

Characteristics of Knowledge Marketing

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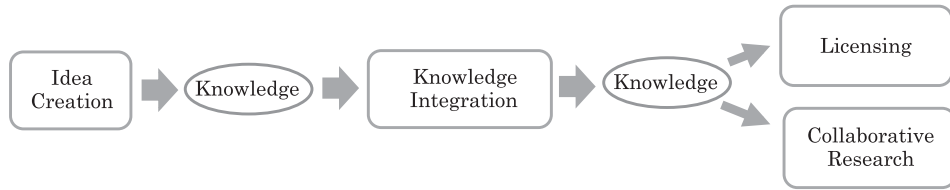
I Introduction

In the era from the 1960s to the 1980s, as Japan's economy grew rapidly, sales of manufactured goods, such as automobiles and electronic equipment, rose dramatically; this was followed by sales in the service sector. The expansion of Japan's economy demonstrated Petty-Clark's law in its progression from primary to secondary and then tertiary industries. However, the importance of knowledge to the economy became evident only in the later years. As Drucker (1993) and Burton-Jones (1999) observe, companies increase sales and profits by substituting knowledge for labor. Machlup (1962) and Drucker (1969) call this phenomenon "knowledge economy." Discussions of the knowledge economy raise two problems for companies: how to create knowledge and how to manage advanced knowledge (Nonaka, 1985; Nonaka, 1990; Nonaka and Takeuchi, 1995; Nonaka and Konno, 2003; Nonaka and Konno, 2012).

Marketing is indispensable for selling products. Drucker (1954) insists that companies exist to create customers, making marketing and innovation their basic functions. Teece (1986) suggests that innovation may not generate profits but marketing and productive capacity preside in doing so.

Formal study of marketing began in the early 20th century, and its practice advanced as economies expanded after World War II. The guiding theme of marketing was that companies distribute products throughout markets so as not to accumulate inventories as factories became mechanized. The assumption that industrial products are tangible goods was implicit. The role of marketing changed as the service sector grew in prominence. Services marketing, particularly B-to-B marketing of producer goods, expanded, and with it came the issue of how companies market knowledge to each other as a crucial production input. Tomita (2014)

Figure 1 Knowledge Marketing Model



mentions that services marketing and B-to-B marketing are limited in dealing with knowledge; however, it is necessary to identify what knowledge marketing is because knowledge continuously gains economic importance. Therefore, this study identifies the characteristics of knowledge marketing. We examine pharmaceuticals as a knowledge-intensive industry and present Knowledge Marketing Model (Figure 1) (Tomita, 2014). We investigate the four processes of idea creation, knowledge integration, licensing, and collaborative research. Section 2 reviews each of the processes, and Section 3 considers the characteristics of knowledge marketing.

II Results

II - i . Idea creation (Tomita, 2014 b)

Companies must create knowledge; however, creating useful knowledge is difficult. Eisai Co., Ltd has established a Knowledge Creation Department to create knowledge, particularly ideas. Patented drugs are improved by following the 1% Rule and the *hcc* driven innovation policy. Development includes epoch-making new drugs (radical innovation) and the improvement of existing drugs (gradual innovation). The departmental policy pertains mainly to the latter.

To improve the ease of taking drugs and their effects, it is important to understand patients' needs and behavior. All Eisai employees spend 1% of their work hours in facilities that treat patients with symptoms of dementia. This requirement promotes knowledge and product development.

We obtained three findings from the Eisai case study. First, development of improved products involves accumulating new knowledge atop previous knowledge. Second, researchers can understand issues with current drugs by associating with patients and gathering ideas for improvements. Knowledge creation involves contact with patients, that is, customers. Third, we confirm the importance of a customer orientation.

Comprehending customers' needs and building relationships with them are top marketing

priorities and important knowledge-creating activities in the knowledge-intensive pharmaceutical industry. We confirm that technology-oriented companies must become customer-oriented in their R&D.

II - ii . Knowledge Integration (Tomita, 2015)

One division in a company may create knowledge, but opportunities to transfer it among divisions increase because combinations of sophisticated knowledge are necessary for developing new products. A prime example is the transfer of knowledge from overseas research facilities to a company's central research institute. The transfer of explicit knowledge is less effective than the transfer of tacit knowledge ; however, cross-border transfers are made difficult by organizational factors. Previous studies distinguish the senders of knowledge from its recipients ; however, both parties are senders and recipients, and separating their role is undesirable. Joint knowledge must be integrated to create new knowledge.

