

## Analyzing the Process of Absorptive Capacity: A Case Study of Garment SMEs in Yogyakarta

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**Abstract:** *Absorptive capacity is defined as the company's ability to identify, explore, and apply knowledge gained from the external environment into the form of services. Previous studies examined this generally put forward the role of R&D and leadership authority to neglect the natural process of absorptive capacity. As a knowledge process, its natural process unseparated from the involvement of all parties in the company (including employees). This study aims to analyze the absorptive capacity process in Garment SMEs located in Yogyakarta with its characteristics that still prioritize business practices based on traditional approaches and local wisdom. By adopting a qualitative based on case studies, it found that the process of absorbing information generally carried out through informal interactions with customers and various communities. It is also confirmed that each stage of absorptive capacity does not always flow linearly, and the intensity of the absorption holds by companies determined by innovations required and the characteristics of the company.*

**Keywords:** *Absorptive capacity; exploration; transformation; exploitation; innovation capability.*

**Abstrak:** *Daya-serap diartikan sebagai kemampuan mengidentifikasi, eksplorasi dan menerapkan pengetahuan eksternal ke dalam bentuk produklayanan. Studi terdahulu yang mengkaji ini umumnya mengedepankan peran R&D dan otoritas pimpinan sehingga membuat proses natural kapasitas absorptive terabaikan mengingat aktivitas penyerapan pengetahuan tersebut tidak terlepas dari keterlibatan semua pihak di perusahaan (termasuk pegawai). Studi ini bertujuan menganalisis proses kapasitas absorptive pada UKM garmen yang berlokasi di Yogyakarta dengan karakteristiknya yang masih menerapkan bisnis berdasarkan pendekatan tradisional dan kearifan lokal. Dengan mengadaptasi pendekatan kualitatif studi kasus, maka ditemukan bahwa proses penyerapan informasi dilakukan umumnya melalui interaksi informal dengan pelanggan dan kelompok komunitas. Disini juga dikonfirmasi bahwa tahapan absorptive (identifikasi, eksplorasi, implementasi) tidak selalu mengalir linear dan intensitas daya serap tersebut sangat ditentukan oleh kebutuhan inovasi dan karakteristik perusahaan.*

**Kata kunci:** *Kapasitas absorptive, eksplorasi, transformasi, eksploitasi, kapabilitas inovasi.*

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Received: July 25<sup>th</sup>, 2020; Revision: November 20<sup>th</sup>, 2020; Accepted: December 14<sup>th</sup>, 2020

Print ISSN: 1412-1700; Online ISSN: 2089-7928. DOI: <http://dx.doi.org/10.12695/jmt.2020.19.3.6>

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## Introduction

The absorptive capacity has become an interest of scholars in the last several decades (Zahra & George, 2002; Akgun et al., 2003; Easterby-Smith et al., 2008). The concept of absorptive capacity is a complex construct requiring depth and detailed analysis. However, existing studies to this are mostly dominated by quantitative approaches (Sáenz et al., Revilla, & Knoppen, 2014; Alves et al., 2016; Costa & Monteiro, 2018; Gallegos & Torner, 2018; Patel, 2019) in which it is more appropriately used to test the theory, and a few studies used qualitative methods (Aribi and Dupouët, 2016). One study by Aribi and Dupouët (2016) noticed that the absorptive capacity depends on the research and development (R&D) of the firm.

However, in certain circumstances, there is a difference in the information required by the firm, and not all rely on R&D, so it will be irrelevant if applied to a firm that has limited research expertise (Kang & Snell, 2007). On the other hand, Easterby-Smith et al. (2008) observed the concept based on individual authority at the firm, so this restricted the nature of the absorptive capacity because not all elements can be involved. In contrast, it requires the involvement of all aspects in processing the knowledge (Szulanski, 1996). Individual authority refers to various actions performed by people within the organization related to learning, such as individual cognitive factors, attitude towards risks, knowledge acceptance behaviour, etc. As an organization comprised of individuals with different features of personal authority, this factor affects how knowledge is acquired and utilized by organizations.

