insights. The communication takes place by using different methods according to the type of business; for B2B or B2C, as they were discussed in Section 5, the methods used in order to communicate with the consumers can be different (e.g. interviews, surveys, focus groups, etc.).

One common achievement of accessing the customers for collection of their problems and insights and by utilizing customer knowledge for innovative products and service developments is that the company proves its *commitment* to its customers this way. This element of signaling is even more highlighted in B2B projects, given that the lower number of customers compare to B2C, provides the company the chance of managing more coherent relationships with the customers. Perceiving commitment from the company has strong influence in motivating them to even participate in the project and give their insights to the company.

"They participate if they feel somebody is really listening to them". (Interviewee 3)

Other than the element of commitment, the pervious business performances of the company are crucial in the quality of its relationships with the customers. This feature, addressed in signal literature more specifically as *accounting signals*, is a signaling factor that can be understood via

company's relative success levels in satisfying customers and furthermore its position among the competitors in industrial or social norms and figures.

Based on the signaling characteristics, commitment and accounting signals can be categorized as overt signals as they refer to the conscious communication made by the company.

6.1.3 Signaling elements: what others say and do

During the concept development project, the willingness of the consumers to cooperate with the company has a very strong effect on the final generated concepts. The interviewees all agreed on the fact that the *brand name* of the company and customer loyalty are very important in motivating the customers to assist in the process. As Erdem and Swait (1998) explain, brand name and consequently brand image of a company can improve the confidence level of its customers on company's intentions. Customer loyalty on the other hand has its roots in previous value propositions of the firm to the consumers and the extent to which the specific brand has been successful to satisfy its customers.

As described in Section 6.1.1, in companies that are focusing on both products and services, value is not defined by the company itself rather perceived by the customer. The credibility of the company's intentions in creating more value is also measured based on customers' *Value perceptions*. Therefore company's previous efforts in utilization of customers' insights and perceptions in value creation and their focus on customer awareness for company's offered products and services can improve the current cooperation of the customers.

Another aspect of integrated marketing communication which has an influence on the consumer behavior to rely on company's intentions and assisting in generation of concept ideas is *repeat patronage*. The use of this element was derived according to its integration with customer loyalty which is well-described in Dick and Basu (1994). Customer loyalty in their perspective is the strength of relationship between an individual's relative attitude and the repeat patronage. As a result the presence of customer loyalty is dependent on the high level of repeat patronage. Apart from customers' cooperation in concept development process, loyalty and repeat patronage influence future purchases of customers as well; they will become locked-in if the company fulfils their expectations every time.

“The company always helps its customers with their problems so when we ask for something the customers are willing to help”. (Interviewee 5)

“We always tell people that their input will help the company to create future products which has been quite appreciated”. (Interviewee 3)

Other than customers’ needs the company should also consider market and social trends in generating alternative concepts. Signals representing the company’s responsiveness regarding social concerns can improve the level of appreciation for the company in global markets. For example, “sustainability” as a well-known measure of social responsiveness is taken into consideration in the under-studied project. This is an example of *institutional signals* that the firm sends to its customers and competitors.

In this part the signaling elements exist both from overt and covert signals. To sum up the elements of signaling taken in the concept development project ‘X’ can be summarized in a new triangle presented in Figure 6.1.1.

