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# Knowledge sharing is knowledge transfer: a misconception in the literature

Gangeswari Tangaraja, Roziah Mohd Rasdi, Bahaman Abu Samah and Maimunah Ismail



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## Abstract

**Purpose** – The paper aims to clearly differentiate knowledge sharing (KS) and knowledge transfer (KT) besides exemplifying their interconnections to minimize the current confusions in the knowledge management (KM) literature.

**Design/methodology/approach** – An extensive literature review method was used to analyse relevant literature on both KS and KT to clearly delineate their differences and their interconnections.

**Findings** – The paper found that KS is a subset of KT (using personalization strategy), whereas KT as a whole is a broader concept, if compared with KS. However, KS is not one of the immediate processes involved in KT (using codification strategy). The processes involved in KS and KT differ according to the strategy used (in KT) and perspective chosen (in KS). Other findings include KS (unidirectional) as reflective concept (viewed so far), whereas KS (bidirectional), KT (personalization) and KT (codification) as formative concepts.

**Research limitations/implications** – The findings of this paper were based on the review of selected relevant articles only.

**Practical Implications** – The paper will minimize the current confusions in the KM literature and will assist future researches on both KS and KT to ensure what these concepts entail to avoid construct underrepresentation.

**Originality/value** – As compared to previous attempts, the present paper has shown the interconnections between KS and KT, as well as the differences based on the two perspectives of KS (unidirectional/bidirectional) and the two strategies of KT (personalization/codification), and such effort is new in the literature.

**Keywords** Knowledge transfer, Knowledge management, Knowledge sharing

**Paper type** Literature review

## 1. Introduction

Knowledge sharing (KS) and knowledge transfer (KT) associated researches are no longer new in the field of knowledge management (KM). The significance of effective KM and its associations to organization's effectiveness and performance quality (Borges, 2013) made the entire KM field became very popular among scholars and human resource development (HRD) practitioners (Al-Alawi *et al.*, 2007). Within the field, enormous focuses have been given to develop KS and KT models because they are the key processes to enable knowledge transmission from one member to another, which will eventually lead to individual career success (Mohd Rasdi *et al.*, 2012). Having said that voluminous numbers of KS and KT models were found available in the literature (Liyanage *et al.*, 2009; Tangaraja *et al.*, 2015; Welschen *et al.*, 2012). These models highlight a list of enablers that are claimed to be able to foster either KS or KT in the specified context. However, the extent to which the enablers were actually able to explain the concepts and achieve the intended research objectives as set has to be probed further because there is confusion in the literature due to the blurriness of the concepts (Paulin and Suneson, 2012).

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An extensive literature review provides evidences that the terms KS and KT were used interchangeably by some KM researchers (Kumar and Ganesh, 2009). Liyanage *et al.* (2009) have exposed that KS and KT were discussed together at times because of lack of clarity about the concepts in the literature. Paulin and Suneson (2012) have acknowledged such misconception and, in fact, have produced an applauded work by attempting to distinguish the differences. This is discussed in the later section.

Among the researchers who have such misconceptions are, for example, Cruz *et al.* (2009), Al-Alawi *et al.* (2007) and Hsu and Wang (2008) to name a few. For example, Cruz *et al.* (2009) have equated KT with KS. As it was explicitly mentioned in their paper that “managers should encourage their employees to transfer knowledge as a means to enhance their organisations’ efficiency” (p. 478), indicates that transfer in this work was indeed regarded as sharing. In fact, the authors also termed KT as “knowledge transfer behaviour” (p. 479), which clearly indicates the misconception of the concept. In a separate research, Hsu and Wang (2008) have defined KS as “the process of transferring knowledge among individuals and groups” (p. 47). Last but not least, is the research work of Al-Alawi *et al.* (2007) who have similar misconception. It is however important to highlight that these are just a sneak peek of relevant literatures that have misunderstood these two concepts. There are many others who have the same confusions.

