

## **Operationalizing Internal Knowledge Transfer Factors: An Application for Small and Medium Enterprises (SMEs)**

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### **ABSTRACT**

Being aware of the knowledge transfer process enables small and medium enterprises (SMEs) to improve their organisation. Despite the many barriers that prevent SMEs from conducting knowledge transfer, SMEs should be aware of the factors that should be considered in the knowledge transfer process. This paper aims to operationalise factors that should be considered in the knowledge transfer process, especially in small and medium enterprises (SMEs). From interviews conducted with 13 employees as informants, we discovered indicators for each dimension that we adopted from the original model, namely, co-worker, senior employee and director for the dimension, actor; job-related and non-job-related for the dimension, context; services and product for the dimension, content, and for the dimension, media, we identified website, e-mail and chatting application. We also identified a new dimension that was not mentioned in the original model, namely, time, which comprises frequency and duration as indicators.

*Keywords:* Knowledge transfer, knowledge transfer factors, small and medium enterprises (SMEs)

### **INTRODUCTION**

According to the Ministry of Small and Medium Enterprises of Indonesia, the level of SME growth in 2012 increased by around 2.41% from 2011 whereas the level of big company growth increased by around 0.32% in the same year. To be able to compete globally, SMEs have to escalate the competitive advantage they have. In order to improve

their competitiveness, SMEs need efficient human resources. The quality of human resource can be measured from its ability to gather knowledge to improve operations. In order to compete in the market, each member of an organisation has to share the

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knowledge he or she has. The company must, therefore, act to emphasise that each member should transfer his or her knowledge to the rest of the team. Knowledge transfer is one of the main sources for SMEs to access knowledge.

According to the knowledge-based view (KBV), performance between organisations is not determined by any internal resources of organisation, but is caused by asymmetries of knowledge (Curado, 2006). KBV emphasises that the objectives of organisation are actually the generation and the application of knowledge (Bartianu & Orzea, 2010). The assumption is also applicable for Small and Medium Enterprises (SMEs). In this era of fierce business competition, it is important for small and medium enterprises (SMEs) to access the knowledge that is needed. Knowledge for SMEs is a leverage of business, and knowledge transfer is the main source of accessing knowledge for SMEs (Chen & Chang, 2012). This is much more important for SMEs, as they organise fewer knowledge resources compared to big companies (Durst & Ferenhof, 2014). Being aware of the knowledge transfer process enables SMEs to improve their organisational factors (Yousif, 2012). However, there are many barriers raised against SMEs, and this causes them to tend to neglect to implement knowledge transfer (Razak et al., 2013). Previous studies have revealed several factors that can be barriers for SMEs such as financial factors, management strategic orientation and management capacity and resources (Eckl, 2012). Razak et al. (2013)

included knowledge capabilities and process practices in the organisation as some of the main weaknesses of SMEs. Eckl (2012) emphasised on the lack of participation and culture barriers as being the most important barrier preventing SMEs from conducting knowledge transfer.

Knowledge transfer can be done in many forms including interaction between people (Yousif, 2012). Chen and Chang (2012) emphasised the process, stating that the higher the absorptive capacity, knowledge complexity and specialised structure, the better the transfer of knowledge. Razak et al. (2013) emphasised on the need for a proper knowledge infrastructure such as structure, technology and culture to ensure that the process of knowledge transfer among employees is effective. Thus, despite the many barriers preventing SMEs from conducting knowledge transfer, SMEs should be aware of the factors that should be considered in the knowledge transfer process so that SMEs can conduct knowledge transfer in an efficient way. This paper aimed to operationalise the factors that can be considered in the knowledge transfer process, especially in small and medium enterprises (SMEs).

## **THEORETICAL BACKGROUND**

### **Nature of Knowledge**

Davenport and Prusack (2000) saw knowledge as a further level of evolution of data and information. Data were objective facts about events that may have no meaning to a particular user. Through the processes of contextualising,

categorising, calculating, correcting and condensing, however, data are transformed into information (Davenport & Prusack, 2000). Information is data that already have meaning. However, information is not yet considered knowledge. Information only gives meaning or context for data, while knowledge enables individual to justify the truthfulness of their observations based on their observations of the world. It is also the capacity to define a situation and then to act accordingly (Nonaka et al., 2006).