The early stages of research into the anti-seizure drug Perampanel exemplifies how Eisai's domestic research institute in Tsukuba and its London research institute mutually absorb and integrate knowledge and create new knowledge.

Our analysis reveals three results : 1) The difference in knowledge between domestic and foreign researches is minimal ; 2) an informal communication path exists ; and 3) both parties monitor each other.

First, both parties share knowledge equally. Second, dialogue between parties builds trust that advances knowledge. Third, Eisai's institutes operate as equals that monitor research and results without strained relationship.

II - iii . Licensing

Creating ideas and integrating knowledge belong to internal marketing. However, licensing and collaborative research belong to external marketing because they provide knowledge outside a company.

Many drug development ventures seek to license knowledge profitably but often are unable to do so. Our survey research examined how drug development ventures and pharmaceutical companies seek to close this gap and found five relevant characteristics.

First, knowledge and its promotion are affected by the persons participating and the prevailing situations. That is, knowledge depends on context. Second, borders between disclosure and non-disclosure of knowledge fluctuate through negotiations. Therefore, a manager with requisite authority should oversee negotiations. In addition, dialogue with the

buyer is important. Negotiators cannot disclose knowledge randomly, but they will disclose it to a trustworthy partner. Thus, negotiations require networks (bonds) that are narrow and strong. Third, to make a deal in knowledge is to deal in unfinished goods. One party transfers knowledge and another develops it to create new knowledge. Fourth, deals coalesce in the interval where differences between the seller's and buyer's knowledge are smallest. In the marketing of knowledge, the seller in a drug development venture raises the buyer's knowledge and narrows differentials in knowledge. This endeavor differs from general business marketing, which relies on asymmetric information. Fifth, a customer orientation is important. Venture companies are technologically oriented, but the buyer of a pharmaceutical compound must produce it. Therefore, disclosure of such knowledge is expected.

II-iv. Collaborative research (Tomita, 2010)

Collaborative research is a form of external marketing. When a company finds a collaborator, it must elevate the partner to its level of knowledge. Knowledge marketing is essential. Collaborative research advances in cooperation; however partners remain as competitors. Therefore, collaborations between companies fall under internal marketing to the extent that companies cooperate and under external marketing to the extent that they compete. Collaborative research is the ultimate in knowledge marketing.

We prepared a questionnaire survey to examine collaborative research between pharmaceutical companies in Japan and the United States. First, we clarified the importance of partners trusting each other's capabilities. Cooperation increases when trust increases, and new knowledge is created. Then we examined factors that enhance that trust. Our survey identified academic and research achievements as two factors that enhance collaborative trust. Collaboration often occurs during the discovery stage of R&D before companies acquire a patent. Therefore, promotion cannot be based on patents, and it is important to construct the hypothesis "Compound XX can treat disease YY" through scholarship and research. During collaborations, however, knowledge/information/technology and communication are important. Knowing the partner and communication based on knowledge builds trust in capabilities.

Four findings emerged. First, the need for collaborative research means that knowledge is not created within one company. Even if one company could bring R&D to a conclusion independently, it will choose a strategy that shortens the time spent on R&D. Second, knowledge creation is based on mutual trust in a partner's capability. Third, academic and research achievements promote knowledge. Fourth, through knowledge/information/technology and communication, collaborative companies become equal in knowledge. Asymmetry in

Table 1 Findings in this study

II - i	Idea Creation	<ul style="list-style-type: none"> •Development of improved products involves accumulating new knowledge atop previous knowledge. •Knowledge creation involves contact with customers. •Technology-oriented companies must become customer-oriented in their R&D.
II - ii	Knowledge Integration	<ul style="list-style-type: none"> •Both parties share knowledge equally. •Dialogue between parties builds trust that advances knowledge. •The institutes operate as equals that monitor research and results without strained relationship.
II - iii	Licensing	<ul style="list-style-type: none"> •Knowledge depends on context. •Borders between disclosure and non-disclosure of knowledge fluctuate through negotiations. •To deal of in knowledge is to deal in unfinished goods. •Deals coalesce in the interval where differences between the seller's and buyer's knowledge are smallest. •A customer orientation is important.
II - iv	Collaborative Research	<ul style="list-style-type: none"> •The need for collaborative research means that knowledge is not created within one company. •Knowledge creation is based on mutual trust in partner's capability. •Academic and research achievements promote knowledge. •Asymmetry in knowledge does not exist.

knowledge does not exist. Table 1 indicates these findings.