One possible reason for such confusion is because KT itself can be achieved using two strategies, namely, the personalization and codification (Joia and Lemos, 2010). The term personalization and codification were first introduced as KM strategies by Hansen *et al.* (1999) at macro level. Later, Joia and Lemos (2010) have more specifically identified them as KT strategies. According to the authors, in the first codification strategy, explicit knowledge is structured and stored in repository systems to enable KT, whereas in the latter, personalization strategy, the tacit knowledge in the form of know-how and best practices are transferred from one employee to another employee directly via personal contact. Hence, KS has often been confused with the second form of KT which occurs via personalization strategy because sharing is one of the processes involved here. As such, some KM researchers assume that these two concepts are rather similar and identical which led to the confusions. Moreover, the existing literatures on both KS and KT are also quite ambiguous (Cruz *et al.*, 2009; Hsu and Wang, 2008). In fact, dearth of literature discusses about their differences. Hence, some researchers just fail to get clear notion of the concepts.

Such confusions in the KM field are problematic because it can lead to misleading findings. Moreover, similar operationalization of different constructs and concepts or vice versa has led to having mix-up antecedents and outcomes and has eventually created confusions on the cumulative understanding of the concepts (Ford and Staples, 2008). Besides that, it also threatens the validity of the measures used because some scholars end up using the same instruments to measure both KS and KT. According to Ary *et al.* (2011), tests may have imprecise measures of the constructs they are designed to assess, if they leave out something that theory states should be included, they include something that should be left out or both. The use of these concepts interchangeably indicates a possible violation of validity. As a consequence, one can have little faith in the results obtained, as well as in the conclusions made based on the results (Ary *et al.*, 2011). Hence, such researches can suffer of serious methodological flaw, which is the most important concern of any research.

Though in recent years the trend in KM field has shifted its focus more towards KS (Noaman and Fouad, 2014; Tangaraja *et al.*, 2015; Yesil and Dereli, 2013), however, researches on KT still captures the attention of some scholars (Nor Aziati *et al.*, 2014, Peng *et al.*, 2014; Wang, 2015). As such, it is indeed crucial to clearly define these two concepts, extract their underlying elements, specify their interconnections, as well as their differences to help scholars and KM researchers get clear notion of the concepts. Such attempt is imperative because it aims to help KM researchers produce quality research. This also will eventually assist HRD practitioners to embark on the right steps to foster KS among employees,

besides, shed lights on the important factors that enable KT among employees within the organizations. While [Paulin and Suneson \(2012\)](#) have attempted to clarify their differences, however, it is still quite vague and has some shortcomings. Hence, further improvements are needed so that researchers could visualize their differences clearly without any difficulties. As such, the objective of this paper is to distinguish clearly the differences between KS and KT and to exemplify their interconnections to provide clarity to KM researchers.

Therefore, the methodology involved in this paper is as follows: first, the authors did an extensive literature review on both KS and KT. Second, the authors segregated papers that used the terms interchangeably and papers that offered a clear definition. Third, the problem statement was strengthened by providing proofs of past articles that used the concepts interchangeably. Fourth, a review was done to identify the possible reason for such misconception. Fifth, past articles that have attempted to address this shortcoming were identified and reviewed. Sixth, papers that offered clear definitions were analysed for the purpose to extract their underlying elements, distinguish the differences and highlight the interconnections. Seventh, further improvements were made to previous attempts to distinguish KS and KT with logical arguments. Finally, the future direction for each of the concept was set and the findings were presented.

The reviews were based on a thorough analysis of published literature on both KS and KT from the university's subscribed databases, such as Emerald, Ebscohost, SAGE, IGI publishing, JSTOR and Proquest. The key words used to search for related literature were KS, KT and KM.