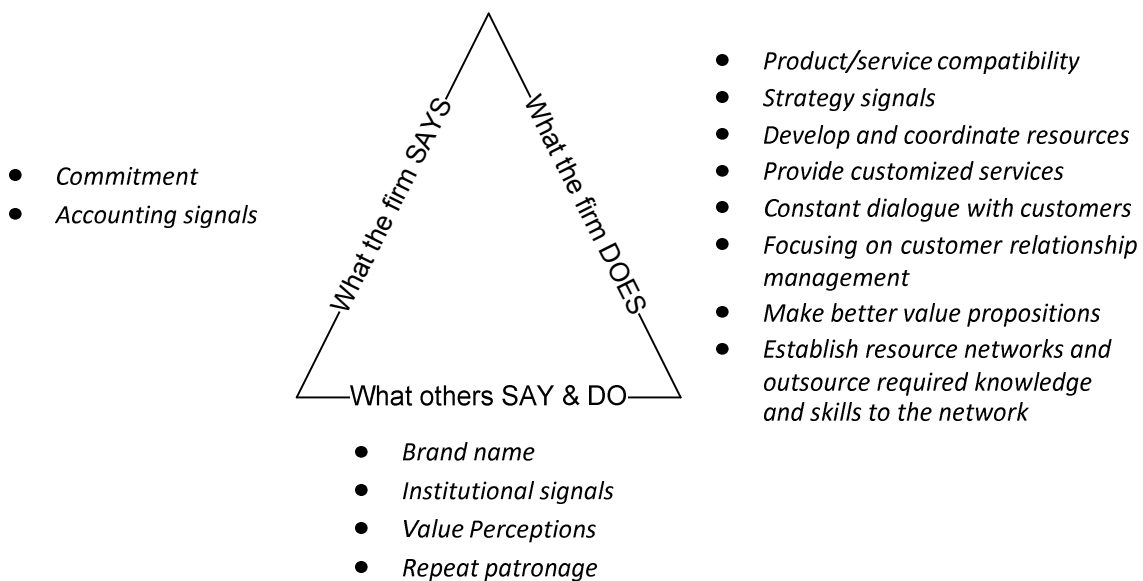


Figure 6.1.1: Elements of Signals and Service Dominant view for concept development project ‘X’

Reviewing the elements included in the figure and comparing them to all the elements in the main triangle of Figure 3, informing the company about the elements that are missing might be

beneficial for them given that the company doesn't have the signaling perspective for taking such actions. They are conducted as product/ service marketing activities, business strategies or communication methods. Taking the elements of signaling into account in concept development projects can be a great step forward for the company in getting more close with the customers, providing better values for them and in long term getting sustainable competitive advantage.

6.1.4 Signaling elements that were not found in project 'X'

After the signaling elements addressed in project5 'X' were identified, it was also worth to analyze those elements that were not included in the concept development process. For doing so, first those elements are presented in a figure below:

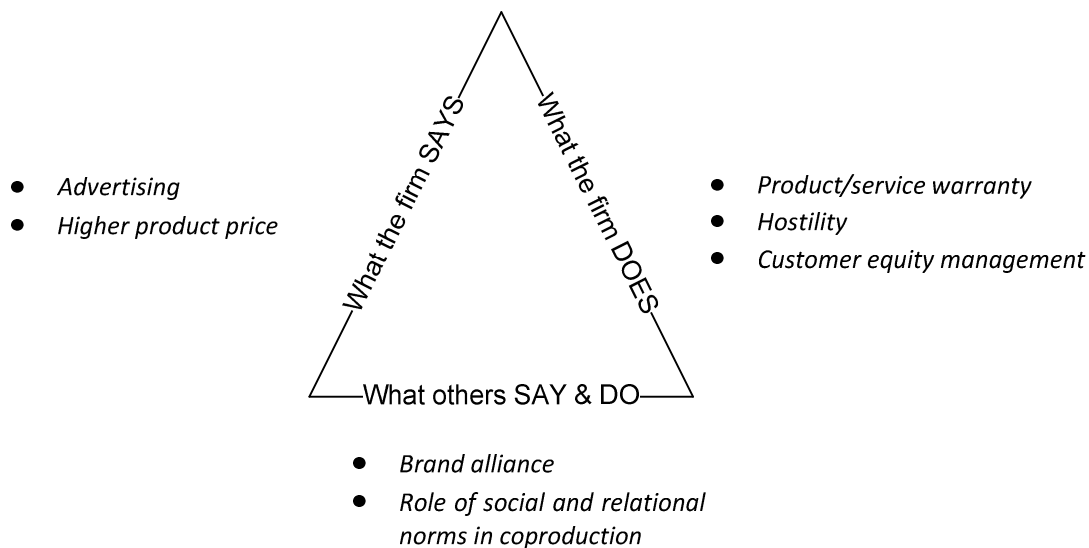


Figure6.2.2: Elements of Signals and Service Dominant view NOT addressed in concept development project 'X'