As the first person applied absorptive capacity in the organizational context, Cohen and Levinthal (1990) defined it as the ability of the firm to identify, digest, and implement external knowledge into the form of products/services. As the ability of the firm to absorb knowledge from the outside, absorptive capacity, however, determines their ability to survive (Pauluzzo & Cagnina, 2017).

To understand how the processes absorbent capacity flow in a firm, it is essential to know the way a firm absorbs external knowledge in its dynamic environment (Eisenhardt & Martin, 2000) and it is the aim of the present study. This study used a case study method from three home-based manufacturing firms. In addition to limited R&D facilities, the firms also prioritize non-formal interaction in their operations. In this context, non-formal refers to unstructured activities conducted by individuals within the organization, aiming to create new knowledge such as technique and methods for the production process. The nature of non-formal interactions is amorphous, not documented, occurs in various occasion without any predetermined plan.

This study aims to analyze the process of absorptive capacity in SMEs, which are located in Yogyakarta, Indonesia. To achieve these, this article conducted by using the case study as explained by Eisenhardt (1989) Eisenhardt and Graebner (2007) and Yin (2009). The usage of the case study approach makes the researcher find and analyze the phenomenon which emerges on the object being investigated. A case study also is used to analyze the phenomenon which is rarely observed.

The rest of this paper is organized as follows: The following paragraph will discuss relevant literature on absorptive capacity. This then continues with the description of the research method followed by the case study description. The discussion will explain in the fourth part, while the last is the conclusion and research suggestion.

Historically, absorptive capacity was first introduced by Adler (1965) in the macroeconomic concern on financial ability in using and absorbing information/knowledge from the external environment. This concept was then developed by Zahra and George (2002) within the organizational context and defined it as the ability to identify, digest, and implement external knowledge into products/services.

The concept thus developed in various fields such as strategy '(Hu, 2012) knowledge management (Valentim et al., 2016), and innovation management (Macedo-Soares et al., 2017; Carpio & Torner, 2018) and made its definition varied. Cohen and Levinthal (1990), for instance, defined the absorptive capacity as the ability of an organization in conducting identification, assimilation, and exploitation of the knowledge from the external to develop product/service. Zahra and George (2002) highlighted the absorptive capacity as the organization's routine in obtaining, assimilating, transforming, and exploiting external information. These explained that the interaction occurring in the company comes as a stimulus for exploration and exploitation of knowledge.

Regardless of the different assumption models, it has, the absorptive capacity distinguished in three distinct phases; exploration, transformation, and exploitation. Firstly, the investigation represents the fundamental process of organizational learning (He & Wong, 2004). The firm interacts with its environment and transmits potential useful knowledge to their internal (Aribi & Dupouët, 2016). During the interactions, the firm scans the external environment for securing the description of its business and its environment (Lichtenthaler, 2009). The fruitfulness of the exploration determined by internal exploration competence (Hoang & Rothaermel, 2010) and external collaboration, such as technology purchase (Lane et al., 2006).

Furthermore, transformation according to Aribi and Dupouët (2016) is emerged in the form of knowledge adaptation until generating new knowledge that the firms understand the circumstances of their environments, which initially perceived as incompatible with the current cognitive frames of reference through dissociation. This process initiated for developing new perceptual changes to existing knowledge structures '(Todorova & Durisin, 2007).

Existing literature revealed the absorptive capacity as a nonlinear process, where back-and-forth in each stage occurred (Aribi & Dupouët, 2016), and it is defined by managerial authority (Easterby-Smit et al., 2008). This study is different from previous studies in several ways. The absorptive capacity process occurs either in a linear or nonlinear process, depends on the organizational characteristics, and how the firm reposes the information '(Todorova & Durisin, 2007). As part of the absorptive capacity process, the company which requisites high knowledge assimilation is not perpetually established by the exploration process. The method of knowledge identification does not end in the robust knowledge acquisition, and absorptive capacity necessarily is not terminated in the form of products/services, it depends on how the company perceives the information from the external.

In the final stage, new knowledge incorporated into products/services before being delivered to the market applied by integrating internal and external expertise (Rothaermel & Alexandre, 2009) to trigger innovations (Mulyana et al., 2015).