## 2. Literature search

### 2.1 A review on previous efforts

As discussed in the earlier section of this paper, as of now, researchers have made very limited attempts to differentiate KS and KT, although the confusions were acknowledged. It should be recalled that [Liyana \*et al.\* \(2009\)](#) have exposed the confusions in the literature and have touched on the differences slightly, however, focused profoundly on KT because their research focus was on the latter. Though the authors did not discuss thoroughly on the differences, they have made significant contributions because they have delineated some of the elements KT entails. Another significant effort was made by [Paulin and Suneson \(2012\)](#). These authors have discussed fairly to distinguish several concepts, including KS and KT. According to the authors, the key element used to differentiate whether a concept is KS or KT is based on the perspective used to view knowledge as an object (K-O) or as a subjective contextual construction (K-SCC). Both papers are a tribute to the KM scholars because their reviews also included some of the previous reputable work of KM gurus, such as [Polanyi \(1962\)](#), [Nonaka \(1994\)](#) and [Nonaka and Takeuchi \(1995\)](#), among others. The points highlighted by the papers were simplified and presented in the [Table I](#) below.

An analysis of the highlights in the papers indicates that the differences outlined are still quite unclear. In fact, both papers have some form of amalgamation of various perspectives and strategies within the concepts. For example, [Liyana \*et al.\* \(2009\)](#) have spelt out the differences between KS and KT. However, the authors only acknowledged KS using bidirectional perspective (knowledge exchange among employees) and have missed out the unidirectional perspective of KS (one way action from source to recipient) ([Tangaraja \*et al.\*, 2015](#); [Yi, 2009](#)). Similarly, [Paulin and Suneson \(2012\)](#) did not discuss about the different perspectives within KS. However, they have come up with a very simple approach to distinguish the two concepts as stated above.

Second, both [Liyana \*et al.\* \(2009\)](#) and [Paulin and Suneson \(2012\)](#) did not clearly specify the different strategies used to transfer knowledge i.e. personalization and codification.

**Table I** The differences between KS and KT

<i>Authors</i>	<i>Characteristics of knowledge sharing (KS)</i>	<i>Characteristics of knowledge transfer (KT)</i>
<a href="#">Liyanage et al. (2009)</a>	<p>People-to-people process where individuals mutually exchange knowledge (two-way)</p> <p>Only occurs at individual level</p> <p>A critical stage in KT</p>	<p>Involves great participation of source (sender who shares the knowledge) and receiver (who acquires the knowledge)</p> <p>An act of communication by the sender and how efficiently the receiver transforms the knowledge into a usable form</p> <p>Conveyance of knowledge from one place, person or ownership to another</p> <p>Successful KT results in receiving unit accumulating or assimilating new knowledge</p> <p>Can go beyond individual level to higher levels, such as group, product line, department or division</p> <p>Involves accessing of knowledge, acquiring of knowledge and subsequently applying the knowledge to make things more efficient and better</p> <p>Can occur via oral communication and via technological interventions</p> <p>More complex than KS</p>
<a href="#">Paulin and Suneson (2012)</a>	<p>A critical stage in KT</p> <p>Occurs at individual level (level of analysis)</p> <p>Knowledge as a subjective contextual construction (K-SCC) perspective which argues that knowledge cannot be separated from the context or the individual because it involves processes of sense making and understanding</p>	<p>Occurs at higher levels, such as group, department, organization, business, etc.</p> <p>Knowledge as an object (K-O) perspective which argues that knowledge is just an object which is transferable</p>

[Liyanage et al. \(2009\)](#), however, have integrated [Nonaka's \(1994\)](#) SECI Model to come up with a process model of KT.

Third, [Liyanage et al. \(2009\)](#) acknowledged that KT can occur via oral communications, as well as technological interventions, but lacks detail elaboration. Our reviews indicate that KT via technological interventions can occur in two ways. One way is when two or more people interact using online applications, such as e-mail, WhatsApp, etc. According to [Bosua and Venkitachalam \(2013\)](#), this is also a form of personalization strategy apart from face-to-face interaction. The second way is when pre-existing online information is acquired by a recipient on his/her own without any interactions. Here, the source is not an individual but rather information that was contained in an object, such as computer. The identified and acquired information is later translated into knowledge by the recipient in his/her mind via sense-making process. KT, in this way, is using the second strategy i.e. codification. Similarly, information from hardcopy sources, such as books or other hardcopy reading materials, can be translated into knowledge in recipient's mind without technology intervention using codification strategy.