In the category *what the firm does*, focusing on *product/ service warranty* can help the company in later phases when they want to sell the final product/ service. This element can be accounted as a driving force for the customers to rely on the signaling offers' honesty; otherwise the customers have the possibility to punish the company according to the warranty agreements. The element of *hostility*, as described in Section 2.1.4.7, is usually sent from the company to its competitors to win the competition. Since the concept development Project 'X' as described in Section 5 was an ongoing project in concept testing phase, the final concepts had not been selected and visualized for future offers. Therefore this activity (i.e. hostility) was not expected

to occur in this phase of concept development before the competition is started. Moreover, as the element of *Customer equity management* can help the company to gain more customers and increase its revenues, this activity is also more well-suited for later phases. When the final product/ service is out in the market and the company wants to attract more customers this signaling activity is expected to be considered.

In the category of *what the firm says*, the elements of advertising and price despite being the historical methods for signaling the product/ service quality were not in the focus of project 'X'. Advertising is planned to be used as the main method for communicating the features of final product/ service in later phases. Sales plans and pricing are also planning based on the final outcome(s) of the concept development process, before entering the market. However, no conclusions about their usefulness in concept development projects can be made from this study.

Finally, in the group of *what others say and do*, although two different divisions are working together on the project, which is one of its competencies comparing other concept development projects, the brand under which the final product/ service is going to be offered has not yet been decided. On the other hand the two divisions have almost the same customers; therefore the element of *brand alliance* is not influencing the concept development process in this project. However, as a result of discussion above, it is expected that brand alliance in other projects improves the process by integrating different customers' insights from the different brands. On the other hand by combining the different capabilities of the brands included which are perceived valuable for the customers, the process becomes stronger and more ambitious from the customers' perspective. Lastly, the *role of social and relational norms in co-production* is also important when the product is going to be delivered to the market; therefore using this element in today's phase of the concept development project was not expected.

6.1.5 Costly signaling activities

Another focus of semi-structured interviews was to understand the actions undertaken by the company consistent with costly signaling activities. The main characterizations of costly signals were presented in Section 2.1.5 according to Miller (2009). There, it was mentioned that a costly signal is a reliable, difficult to imitate signal sent from the company to suppliers, competitors or customers. On the other hand, the wasteful nature of conspicuous consumption is inherent in

these types of signals in the sense that for a signal to become costly, it demands conspicuous waste, precision or reputation, all defined in Section 2.1.5.

While investigating concept development project ‘X’, the interviewees were asked about different actions taken by the company in order to make their project and more specifically their offerings hard to replicate by their competitors. Other than intellectual property protections such as patents or trademark which were not the focus of this study, the interviewees referred to significant investments of time and money in concept development projects. They described that especially in the early phases of concept development when the company is studying market insights the learning nature of the process requires an unusual expenditure of time which was not common in traditional product development projects. Comparing this to costly signals framework, in understanding customer’s insights, converting understanding into requirements and generation of concept ideas *conspicuous precision* is more taken by the firm for making the process reliable. On the other hand, as it was mentioned in Section 6.1.3 the brand name and brand image of the company have crucial influence in customers’ reliance on the project and their cooperation in concept development process. Since brand name and image can be considered as two measures of company’s reputation, the role of *conspicuous reputation* in providing costly signal can be confirmed as well. Moreover, after the concept generation phase is finished and the company starts the actual development of the concepts, substantial investment of resource and money is needed which reveals the demand for *conspicuous waste* from the company, in order to provide hard-to-replicate offers.

“To be in the concept phase is not that money intensive, it is more the research that we invest in... to do the research in the right way and to know what we are aiming for and to communicate it with our customers takes a very long time”. (Interviewee 4)

Accordingly it can be concluded that in order to differentiate from the competitors and being the first mover in the market, the company is using different approaches which can be addressed as costly signaling activities. Different costly signaling activities can be taken in different phases of the concept development project which explains the relative portion of all activities in the project as a whole.