As the ability to absorb knowledge from the external environment, such capacity is an essential role in the success of companies, especially SMEs. Through these, external cooperation (Muscio, 2007; (Sari et al., 2017) to encourage innovation (Aboelmaged & Hashem, 2019), product development, and market expansion (Tzokas et al., 2015) might be done. In Indonesia, one study conducted by Geenhuizen et al. (2010) confirmed that the process of absorptive mostly carried out through learning-by-doing, and informal contacts with customers. Companies also try to absorb information through a formal approach such as exhibitions and collaborating with research agencies, and maximizing the internet (Indarti & Geenhuizen, 2005)

These findings create novelties that lead to the contribution of knowledge for several reasons. First, this study was undertaken in the garment industry requiring intensive innovation to survive. Second, the context of the research where this study was conducted. This study was conducted in SMEs setting, while previous studies were predominantly conducted in large companies supported by advanced research facilities (Aribi & Dupouët, 2016), and high-technology in their production system; the industries include semiconductor, electronic, and defence equipment.

## Research Methodology

This study aims to analyze the process of absorptive capacity in the case companies operating in the garment industry. To achieve this objective, researchers employed a case study method proposed by Eisenhardt (1989) and Yin (2009). A case study was considered as the most appropriate method to investigate the absorptive capacity process that is very complex and influenced by many factors that can lead to different interpretations when translating the phenomenon (Stuart et al., 2002). Furthermore, a case study is appropriate to use if the research question is in the form of how and why, where descriptions are needed (Yin, 2016).

The selection of subjects in the study using a case study approach was based on theoretical sampling (Yin, 2009). The number of samples is not the only consideration. The researchers also consider the composition of subjects to enable replication logic as the foundation for theory development. The composition of issues must form a certain degree of variations, in terms of features related to topics under investigation such as product innovativeness, company size, innovation capabilities, etc. For this reason, it is strongly recommended for researchers to possess preliminary knowledge of the subject before the researchers dig deeper to obtain more detailed data (Eisenhardt, 1991).

It is important to emphasize here that the purpose of selecting firms as subjects in the case study is not for developing statistical generalization, but rather aiming to build logical conception explaining the causal relationship between phenomena (Yin, 2016). In particular, logical inference attempts to explain what caused what, and why the causality occurs (Eisenhardt 1989).

This study used a multiple case approach from three manufacturing companies with various considerations. The case description can be seen in Table 1. First, case studies with multiple-case allow researchers to gain better research validity (Eisenhardt 1989). Second, because the absorptive capacity process is challenging to understand in various contexts (Yin, 2009) due it is influenced by many factors.

Table 1.  
*Details of the Case Companies*

	<b>Amanah Garment</b>	<b>Ragil Jaya</b>	<b>Kurnia Tenun</b>
Establishment	2012	1998	1962
Raw material	Polyesters	Natural plants	Warp and weft yarns
Products	Caps and apparels	Curtain, placemat, craft, bag	Lurik fabric, bag, bed linen, wallet, shoes
Customers	Domestic and export	Domestic and export	Domestic
Production tools	Modern convection machines	Non-engine weaving equipment	Non-engine weaving equipment
Employe size	17	32	54

The process of collecting and analyzing the data was conducted simultaneously to make changes in research instruments. In collecting data, researchers conducted interviews with directors, managers, and employees of the company because they were the people who were directly involved in the process of absorptive capacity. Also, this study used documentation and observation studies so that the triangulation of data sources can be conducted to improve the research validity (Eisenhardt 1989; Yin, 2009).

### **Case Study Descriptions**

#### *Case study A: Amanah Garment*

The first case study comes from a small but fast-growing company located in Yogyakarta, Indonesia. Since established in 2012, this company consistently utilized production equipment with modern machines such as a high-speed machine, over deck machine, press and brooch machine. Their customers mostly came from organizations and order system made based on a pack, 12 pieces. In running their business, Amanah Garment is assisted by 17 employees with a production capacity of 4,000 - 6,000 in various types of products each month.

Since the size of the firm is relatively small, we were able to follow critical managers and employees over a sustained period. This firm consistently develops and utilizes a relationship with several institutions like schools, NGOs, corporations and so on—these collaboration functions as a source of information. Customers can bring product models in different models as they wish. It is not surprising that kind of interaction could present a tremendous prolonged dialogue, and their contact could end in business activity.