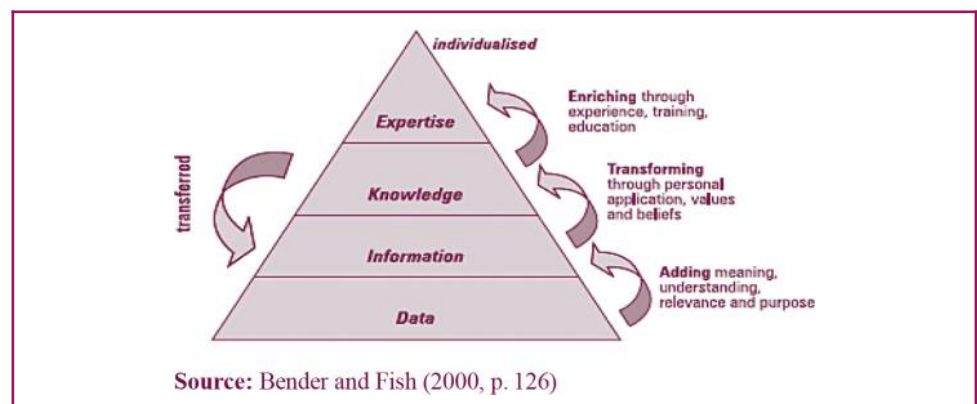
On the other hand, KT via oral communications occurs when the source and recipient are individuals and engage in some sort of personal interactions face-to-face, using personalization strategy but without technology intervention. These two strategies of KT are discussed further in the later section of this paper. Though not explicitly mentioned, Liyanage *et al.* (2009) have actually amalgamated the two strategies together. One proof is when Liyanage *et al.* (2009) claimed that “KT is the conveyance of knowledge from one place, person or ownership to another” (p. 122). Hence it was quite unclear.

Fourth, Paulin and Suneson (2012) have argued that the key element used to differentiate whether a concept is KS or KT is based on the perspective used to view K-O or as a K-SCC. This claim is quite unconvincing because there is an ongoing debate that once knowledge is outside of human brain, it is just mere information (Davenport and Prusak, 1998; Grover and Davenport, 2001). The popular knowledge hierarchy by Bender and Fish (2000) was developed in the same vein with credible arguments substantiated with evidence (refer to Figure 1). According to Bender and Fish (2000), “information” is transformed into “knowledge” only in an individual’s mind based on one’s interpretations, values, beliefs and experiences. The notion knowledge is more superior to information and that it only forms in an individual’s mind is also supported by many other researchers, for example Sabetzadeh and Tsui (2011) and Zhang and Ng (2012) to name a few. In fact, Sabetzadeh and Tsui (2011) have further added that information is only descriptive; however, knowledge is predictive because it provides the basis for future prediction.

Based on the explanation given above, this study also agrees that codified materials only contain information; however, to form knowledge, individuals should interpret the information with their previous experiences and insights, and this involves thinking processes at an individual’s mind. Therefore, the perspective, “knowledge as an object” used by Paulin and Suneson (2012) to identify a concept as KT, contradicts with this argument because knowledge can never be separated from one’s mind. Though Alavi and Leidner (2001) also have viewed knowledge using five perspectives, namely, a state of mind, an object, a process, a condition of having access to information and/or a capability, however, their view is still open to a debate using the Bender and Fish’s (2000) knowledge hierarchy.