6.2 Using a PSP approach for conducting Concept Development

During the empirical investigation, one interesting finding was that a similar approach to what is conducted in problem solving approaches was taken by the company in order to identify and select the best concepts. The idea was initiated by understanding that the company has conducted two intensive workshops at the very beginning of the project, as they were described in Section 5, in order to identify customers' needs in the form of problems and their solutions. The first workshop has been held after interviewing different customers about their insights and problems. In that workshop selected people from the project group were brainstorming the problems identified from the interviews and more specifically identified the opportunity areas based on the problems. The second workshop was then for suggesting solution alternatives for those problems considering both customer values and company values. This perspective for identification of opportunity areas was consistent with the literature in perceiving opportunities as problem-solution pairs (Hsieh et al., 2007).

Integrating more the concept development process with what was reviewed in literature of PSP presented in Sections 2.4 and 2.5, we tried to build a similar approach to the five step PSP model for conducting concept development process and then see if the interviewees confirm them. The steps are presented in Figure 6.2.1. and the basic assumptions taken for building this approach are presented below the figure.

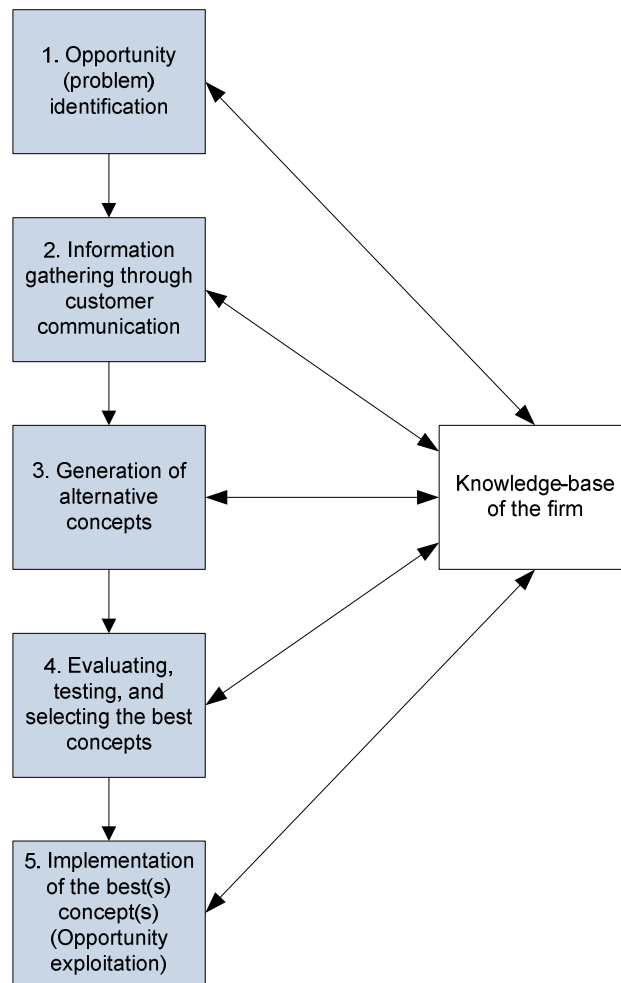


Figure 6.2.1: A five-step PSP approach for conducting concept development

As discussed earlier opportunity and problem-solving pairs have the same nature, therefore we try to build a problem solving approach for identification and exploitation of opportunities in concept development projects.

Since understanding the customers' needs, perceptions and expectations are vital in building concept ideas, integration of the knowledge-base of the firm in the framework was essential. Moreover deploying problem solving approach in concept development leads to creation of new knowledge in some or every stages of the concept development process. Therefore every stage of the process should be linked to the knowledge-base of the firm (The two-way arrows to the box knowledge-base of the firm indicate these dual relationships).

Since the most economical way of conducting PSP as presented in Section 2.5 is through the sequential approach the ideal assumption is to build the process sequentially. However taking cyclical approach has nothing in contradiction with the model since the focus of this model is not on the economical terms of the process; only some steps will be repeated if necessary during the process which won't affect the nature of the assumptions and outputs of the model.

According to Section 5, after checking the five-step PSP approach with the interviewees they all confirmed that the concept development process is following the PSP approach. However, as it was described in Section 5, two steps of concept development process namely, identification of different opportunity areas after gathering customers' insights and further development of selected concepts after the evaluating and testing phase are conducted as independent steps in the process. These two steps are not well-addressed in the five-step PSP approach. Therefore it was decided to perceive these steps enough important to be considered separately rather than inherent in their parent steps. The PSP framework was extended due to this consideration and the new seven-step PSP framework was created as it is presented in Figure 6.2.2 below .