In its operations, Amanah Garment implements a production system based on made-to-order with unique product features and specifications. In fulfilling the customer's particular order, their existing model requires modification according to customer's demand.

Information exchange between firms and customers in these circumstances is conducted, and it may take a long time, depending on the complexity of the product. Once an agreement is reached, the production process will be started, and this work mostly is the responsibility of the production department, and they officiate in implementing the information in the form of products.

#### *Case Study B: Ragil Jaya*

Our second case came from a traditional handicraft manufacturing firm, Ragil Jaya, which operates since 1998 in Yogyakarta, Indonesia. This company utilizes standard production equipment which is called Non-Engine Weaving Equipment (NEWM). Round of the raw material used is natural fibres such as Vetiver, Cyperaceae, Agel, water hyacinth, and stick. The utilization of natural fibre raw materials aims to produce handicrafts with good quality. The production results include placemat, tissue box, tablecloth, souvenirs, shoes and bags which are marketed to various regions in Indonesia, Asia, and Europe.

As a small and medium enterprise, Ragil Jaya is quite thriving in entering the global market. Assisted by 34 employees, this company has extensive external cooperation, both with similar firms and local government. Their collaboration with the local government allows the firm involved in various exhibitions of handicraft products in several provinces throughout Indonesia. Therefore, the opportunity for external exploration is easier for Ragil Jaya. Their involvement in several events also plays a role for the firm to gather information from the total rank of customers, so it is possible for them to understand some types of products expected by customers.

In addition to business objectives, this firm offers training programs for the development of handicraft products. The training, mostly, is earmarked for the community, educational institutions, and craft activists. Since Ragil Jaya's director also plays a role as a business consultant of handicrafts, so it is not often for him to act as a trainer for several companies in

various cities, through government cooperation. At a given moment, the firm embraces a local company of a similar nature in the joint development of a handicraft product. The personal relationship that exists between those various communities facilitates this firm to absorb new external information from a complete rank of sources. Ragil Jaya accepts orders on demand, generally with individual specifications. Towards such needs, modification of existing products should be made to meet the criteria of the customers'.

#### *Case Study C: Kurnia Tenun*

Our last case is from a traditional manufacturing firm located in Bantul, Indonesia. Since its establishment in 1962, Kurnia Tenun has maintained its focus as a manufacturer of striated fabrics. As a family business, the succession of leadership until now has entered the third generation. To support its operations, this firm is assisted by 54 employees, and most of them are family members. The company implements integrated production, processing of raw yarn, dyeing, drying, spinning, motive making until the weaving process. Most of the raw materials are made of cotton yarn, with a production capacity of 3,500-4000 meters per month which is done by using the Non-Engine Weaving Machine (NEWM). Their customers are both individuals and industrial organization.

As a family business and adopting the traditional production process, Kurnia Tenun involves in several social organizations and local community activities. The interaction with such communities has a unique role as the primary source of information for the company. It is often that the community member becomes a marketer for the company, word-of-mouth marketing. Kurnia Tenun mostly offers regular primary products that characterize the company, but in any case, they also accept orders with different motives from its basic models. Customers bring their product model, and the firm tries to translate the model before doing the production. When the agreement about the product models is

reached, the company then implements the next process, which is known as the implementation of knowledge into the form of products. The information that came from the external environment is applied at the internal environment, after passing the previous two stages, exploration and transformation. This implementation can occur in two possibilities. First, the product results are new, while the second is the result of modification of the existing product and those are commercially reasonable assets.

## **Results and Discussion**

This article aims to find the answer to the research question: *how does absorptive capacity take place in the company?* In its nature, the process of absorptive capacity encompasses three phases, including exploration, transformation, and exploitation process. This study finds out that social interaction constitutes the most determining factor for the firm's absorption. The social interaction occurs between case study firms and external parties with the purpose of exchanging information, which subsequently converted into a product of innovation. The interaction can occur during company exhibition, communication with customers, or during the product design, particularly for made-to-order products. From the empirical evidence, we can infer that most social interaction occurs during the product design stage. It is also confirmed that each firm has disparate needs on absorptive capacity, where this fettle is due to their differences in information needs and how the firm views the information '(Todorova & Durisin, 2007). The finding will be discussed in the next part of this paper, and it also will be grouped based on each case, see table 2.