Knowledge comes from information as information comes from data. Information can be transformed into knowledge through the process of i) Comparison i.e. How does information about this situation compare to other situations we have known?; ii) Consequences i.e. What implications and does the information have and what actions will it lead to?; iii) Connections i.e. How does this bit of knowledge relate to other knowledge or information?; and iv) Conversation i.e. What do other people think about this information? (Davenport & Prusack, 2000).

Knowledge is complex as a concept. To understand clearly what the meaning of knowledge is, we have to examine its key components, such as experience, ground truth, judgement, rule of thumb and values and belief (Davenport & Prusack, 2000). Knowledge is developed from time to time through experience. Being knowledgeable is not the same as being informed. We are considered having knowledge if we know the truth of a real situation rather than only knowing the theory or generalisation behind

it. Unlike data and information, knowledge contains judgement. Individuals who are considered very knowledgeable or, as we call them, 'experts', can form judgements in the form of solutions to new situations based on knowledge that he/she already has. Knowledge also works through rule of thumb. There are 'shortcuts' to solutions to new problems that resemble problems that existed previously that were solved by experienced workers. Knowledge also naturally cannot be fully neutral. It is influenced by an individual's values and beliefs.

### **Tacit and Explicit Knowledge**

Knowledge can be found as either tacit or explicit in form (Nonaka & Konno, 1998; Seidler-de Alwis & Hartmann, 2008; Laudon & Laudon, 2010). Tacit knowledge is more difficult to articulate and to transfer, while explicit knowledge can be captured in tangible form (Dalkir, 2011). Tacit knowledge is subjective, experience-based knowledge that cannot be expressed in words, sentences, numbers or formulation. Seidler-de Alwis and Hartmann (2008) explained that tacit knowledge embodies education, natural talent, experience and judgement that we are not conscious of because these elements are not communicated in language. Tacit knowledge cannot be taught and cannot be articulated and cannot be observed because of its richness and complexity (Davenport & Prusack, 2000). We can acquire tacit knowledge through the sharing of experience, observation and imitation (Seidler-de Alwis & Hartmann, 2008).

Explicit knowledge or codified knowledge refers to knowledge that is transmittable in formal systematic language (Nonaka & Konno, 1998). It is the kind of knowledge with which we are more familiar. We find it everywhere, in newspapers, textbook, television and the Internet. We are aware of it and we use it, and we can share it in the form of data, manuals, reports etc. (Seidler-de Alwis & Hartmann, 2008).

### **Individual and Organisational Knowledge**

Most tasks conducted by people at work are knowledge-based (Smith, 2001). Thus, the way to manage knowledge and to get as much value as possible from it is greater now than it was in the past (Davenport & Prusack, 2000). Knowledge can be considered as a corporate asset (Smith, 2001). It is what we call organisational knowledge. Individual knowledge or personal knowledge belongs to the individual who possesses it rather than to the organisation, but the organisation can use it as long as the individual is involved with the organisation. Individual knowledge refers to Polanyi's tacit knowledge (Mahdi et al., 2011), while organisational knowledge can be tacit (human-centred assets) and explicit (intellectual property assets, infrastructure assets and market assets) (Beckman, 1999). Bhatt (2002) argued that individual knowledge and organisational knowledge are distinct yet interdependent. The interdependence comes from the nature of an organisation, which cannot claim rights to an individual's knowledge (Bhatt,

2002), yet individual knowledge does not merely transform into organisational knowledge, but is more than the sum of individual knowledge (Baek et al., 1999). To be transformed into organisational knowledge, individual knowledge needs to be facilitated by interaction between individuals who possess the knowledge (Bhatt, 2002). In other words, organisational knowledge is knowledge shared within the organisation (Baek et al., 1999).

### **Knowledge Transfer**

To be able to capture the value of individual knowledge, organisations should provide a conducive environment for knowledge transfer to happen (Smith, 2001). According to Manovas (2004), knowledge transfer is the transmission of knowledge from one division to another within an organisation in order to achieve desired goals. Manovas, Weissenberg and Spieth (2006) also emphasised that knowledge transfer is goal-orientated, but it includes the individual, the group and the organisation as actors of knowledge transfer. Razak et al. (2013) emphasised on the correlation between knowledge transfer and retention and upgrading of human skills and talents. Thus, in this research, knowledge transfer is defined as the process of knowledge handover or the transmission of knowledge from one individual or group to other individuals or groups orientated to achieve organisational goals by developing competencies of individuals.