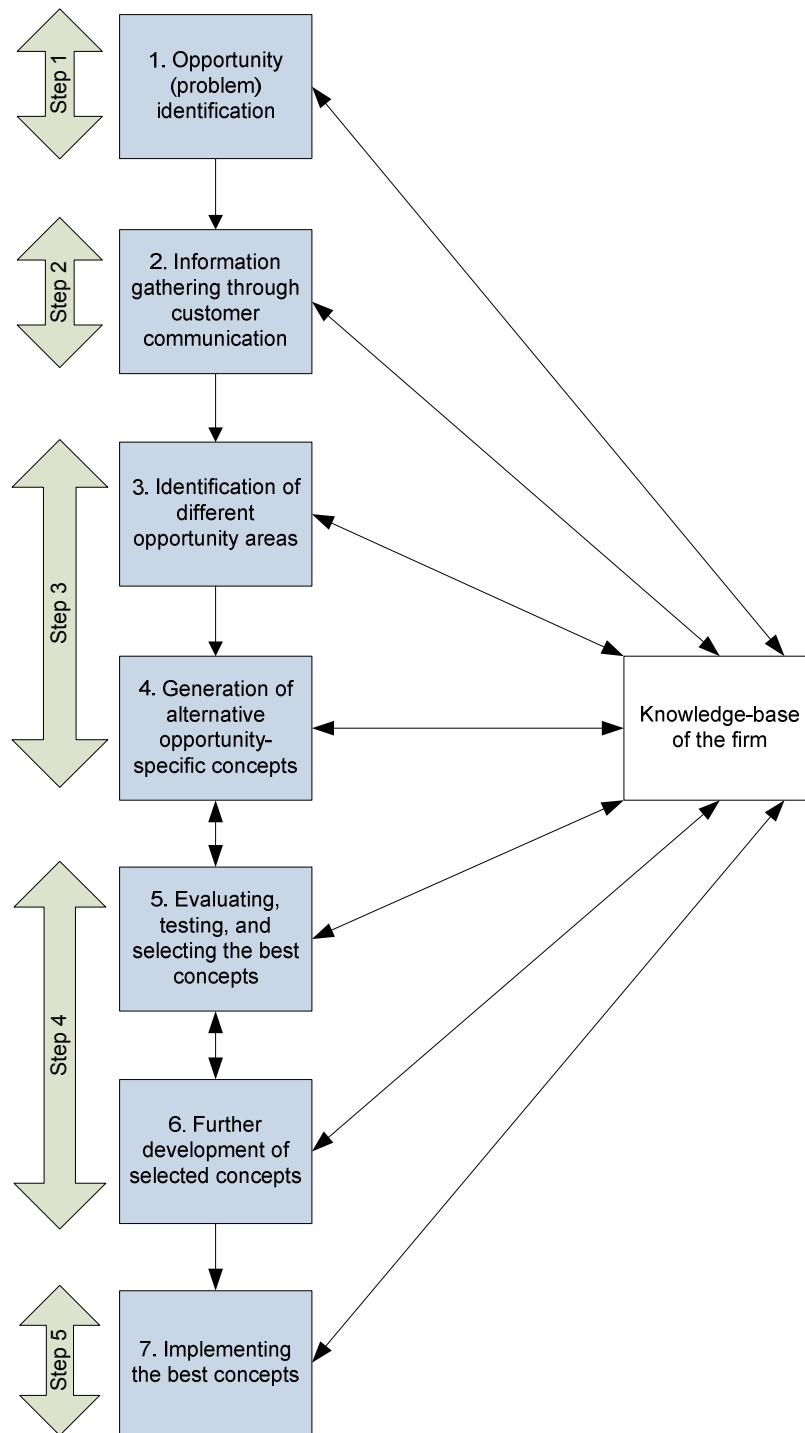


Figure 6.2.2: The extended seven-step PSP approach for conducting concept development

The thick arrows at the left side of the boxes are the related steps of the main (five-step PSP) framework. These arrows show which steps of the new figure were assumed to be together as one step in the main framework. The two-way arrows between steps 4 to 6 are because of the learning cycles between them as it was described in Section 5.