III Five characteristics

Tomita (2015) identifies five characteristics of knowledge: cumulative, situation dependence, novelty, not open to the public, and difficulty of the evaluation. Following this work, we identify five characteristics of knowledge marketing.

First, new knowledge is accumulated atop existing knowledge. Therefore, knowledge marketing involves unfinished goods. A company presents its knowledge to partners and both jointly create a new product. We found that accumulating new knowledge atop existing knowledge occurs during the idea creation stage. We found that the licensing stage confirms that knowledge is an unfinished product. The collaborative research stage demonstrated that knowledge creation is not concluded by only one company (Table 1). During integration stage, knowledge is transferred as an unfinished product that its recipient completes. The status of knowledge as an unfinished product is established throughout the stages of idea creation, knowledge integration, licensing, and collaborative research. Once it becomes evident that knowledge is an unfinished product, the need for knowledge marketing becomes apparent.

Second, knowledge is situation-dependent and meaningful only to the involved parties. Tacit knowledge lurks behind explicit knowledge is more important than transactions of explicit

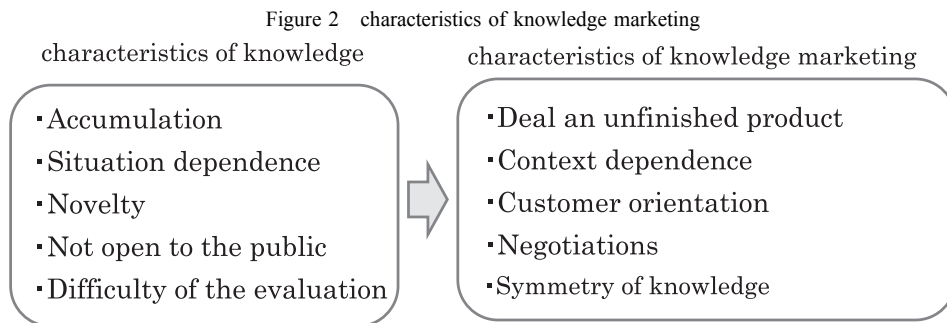
knowledge.¹ Tacit knowledge is transferred via relationships between sender and receiver or buyer and seller. Its value is assessed within those relationships and fluctuates with context. The idea creation stage confirmed that knowledge creation depends on the context of the customer, and the licensing stage demonstrated that knowledge and promotion depend on the context (Table 1). These depend on the seller understanding what the customer needs and providing knowledge to match it. Documented during the collaborative research stage, the finding that knowledge is created through trust relates to interactions with the partner company and establishes context dependence.

Third, knowledge has novelty, and its value is high in the projecting knowledge for a technical level, but sellers must be customer-oriented when marketing knowledge. In other words, the seller pursues knowledge through its technology orientation, but a buyer may not be interested even in knowledge of the highest order if the seller disregards marketability. In a high-performance market, an epoch-making product was sold innumerable, but sales are inadequate, and many products become extinct immediately. The buyer expects only uniform functioning, and the product need not be “super.” The buyer regards convenience as more important. Knowledge parallels this example. Therefore, the seller must offer downstream knowledge about a product’s manufacture. The importance of a customer orientation appeared during the idea creation stage and the licensing stage (Table 1). Even though the seller is technologically competent, it must be customer-oriented.

Fourth, the seller does not reveal knowledge before the sale, and negotiations are indispensable because the value of knowledge is difficult to convey. During negotiations, the seller reveals knowledge only to a trustworthy partner so that knowledge must be transmitted in a small, strong network. When a partner proves reliable, the seller may reveal undisclosed knowledge. The boundary between unrevealed and revealed knowledge fluctuates with the negotiating situation. The knowledge integration stage demonstrated the necessity of communication and importance of parties functioning as equals. The licensing stage showed that the border between undisclosed and disclosed knowledge fluctuates during negotiations (Table 1). Because sender and receiver and seller and buyer are co-equals, both can communicate and negotiate at a high level.