#### *The exploration activity*

In most cases, external exploration covers the recognition and acquisition of external information. In Amanah Garment, these exploration activities started when the firm admits the product model from costumers.

This interaction will evoke long discussions between the firm and their potential customers, so that information exchange activities can be undertaken. Such actions are known as part of social interaction (Nonaka, 2007) in which the information of the product model poses as new knowledge (Cook & Brown, 1999). On the other hand, in identifying the understanding of the external environment, the second firm, Ragil Jaya, begins by exhibiting handicraft products at various events. The interactions which occur here are to find market opportunities globally.

At the time of the interview, the directors of the firm stated that by following the exhibition in several provinces, we could quickly identify product characteristics expected by customers from vast ranks. Unlike the two previous cases, the last firm, Kurnia Tenun, is less involved in interacting with the external institutions. Their interaction with external parties seems to merely happen in transactional when customers come to the company to place orders. It also makes that product modifications' in this firm are exceptionally very limited, and they prefer to preserve its traditional products that characterize the firm.

Table 2.  
*Summary of the Absorption Activities within Case Companies*

Phase	Company Case Studies		
	Amanah Garment (A)	Ragil Jaya (B)	Kurnia Tenun (C)
Exploration	<b>Process/activities in recognition of external knowledge</b>		
	Maintaining existing customer relationships; Searching consumer behaviour (changing in fashion, or trend)	Participating in handicraft exhibitions; Building relationships with local companies, educational institutions, and artisans;	Composing relationships with local communities; Maintaining existing customer relationships; Exploring cultural attributes for specific customers;
	<b>Process/activities in the acquisition of external knowledge</b>		
	Refocus on external collaborations; Enhance private sector cooperation; Utilize the current production tools;	Establish economic sharing with similar companies; Enhance government sector cooperation;	Compose upon informal relationships; Utilization of social media;
Transformation	<b>Process/activities in transformation external knowledge</b>		
	External information sharing (schools, and local communities); Internal information sharing; Brainstorming meeting;	External information sharing (government institution, universities, craftsmen); Internal information sharing;	External information sharing with local communities (NGOs); Internal information sharing; Brainstorming meeting;
	<b>Process/activities in assimilation external knowledge</b>		
	Prototype testing; Experimentation;	Government-assisted adaptive experiments or training; Prototype testing;	Experimentation;
Exploitation	<b>Process/activities in application external knowledge</b>		
	Modification of existing products; New product establishment;	Modify the existing products; New product establishment;	Modify the existing products;

Once the information has been obtained, the company will continue to the acquisition of the information. Each case has a different point of view about the external environment where this condition can impose the company's external collaboration. For instance, cooperation with the government, in particular, is not the right choice. Such a partnership could make the company difficult to grow wherefore government intervention will be possible. On the other hand, government collaboration is a fundamental requirement for two other cases, although the cooperation of Ragil Jaya with the government, in particular, is more intent. Indeed, building external collaboration is one feasible option for the company to maintain the stability of competition, and the relationships within the organization, key customers and stakeholders, are all fundamental to enabling firms to survive.

The command and control nature of how SMEs are managed and how they view external information (Todorova & Durisin, 2007), and collaboration can explain this behaviour pattern. Nevertheless, what constraints SMEs' to their transformation ability is less attention to regular communication with external stakeholders. Changing to a more inclusive process of taking a decision is pivotal to stay away from firefighting and to avoid reaction towards external stimuli to build organizational resilience. This means a negative impact on SMEs' ability can be caused by limited interaction with customers, competitors, and suppliers —(Bergman et al., 2006).

#### *The transformation activity*

During the transformation process, the company tries to develop external knowledge that is acquired at the exploration stage, so the internal knowledge structure will change (Todorova & Durisin, 2007). The complexity of the information will determine the effectiveness of the transformation in the company. The more complex the product design model obtained from customers, the transformation process in the company will be more difficult and takes a long time.