### Knowledge Transfer Factors

There are several factors that influence the process of knowledge transfer within an organisation. Boisot (1987) emphasised on aspects of the communication process and developed dimensions such as the availability of communication facilities, coding between sender and receiver, sharing between sender and receiver, speed of message transmission, follow up and legal aspects. Another point of view from Boschma (2005) included distance, absorptive capacity and dissemination of innovation and trust as further dimensions that should be considered as knowledge transfer factors. Razak et al. (2013) mentioned four dimensions i.e. technology, structure, culture and human resources. However, this research adopted Yousif's (2012) model based on the work of Albino et al. (1999), which can be considered more advanced compared to other frameworks (Yousif, 2012). The model includes the dimension, actors i.e. the people involved in the process of knowledge transfer; the dimension, context i.e. the situation in which the interaction takes place; the dimension, content i.e. what is being transferred between the actors; and the dimension, media i.e. the channel by which the transfer is carried out. These dimensions were also mentioned by Eckl (2012). Eckl differentiated the actors involved in the process of knowledge transfer into three: knowledge creator, knowledge disseminator and knowledge taker. Each role related to other dimensions. Knowledge creator related to the object of knowledge transfer (in Yousif, this is

called content); knowledge disseminator related to the media of knowledge transfer; while knowledge taker related to absorptive ability. In this research, the actor's role was limited to creator and disseminator only, thus the ability or competency of the knowledge taker is not discussed.

### METHODOLOGY

This research is qualitative in nature, and its objective was to operationalise the factors of knowledge transfer within small and medium enterprises (SMEs) by conducting interviews with the informants. The object of this research was knowledge transfer factors, defined as factors involved in the process of knowledge handover or in the transmission of knowledge from one individual or group to other individuals or groups with an orientation to achieve organisational goals by developing the competencies of individuals. The literature provides four dimensions of knowledge transfer factors, namely, actor, context, content and media. The actor is the individual who plays a role in the process of knowledge transfer as sender or receiver of knowledge. Context can be divided into two categories, internal and external. Content in this research referred to knowledge needed in order to do the job in organisation. Media is the channel for transmitting knowledge.

The SME that was the study object for this research was a technology-based SME now positioned in the growth phase of its lifecycle. It has three branches, in Bandung, Jakarta and Yogyakarta, and employees from all three branches were included in

the interviews. The authors used purposive sampling to determine the respondents to include in the data collection stage.

The authors focussed on the divisions for which, in their opinion, knowledge transfer was critical. For the Bandung branch, three divisions were selected: technical support division, billing and customer service division and accounting division. From the technical support division, three employees are included as informants, with the initials C, S and W. For billing & customer service, three employees with the initials R, Y and A were included as respondents. From the accounting division, only one employee was chosen, with the initial G. For the Jakarta branch, the authors chose the technical support division and marketing division. From technical support two employees were included as informants, with the initials A and Z. From the marketing division, only one employee was chosen, with the initial S.

For the Yogyakarta branch, three divisions were chosen as division samples, namely the marketing division, billing and customer service division and SEO division. From the marketing division, there was one informant, with the initial D. From billing & customer service division, there were three employees included as informants, with the initials L, M and Z. From the SEO division, there was only one informant, T.

The thematic analysis technique was used to analyse the results. The steps used in the analysis process were as follows:

1. The interview recording was transcribed.
2. From the transcript, the researcher identified particular themes that were mentioned by the respondents.
3. The themes that were identified were deployed to each dimension.
4. The themes in each dimension were converted into indicators.

## RESULTS AND DISCUSSION

### Case Study

This research used one small enterprise that operates in technology information and services in Indonesia, PT Q. PT Q provides services and information technology, in particular the manufacture of web domains, web hosting and servers. PT Q has three branches in three big cities in Indonesia i.e. Bandung, Jakarta and Yogyakarta. At PT Q, the process of transfer of knowledge as provided by the company is entrusted to senior employees. The actors whose responsibility to transfer the knowledge are appointed by the human resource department (HRD); they are usually those who already have experience and knowledge in a particular division. Senior employees guide new employees for approximately two months. In the first month, the new employees are given basic knowledge about the products offered by the company as well as the knowledge possessed by their respective divisions. In the second month, the employees work in accordance with their respective divisions but are still under the supervision of senior employees. However, there are difficulties that hamper the knowledge transfer process, especially in

the divisions of billing and customer service and technical support.