Fifth, the difficulty of evaluating knowledge is a disincentive to doing business. In general

1 Nakamura and Asakawa (2004) give chemical formulas and genetic base sequencing as examples of explicit knowledge and assessments of side effects and market size as examples of tacit knowledge. The possibility of side effects is important tacit knowledge but also may discourage the buyer. Therefore, a seller must also reveal positive tacit knowledge to establish business potential. The value of knowledge as a product rises with the probability that the buyer can manufacture the item based on that knowledge.



marketing, sellers rely on asymmetrical information by withholding knowledge about a product and business structures. The seller of knowledge first must elevate the buyer's knowledge so it can judge the value of advanced knowledge. Knowledge marketing involves reducing the asymmetry of knowledge between seller and buyer.

We found that the quantity of knowledge is small during the knowledge integration and licensing (Table 1). However, the collaborative research stage showed the importance of equalizing knowledge. Asymmetry of knowledge declines and the increased knowledge of both parties raise the probability that research will produce productive results.

The five characteristics of knowledge marketing correspond to the five characteristics of knowledge indicated above (Figure 2).

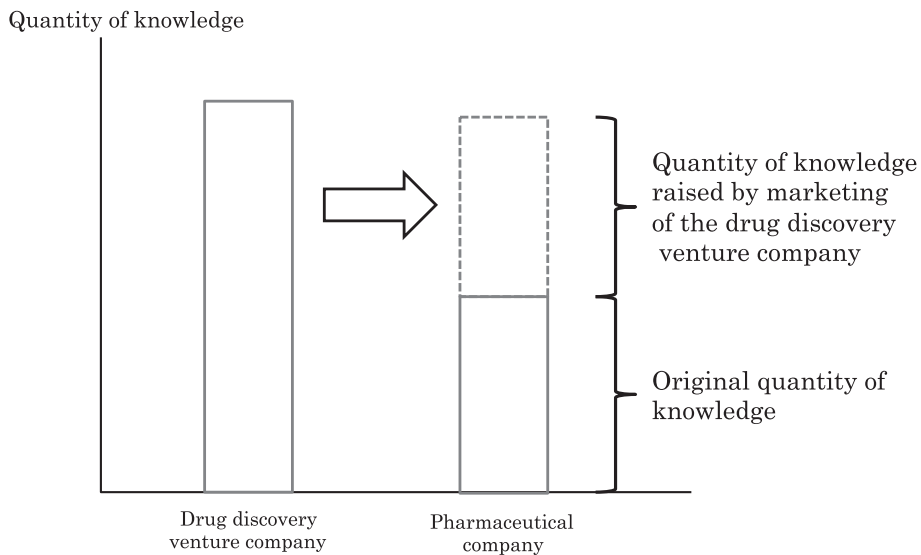
IV Discussion

IV- i . Knowledge disparity

We now compare knowledge marketing with general marketing.

Consumer goods are distributed between search goods with a searching characteristic and experience goods with an empirical characteristic (Nelson, 1970 ; 1974). Credence goods assume the positions of the service provider judgment materials exists. Knowledge goods resemble credence goods in that their quality is hard to evaluate, but the buyer examines quality closely and makes a decision about the purchase. When the marketing of knowledge begins, knowledge is asymmetrical between buyer and seller. The drug discovery venture company has extensive knowledge about its research and resources, but a buyer has no axes on which to evaluate that knowledge objectively. Therefore, the seller must demonstrate the value of its knowledge so the buyer can create an evaluation axis. Thus, the seller must disclose its knowledge as a product.