Worth to mention is that comparing the seven-step PSP approach to the process of concept development described in Section 5, it can be discussed that the last step of the PSP approach (i.e. implementing the best concepts) is not actually conducted during the concept development process. Implementation of the selected concept(s) deals with the actual product/ service development and is conducted by PDNI department after the concepts are decided and communicated to them as described in Section 5.

To sum up, the empirical investigation shows that the concept development process presented in Figure 5 is conducted in a similar way to what happens in five-step problem solving technique introduced by Chakravorty et al. (2008). Considering this, firms can take PSP while conducting concept development projects, define their concept opportunities as problem-solution pairs, and create new knowledge which is the fundamental source of competitive advantage in the viewpoint of Vargo and Lusch (2004). Mapping concept development process on opportunity identification and exploitation phases of entrepreneurship, the concept development in project 'X' is from Kirzner's type of entrepreneurship leading to incremental innovations. The project is more integrated with opportunity identification phase of entrepreneurship process. However actions taken in opportunity exploitation phase such as acquiring resources are also addressed in this project. Concept Development finishes before the opportunity exploitation phase is completely done, given the fact that the actual developments of the products/services or communication of offer characteristics in the market for example through advertising is out of the focus of concept development project.

7 Conclusion and Further Research

7.1 Conclusion

The aim of this study was to identify the elements of signals and costly signals in the concept development process of an innovating firm from innovation opportunity perspective through empirical investigation. In this section the conclusions that can be drawn from this study will be presented and by answering the research questions, the aim of the study will be accomplished. In the following each research question will be asked again and the conclusions for them will come after.

Research question 1: What elements of signals and costly signals are included in the concept development process of an innovating firm?

The main elements of signals that were addressed in the empirical study according to the framework of Figure 3 were:

From *what the firm does* category the company formulated *better value proposition* as the main reason behind conducting concept development project. The purpose is to provide as many values as possible for the customers and as early as possible to become the first mover in the market. Differentiation and diversification as two types of *strategy signals* were addressed as the company's guidelines for providing better value propositions. Since concept development is an approach for understanding and dealing with customers needs from the early phases of innovation identification, a good knowledge-base is needed in this type of project. By *establishing resource networks and outsourcing required knowledge and skills to the network*, the company can track customers' insights as well as technology insights and market trends. After understanding the needs of customers the company tries to define business opportunities which are satisfying those needs and at same time compatible with their capabilities and previous products/services (i.e. the element of *product/ service compatibility* is addressed here). For understanding and gathering customers' insights the company uses different methods according to the setting and goals of the project, all aiming for creating a *constant dialogue with the customers*. After different concept ideas are generated, they are tested with the customers and different offers can be made for different customers. Therefore the level of customization in company's offers is higher in concept development project than the traditional product

developments in which customers were informed about the characterizations of the product/service after it was marketed (i.e. *providing customized services* is confirmed here). Moreover by integrating two different divisions in this project the company is *developing and coordinating resources* which were working as two independent resources previously. This integration between the two divisions was because of their common intension to focus more on their *customer relationship management* processes through concept development.

From *what the firm says* category, accessing the customers and collecting their voices for future innovations is appreciated by the customers since it reveals the *commitment* of the company to them. Other than commitment the relationships between the company and its customers is under the influence of previous business performances (i.e. *accounting signals*) of the company and the extent to which the company has been successful to satisfy customer's needs and expectations.

Finally from *what others say and do* category *brand name*, and *repeat patronage* of the company were defined as the elements that are motivating the customers for participating in the concept development project. Moreover since the value is created by the company and perceived by the customers the credibility of company's intentions is measured by previous *value perceptions* of the customers. *Institutional signals* such as signals that reveal company's attention to social and global trends are also important in the way the customers behave.

Different elements of costly signaling are also addressed by the company in different stages of concept development process for making the outcome hard to imitate by the competitors. The significant expenditure of time and precision for generating and testing the concepts is consistent with *conspicuous precision*. The importance of company's reputation for motivating the customers to cooperate reveals *conspicuous reputation*, and the expenditure of money which is needed for investing in the actual development of the selected concepts and creation of customized products/services is consistent with *conspicuous waste*.