In the billing and customer service division, problems arise if the new employee does not come from the information technology (IT) field. Lack of familiarity with IT makes it difficult for new employees to understand the work of the division. Another problem is the difference in the quality of human resources of each branch, especially in the division of billing and customer service. For example, the branch in Yogyakarta, which began operations in July 2014, finds difficulties in conducting knowledge transfer because most of its senior employees are based in the Bandung branch. Therefore, knowledge transfer is done by means of online messages or online chatting. This problem is also prevalent in the technical support division.

In general, the process of knowledge transfer, which is not smoothly conducted in PT Q, has a big impact on the transition of knowledge as a whole, especially when there are changes in staff because of promotions or resignations. Whenever one employee leaves his/her job, other employees are not always ready to fill the gap. This is a problem that greatly disrupts the business activities of the company.

### Results of the Interview

In this section, we will present the descriptive analysis of the transcript of the interview. Only one example is cited for each indicator shared.

**Dimension of actor.** In this dimension, respondents were asked to identify the individual involved who provided knowledge transfer to the respondents. The respondents named the respective individuals. We noted that three persons were important in the process of knowledge transfer: co-worker, senior employee and the director. Here are excerpts from selected interviews:

Indeed, we should share job-related knowledge with co-workers. Especially in the marketing division, we should understand the product well; this can be achieved by sharing. (Co-worker).

Then, when I was newly started as an employee, there was a senior employee who guided me in doing my job. (Senior employee)

I was told to read the terms regarding my work. I continue to be guided by a senior employee as I learn to do my job. (Senior employee)

Of course, (Director involved in process of knowledge transfer), Especially for us in the headquarters. If there is new technology or new Product, Mr Rendy (name of Director) would tell us immediately. (Director)

Table 1  
*Thematic Analysis for the Dimension, Actor*

Theme	Frequency	Indicator
Director	12	Director
Senior employees	8	Senior employees
Co-worker (Respondents mentioned the name of their co-workers)	34	Co-workers

Senior employees play a role in the transfer of knowledge through the guidance process. Senior employees are instrumental in the counselling process. Senior employees were found to be the most helpful in transferring specific knowledge to new employees. However, new employees in the Yogyakarta branch experienced a problem. Senior employees were required to be in Yogyakarta, but the time to commute there from their homes in Jakarta or Bandung is too long.

Based on field observations, the researchers also noticed that the director played an active role in the process of knowledge transfer, especially in the Jakarta branch. The employees can be asked directly about the work they do by their superiors. When there is new information, the director passes on the information to all employees, especially in the city branches. However, most of the respondents mentioned at least one co-worker as the knowledge disseminator. This means that when they need help to understand specific knowledge, co-workers are the most accessible sources.

**Dimension of context.** For this dimension, the respondents were asked to describe the context in which the knowledge transfer process occurred. We identified two main contexts: job-related and non-job-related. Excerpts of selected interviews are given below:

We learn many things from co-workers; especially when it is job-related, it is very useful. (Job-related)

There's nothing wrong about sharing non-job-related knowledge, as long as it is positive, sure it will bring a benefit. (Non-job-related)

Table 2  
*Thematic Analysis for the Dimension, Context*

Theme	Frequency	Indicator
Job-related	13	Job-related
Non-job-related (General)	6	Non-job-related

General knowledge is important in business activities. General knowledge can also help employees in carrying out their job. This was mentioned as a repeated theme in the interviews by many of the respondents.

**Dimension of content.** In this dimension, the respondents were asked to describe the content of knowledge that was involved in the knowledge transfer process. Two main content was identified: services and product.

Excerpts from selected interviews are given below:

The company provides new information related to services and product to all employees.

Because we (the marketing department) need to know about the products and services provided by the company. So we are the most updated.

Table 3  
*Thematic Analysis for the Dimension, Content*

Theme	Frequency	Indicator
New product	10	Product
New services	8	Services

Information on latest products and services offered by the company is relayed to employees, particularly to those in the marketing division, technical support and billing and customer service as these are the three divisions that deal both directly and indirectly with consumers.