Figure 3 Quantity of knowledge difference



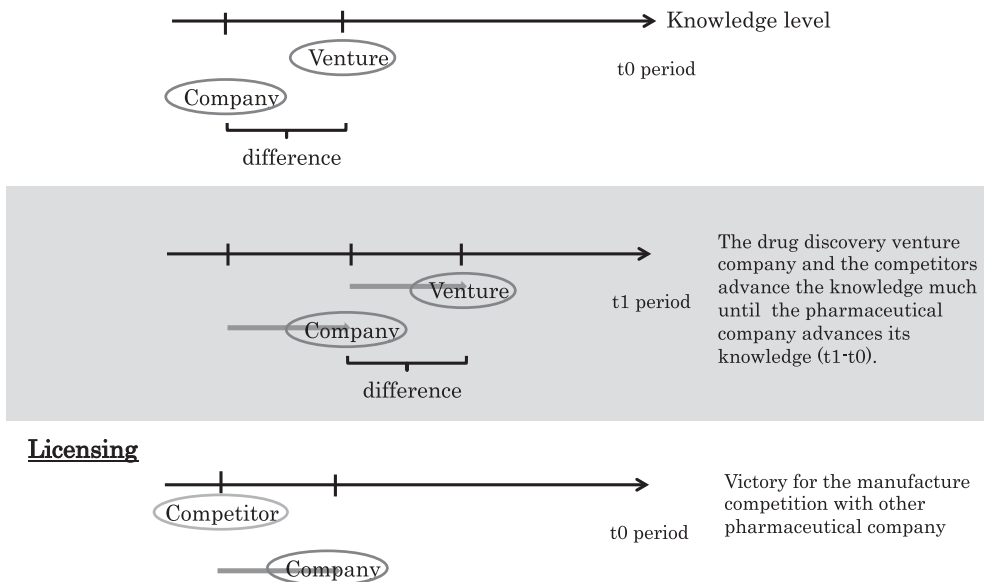
The buyer does not reveal the chemical structure of the compound, but presents its research as the nucleus of its discovery. Concretely expressed, “Compound YY can treat disease XX with adequate safety by coordinating function ZZ of a protein.” In other words, the drug discovery venture company hints at the nature of its discovery to its partner-competitor pharmaceutical company.

By doing so, knowledge differentials diminish (Figure 3). In marketing general goods, disclosing knowledge to a buyer who is a competitor can be fatal for a seller. That is not the case with knowledge goods because of patents and time.

Patents prevent others from copying a discovery without permission, and the R&D period for drug discovery is long. Patent protections and extended research horizons encourage the seller of pharmaceutical knowledge to disclose information to the buyer because the buyer can advance R&D to a higher stage.

Figure 4 shows this aspect. At first, the knowledge of the drug discovery venture company advances to that of the pharmaceutical company at period t_0 . At this time, the drug discovery venture company demonstrates the value of its knowledge to sell the knowledge as a product. However, the pharmaceutical company does not buy the knowledge and conducts R&D by itself because it gets a hint from the drug discovery venture company. The drug discovery venture company can continue to advance its research much until the pharmaceutical company advances its knowledge at the level of the drug discovery venture company at period t_1 . The drug discovery venture company also can advance R&D during this period (t_1-t_0). The knowledge differential between parties does not shrink. If the pharmaceutical company buys

Figure 4 Knowledge level of the drug discovery venture company and the pharmaceutical company



the knowledge at period t_0 , it achieves victory in the manufacturing competition with other pharmaceutical company. In short, the buyer purchases time for R&D when it buys the seller's knowledge and the seller has no disincentive to reveal its knowledge.

The seller's willingness to share knowledge with a buyer differs greatly from general marketing. Traditional marketing models assume that a seller benefits by maintaining asymmetric information about its product. In knowledge marketing, by contrast, a seller seeks symmetrical knowledge. It is not merely that time is needed to develop knowledge ; it is also that evolving knowledge threatens product obsolescence. Therefore, it benefits the seller to sell knowledge quickly at a high price while it is current. The multiple importance of the time element distinguishes knowledge marketing from a standard marketing model.

The fourth characteristic in Figure 2 is that knowledge is "closed." That characteristic warrants some modification, however, because a contradiction arises. Sellers want to avoid revealing essential information prematurely, but they must reveal enough to convey the value of immaterial knowledge to a buyer. A strategic demonstration is necessary, and that makes a small, strong negotiating network indispensable for creating mutual trust. The buyer wants to avoid paying for poor knowledge, and the seller wants to avoid disclosing knowledge to an indifferent or opportunistic buyer. Therefore, negotiation becomes important for both parties in judging and selecting an appropriate partner.