Research question 2: How innovation opportunities are identified and exploited in the concept development process of an innovating firm?

The process of opportunity identification and exploitation in the concept development project is taken in a way similar to the steps of problem solving technique. Therefore a PSP approach can be used for conducting the generic steps of concept development. The seven steps are defined as

opportunity identification, information gathering, defining different opportunity areas, generating alternative concepts, evaluating, testing and selecting the best concepts, further development of selected concepts, and implementing the best concepts. The steps are not always followed sequentially; between some steps feedback cycles are needed due to the importance of continuous learning in those steps. Taking the PSP approach for conducting concept development shows that opportunity identification can be investigated beyond the scope of entrepreneurship literature. Opportunities, in a concept development project can be created by defining problems and identifying solutions for them. Taking the perspective of problem solving during a concept development process can help the company to better address the customers' problems as opportunity areas and provide valuable solutions for them.

7.2 Further Research

A limitation of this research project is that the focus has been on one specific concept development project of a consumer product and service developing and marketing company. Therefore, the result of this project is not suitable to be generalized for the whole consumer product and service development and marketing industry. Investigating more concept development projects could have given more insight on the elements on signals and costly signals being included in the concept development process. Moreover, it would have made it possible to find out more detailed process of innovation opportunity identification and exploitation in the concept development process.

Further research could potentially include scrutinizing more concept development projects from various other companies working in the mentioned specialization area and discovering more signal elements through contrasting, characterizing and potentially grouping them in the integrated marketing communication triangle. Such taxonomy could be useful for further improvement of the communication triangle, generalizing the findings regarding the utilized signal, costly signal elements in the concept development process of the overall product and service development and marketing industry and exploring more steps being conducted for innovation opportunity identification and exploitation. Additionally, concept development projects of companies working in the context of other industries could also be examined to see what kind of differences exist in the exploited signal, costly signal elements and whether the

process of innovation opportunity identification and exploitation in the concept development process follows the same route.

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Appendix: The Interview Guide

Background Question:

- Please describe the concept development process from your perspective?
- What is your role in the concept development project?
- What were the reasons and motives for the company to start the concept development project?

Note: By this question we want to investigate whether the company had experienced a problem or identified an opportunity that led them to think about a new concept.

Research Question 1:

1.1 What types of information do you require from customers to develop new concept?

Note: By this question we need to find out information about product/ service quality and market position.

1.2 In what ways do you communicate with the customers (and competitors)? What is it that you intend to stress?

Note: This question asks about signaling activities in “what the firm says” part.

1.3 What measures are taken by the company that makes the customers to rely on their project and be sure about the credibility of their intentions?

Note: By this question we want to investigate how the firm clarifies the honesty of its signals.

1.4 What activities / announcements of potential actions are you intended to undertake for the concept development project?

Note: This question asks about signaling activities regarding the part “what the firm does” of the framework e.g. provide customized services, coordinate resources.

1.5 In your opinion what features of the company help the customers to contribute in the concept development project?

Note: This question asks about “what others say and do” of the framework and the signals in this part.

1.6 How the selected information/activities above are hard/ impossible to imitate by your competitors? For example through substantial investment of time and money, strong reputation, patents, trademarks, copyright protection

Note: This question investigates the costly signals in all the three parts of the framework.

Research Question 2:

2.1 What types of opportunities did the company identify in customer/industry environment that motivated you to go for the concept development project? Please provide some examples.

2.2 How the opportunities were identified?

2.3 Based on what characteristics were the opportunities prioritized and selected?

2.4 Do you address the opportunities in the following steps?

1. Opportunity identification
2. Information gathering
3. Generating alternative concepts
4. Evaluating, testing and selecting concepts
5. Implementing the best concepts

2.4.1 Are there any additional steps in between or any differences from the above approach? Please describe the process in each of the steps.

2.4.2 Are the steps conducted sequentially or you move back and forth?

2.4.3 In step 4, does any change occur in the concept based on the testing results?

Open Question:

- How do you think this concept development process in general can be improved?