Finally, Paulin and Suneson’s (2012) claim that KT only occurs at higher levels, such as group, department and organization is quite inaccurate, because KT (codification) can occur at individual level, as well as at higher levels. This is because an employee, who reads a reading material on his/her own, will acquire knowledge through sense-making, and later the transfer of knowledge occurs at individual level. However, if an organization arranges an online course using repository system for a whole team, then it occurs at a group level. On the other hand, KT (personalization) occurs at a higher level because it

**Figure 1** Knowledge hierarchy





involves at least two individuals at any time. The detailed explanation about the KT occurrence level is presented in the later section of this paper.

Therefore, [Liyanage et al.'s \(2009\)](#) depiction that KT can occur beyond individual level to higher levels, such as group, department, etc., is more convincing and acceptable than [Paulin and Suneson's \(2012\)](#) viewpoint. As such, it can be concluded that KT can occur at higher levels besides individual level and not merely at higher levels as claimed by [Paulin and Suneson \(2012\)](#).

Though some features listed in [Table I](#) are open to debate, however, the previous attempts also have included some important elements of KS and KT though they have amalgamated the various strategies of KT and perspectives of KS together. For example, both the papers agreed in consensus that KS is a critical stage in KT based on the reviews of Nonaka's work ([Liyanage et al., 2009](#); [Paulin and Suneson, 2012](#)). Such agreement sheds some light that there is overlapping contents between both KS and KT and that KT itself is a broader concept as compared with KS. Our reviews have further refined this finding specifically that KS is a critical stage in KT (using personalization strategy) but not in KT (using codification strategy).

Besides, both papers also decisively specified that KS only occurs at individual level. Our reviews indicate that this is true when sharing is viewed using the unidirectional perspective. This is because in the unidirectional perspective, the active source is the knowledge provider who is the key player and engages in active sharing. As such, it occurs at individual level involving the knowledge provider. However, in the bidirectional perspective, the active sources are both knowledge provider and knowledge recipient ([Tangaraja et al., 2015](#)). Therefore, in the bidirectional perspective, sharing can go beyond the individual level, involving at least two people. [Liyanage et al. \(2009\)](#) specifically have spelt out the important elements that KT entails. They outlined that in KT, active participation of source (who shares the knowledge) and receiver (who receives the knowledge) is crucial. We found that this claim is true when transfer of knowledge occurs using the personalization strategy and not the codification strategy. [Table II](#) presents the integrated, acceptable and summarized viewpoints from both papers.

To put in a nutshell, the above works of [Liyanage et al. \(2009\)](#) and [Paulin and Suneson \(2012\)](#) are a good start to distinguish these concepts (i.e. KS and KT) and to reduce the current confusions in the literature. However, further improvements are also needed to provide better clarity. For that reason, it is therefore important to review past researches on both KS and KT which have provided clear definitions and to extract the underlying core elements. Next, these core elements were compared and integrated with elements in [Table II](#) and are presented as findings of this study.

**Table II** The acceptable differences between KS and KT

<i>Concept</i>	<i>Characteristics</i>
Knowledge sharing	Is a critical stage in KT (using personalization strategy) Occurs at individual level (unidirectional sharing) People-to-people process
Knowledge transfer	Involves great participation of source (sender who shares the knowledge) and receiver (who acquires the knowledge) (using personalization strategy) Can occur at individual level, as well as higher levels, such as group, product line, department or division and organization More complex than KS

Source: Integrated from [Liyanage et al. \(2009\)](#) and [Paulin and Suneson \(2012\)](#)

## 2.2 Knowledge sharing

Past literature viewed KS as either using unidirectional or bidirectional perspectives (Tangaraja *et al.*, 2015). Unidirectional perspective claims that KS only involves the dissemination of knowledge in a single direction from the provider to the recipient (Yi, 2009). The bidirectional perspective, on the other hand, claims that KS involves an exchange of knowledge between individuals through the actions of knowledge donating and knowledge collecting (van den Hooff and de Ridder, 2004). In view of the two main perspectives, researchers have aligned various measures for KS and have provided clear definitions of the measures (Tangaraja *et al.*, 2015). Some of the selected measures for this review are depicted in Table III. These definitions were thoroughly analysed and reviewed to extract the underlying core elements that constructed KS.