The method of knowledge transformation in company A is very complex and takes a long time. The situation is due to production systems in companies that implement made-to-order, where customers can determine the product model needed.

After a product development decision is established, the company appoints an employee team deemed capable of working on the product, usually from the production department. The experience and knowledge of each team member involved are not always the same, and this situation requires the company to socialize internally. The socialization aims to ensure that all team members understand the product model that will be developed so that their existing knowledge can be integrated with the new experience. This responsibility is left to the production manager because he is the most experienced person in product development.

Practically, not all team members involved can understand the information quickly so companies must translate that information into simpler terms. Company Ragil Jaya was established in 1989 and is a producer of traditional handicraft products. The company's expertise lies in its ability to process natural fibre into handicraft products that have economic value. In the transformation process, information mostly comes from customers. The information will be taken internally for testing, and this process aims to obtain more measurements that knowledge fits within the company. The final result of the test resulted in a change of internal knowledge structure to form a new experience. Due to newly acquired external knowledge, some of the firms' existing knowledge becomes less relevant due to obsolescence. In addition, new knowledge can be combined with existing knowledge which subsequently will be developed into a new knowledge configuration. The change of the knowledge configuration depends on the novelty level of knowledge acquired by the company. The more novel unique experience that is developed, the greater the potential for significant configuration changes to occur.



The process of knowledge transformation in Kurnia Tenun is the lowest among the two previous cases. In running a business, the company is more focused on production with the same product model, traditional weaving products. Product modification required by the firm is limited so that the firm does not need much external information. These circumstances, according to Todorova and Durisin (2007), can be emerge based on the company's need for external communication.

#### *The exploitation activity*

During the transformation process, external knowledge will be developed to form a new experience (Todorova & Durisin, 2007). In the Amanah Garment, the exploitation of superficial knowledge into the form of a product can not necessarily be done. Companies often have limited knowledge of the product model to be applied. In response to these circumstances, Amanah Garment commits re-exploration so that the deadlocks discovered during this process can be resolved. This finding reinforced the argument of Turner and Makhija (2006) where the effort aims to complement internal knowledge before it is applied in the form of products, and re-exploration intended to ensure that the experience is feasible to use in the way of the work (Nonaka, 2007).

In general, the process of exploiting external knowledge in Amanah Garment will be implemented implementation; in the form of a product. In this company, after the exploration and transformation of superficial knowledge into the internal, the resulting product is a modification of existing products aimed at targeting new markets. While in the last company, Kurnia Tenun, the application of knowledge in the company is rare because the company is more priority to maintain the traditional products that characterize the company.

## Conclusions

This study aims to analyze how the absorptive capacity process occurs in SMEs operating in the garment industry. In general, the absorptive capacity process consists of three main stages: exploration, transformation and exploitation. Of the three steps, social interactions play a pivotal role to support the three phases. This social interaction occurs both with external and internal parties within the firms. Social interactions with external parties are intended to obtain information while social interactions within the companies aim to internalize information from external parties. This internalization process will cause changes to the configuration of information within the case companies.

Absorptive capacity consists of exploration, transformation, and exploitation. The process of absorbent appears to be nonlinear and iterative; the process is a back-and-forth between all stages occurred to ensure the most appropriate knowledge to be applied in the form of the product. Also, this stud demonstrated that as all individual within the firms regardless of their position play pivotal roles in the absorptive capacity process.

Furthermore, this study also found that a company with high assimilation requirements does not always come from robust exploration. Exploration of external knowledge is intended to find new values from the external environment and then brought to the internal to compose a knowledge-base in internal. Subsequently, the study confirmed that high external knowledge identification is not always followed by high acquisition activity, and the process of absorptive capacity is not necessarily terminated in the implementation stage. The nature of the company and how it perceives information are the reasons that result in the absorptive capacity needs in its internal.

This study used a case study method with the inductive approach, which aim to develop a new theory. Qualitative analysis resulted from this study offers rich and depth insights, however, it lacks broad generalization. To overcome this limitation, the next research using a deductive approach is recommended to examine whether the knowledge developed from this study is generalizable across many companies from different industries. With this method, the theory developed from this study can be assured, and the cycles of knowledge development continue.

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