**Dimension of media.** In this dimension, respondent was asked to tell interviewer, the media which be used during the knowledge transfer process. From the interview we identified three types of media: website, e-mail, and chatting application. Here with the examples of the citation of the interview:

Then, when I newly started as an employee, I was told to read all the materials in the company’s website. (Website)

E-mail is used to disseminate new information to all employees because it is more easily obtained by the employee. (E-mail)

We use Yahoo messenger to coordinate with other divisions because we can directly ask about problems we face. (Chatting application)

Table 4  
*Thematic Analysis for the Dimension, Media*

Theme	Frequency	Indicator
E-mail	14	E-mail
Yahoo messenger	11	Chatting application
Website	8	Website

E-mail is a medium that is used by the company to update employees on the latest information. However, some employees feel the quality of the transfer of knowledge through e-mail is not effective. They consider face-to-face relay of information to be more effective than through e-mail.

**New dimension of time.** During the interview, one dimension was not deductively provided in the framework. Interviewees tended to emphasise the time factor both in frequency and duration of the knowledge transfer process. For instance, one respondents stated, “The company conducts a general meeting twice a year, but we in the technical support division usually conduct meetings more frequently” (Frequency), and, “We usually receive a

month's training. But I think that is not enough, we need longer periods of training" (Duration).

Table 5  
*Thematic Analysis for the Dimension, Time*

Theme	Frequency	Indicator
Duration	8	Duration
Frequency	4	Frequency

Duration is the length of time used by the company in the process of guidance. This may affect the transfer of knowledge to new employees. Time spent socialising was adequate but time spent on transferring knowledge related to guidance was felt to not be sufficient by the respondents. The process of guidance was conducted by senior employees over the period of one month. Most of the respondents felt that this was not long enough a time to acquire full understanding of new knowledge.

It is also revealed that meetings and appointments were rarely carried out by the company. According to the employees, meetings were not only to discuss new information, but to also talk about the difficulties they faced in their daily job; therefore, it was important to conduct meetings more frequently.

## DISCUSSION

Discussion about knowledge transfer cannot be separated from the nature of knowledge forms, whether tacit or explicit. In the workplace, experienced people transfer tacit knowledge to less experienced people

(Smith, 2001), while explicit knowledge can be easily transferred through fewer human-interaction methods or through media such as e-mail, website and chatting applications as discovered from the interviews. These were the media most often used by respondents in this research, but they acknowledged that these media were not sufficient, and they preferred face-to-face channels for transfer knowledge, which may be caused by the tacitness of knowledge, especially for new employees.

Smith (2001) suggested four different modes that can be used in transferring knowledge. Personal knowledge disseminated in an informal forum usually uses role modelling as a method. Public knowledge disseminated in an informal way is usually conducted through a community of practice. Formal ways of transferring knowledge includes occupational training for personal knowledge and information management system for public knowledge. In this case study, it was found that the director and senior employees held an important role in transferring knowledge, while co-workers collectively acted as a community of practice in the transfer of public knowledge in an informal way. Respondents accessed knowledge through e-mail, chatting applications and the website, where public knowledge could be accessed in the form of an information system that was embedded in the company website. Transfer of knowledge to new employees in particular was conducted through training. This corresponded with Smith's (2001) finding from studying forestry-based SMEs

that informal methods of knowledge transfer were less important compared to formal modes of knowledge transfer.

A novel finding of this research was the additional dimension of time as an important factor in knowledge transfer. This new dimension was not mentioned in previous studies. Regarding the tacitness of knowledge, it is possible that the more tacit the knowledge, the longer the duration or the higher the frequency needed in transferring knowledge.

## CONCLUSION

This paper aimed to operationalise factors that can be considered in the knowledge transfer process, especially in small and medium enterprises (SMEs). From interviews we discovered indicators for each dimension that we adopted from the original model, namely, co-worker, senior employee and director for the dimension, actor; job-related and non-job-related for the dimension, context; services and product for the dimension, content, and for the dimension, media, we identified website, e-mail and chatting application. We also identified a new dimension that was not mentioned in the original model, which was time, comprising frequency and duration indicators.

One implication of this research is the measurement of knowledge transfer performance that can be adopted from these findings, rather than using the indicators that are often used in previous studies on big companies. For further research, it is important to explore deeper the tacitness

factor of knowledge to find specific methods for knowledge transfer. The findings of this research also need to be validated statistically.

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