IV - ii . Negotiation

Negotiations between seller and buyer usually are extended. For the major pharmaceutical company that is a buyer, knowledge is expensive, multiple decision-makers are involved, and the boundary between disclosed and undisclosed information fluctuates. For all these reasons, the seller's business manager should direct negotiations. This point differs from general marketing in which salespeople are the negotiators or middle managers oversee knowledge management, as Nonaka (1996) and Aoshima and Nobeoka (1997) note. In this case, however, a senior executive must oversee negotiations because decisions that determine the fate of the company are made almost instantly in knowledge marketing.

Traditional marketing involves tangible goods that buyers often can evaluate without additional explanation. Negotiations are less about explaining the product and more about such issues as price and delivery. Knowledge goods are intangible and require complicated negotiations to transmit their value. The need for extended negotiation is characteristic of knowledge marketing.

Pisano (2006) argues that new drug development is an art dependent on personal judgment, intuition, and experience. In other words, the element of tacit knowledge is strong. The promotion of tacit knowledge, however, is more difficult, so the transfer of tacit knowledge is difficult (Szulanski, 1996). A good relationship with a reliable partner is necessary, and multiple negotiations become necessary for transmitting tacit knowledge.

In addition, the marketing of knowledge as an independent product differs from marketing knowledge-based final products. The seller of PC software reveals its contents and promotes it to millions of possible customers. The seller of knowledge promotes it to one customer intent on buying it and discloses its contents during progressive negotiations. Customers who buy music software, download music, and copy it must regenerate it. A customer does not process the music software, which is a finished product. When knowledge is the product, the buyer adds knowledge and creates further knowledge. The negotiation process makes the difference.

Our model of knowledge marketing embodies idea creation, knowledge integration, licensing, and collaborative research. It captures activities within the company during idea creation and knowledge integration and activities outside the company during licensing and collaborative research. After being integrated, knowledge is released externally. A seller promotes its knowledge and negotiates with a buyer. A company negotiates for the buying and selling in licensing, and negotiates before a contract for collaborative research. However, it must negotiate as needed during the collaborative research period after the contract because each party's profit differs. Because collaborative research differs from M&A, the different

company performs business only in the research jointly and relations with the competition coexist with cooperation. In other words, parties may negotiate a license only once, but they have an extended opportunity to negotiate during collaborative research. Both sides must bring their own knowledge and share it to perform collaborative research. Asymmetrical knowledge becomes symmetrical because both sides share knowledge.

Collaborative research is more predominant than licensing, but results are never assured. Risk dispersion becomes impossible during collaborative research. Each party must observe its partner's research and method. Because collaborative research is a series of transactions, parties must maintain equivalence of advanced knowledge.

V Conclusion

This study has identified five characteristics of knowledge marketing: an unfinished product, context dependence, customer orientation, negotiations, and symmetry of knowledge.

A customer orientation is necessary in general marketing, and context dependence may exist in general marketing, especially in B-to-B marketing. However, the unfinished nature of the product, the negotiation process, and symmetry of knowledge render knowledge marketing different from general marketing. Sophisticated knowledge is created by accumulating new knowledge atop existing knowledge. In this sense, the seller does not present knowledge as a finished product. It creates a knowledge product with the buyer during negotiations while learning the buyer's needs.

During negotiations, the seller must elevate a buyer's knowledge of its product because the buyer cannot immediately judge its value. The seller must offer the buyer hints about developing its product. These efforts elevate the value of the knowledge product. In new drug development, the seller should reveal possibilities for the new drug and elevate the value of the knowledge product.

Even if the buyer's knowledge eventually equals the seller's, the seller encounters no problem if it does not reveal the formula of its pharmaceutical compound because of patents and time. Patents and time are prominent influences on new drug development, as in other industries. In this sense, the five characteristics of knowledge marketing apply to any industry for which patents and time are relevant.

Patents are indispensable for product development, and a company must come to market earlier than rivals. However, it is difficult for a company to conclude R&D alone. It can buy and develop knowledge from other companies and assemble it to develop products. Therefore,

knowledge marketing influenced by patents and time becomes effective in other industries. Because a new drug requires approximately two patents, each patent is important for product development, and the pharmaceutical industry requires extended R&D. Thus, patents and time act in the pharmaceutical industry are much more important than in any other industry. As a result, the pharmaceutical industry expresses the characteristics of knowledge marketing conspicuously. This is why we focus on it in this study.

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