From the reviews, it was found that the three elements which constructed KS is dependent on the perspectives used to view it, namely:

1. the characteristic as a behavioural attribute because KS involves actions of providing knowledge (unidirectional) or actions of exchanging knowledge (bidirectional);
2. people-to-people process. It occurs at the individual level, if sharing is viewed using the unidirectional perspective because the key player is the knowledge provider, and, here, the knowledge recipient is not an active player. However, in the bidirectional perspective, active sources are both knowledge provider and knowledge recipient who share/exchange knowledge, therefore, can occur beyond the individual level involving at least two people. Hence, sharing involves either knowledge provider only (unidirectional) or knowledge provider and knowledge recipient (bidirectional); and
3. involve actions, such as knowledge donating/giving only (for unidirectional) or both knowledge donating and knowledge collecting (for bidirectional). Hence, KS (unidirectional) has been viewed as a reflective construct and KS (bidirectional) as a formative construct in the literature so far. According to Hair *et al.* (2014), a construct/concept is viewed as reflective if the items reflect the construct/concept or, in other words, the construct/concept causes the items. These items in reflective are interchangeable and are highly correlated. In addition, for reflective construct/concept, deleting one of the items does not change the meaning of the construct/concept. In contrast, a construct/concept is regarded as formative, if together the items cause the construct/concept (Hair *et al.*, 2014). This means that the items are not interchangeable and each item captures a specific aspect of the construct/concept. As such, deleting one of the items will result in construct/concept underrepresentation.

It is however important to note that the knowledge collecting process in the bidirectional perspective only denotes the active process of seeking knowledge and does not ensure that knowledge is fully acquired. Knowledge acquisition is beyond knowledge seeking/collecting and it happens in the minds of the recipient via sense-making overtime and is part of KT.

## 2.3 Knowledge transfer

The earlier sections have clearly indicated that KT can be achieved using two strategies, namely, the personalization and codification as spelt out by Joia and Lemos (2010). Both the strategies can be accomplished with and without the facilitation of technology interventions (refer to Figures 2 and 3). In codification strategy, the process of codification actually had happened sometime earlier and not during the actual transfer process. For example, a book may have been written by the author about 10 or 20 years ago using codification process. But transfer of knowledge only happens from the time period a book is published till a time in the future (unpredictable), that is, until the information in the book is still considered valid by a recipient. Though in codification process, an owner has codified his/her explicit knowledge into a book/reading material sometime ago, the actual transfer of knowledge only occurs once a recipient starts reading the material/book.



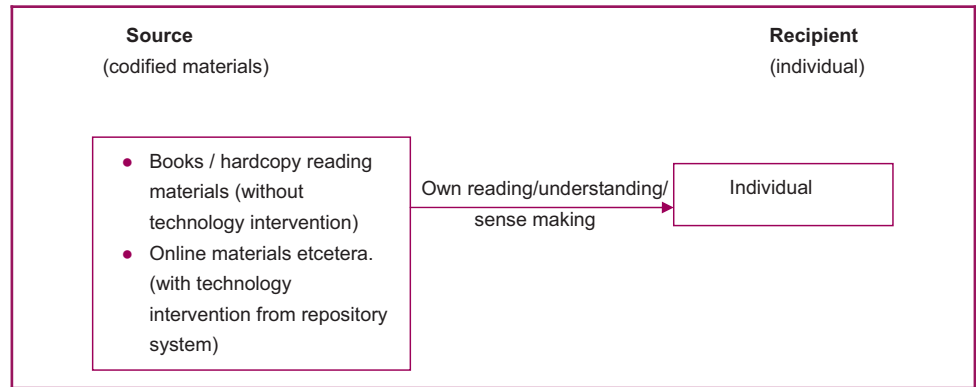
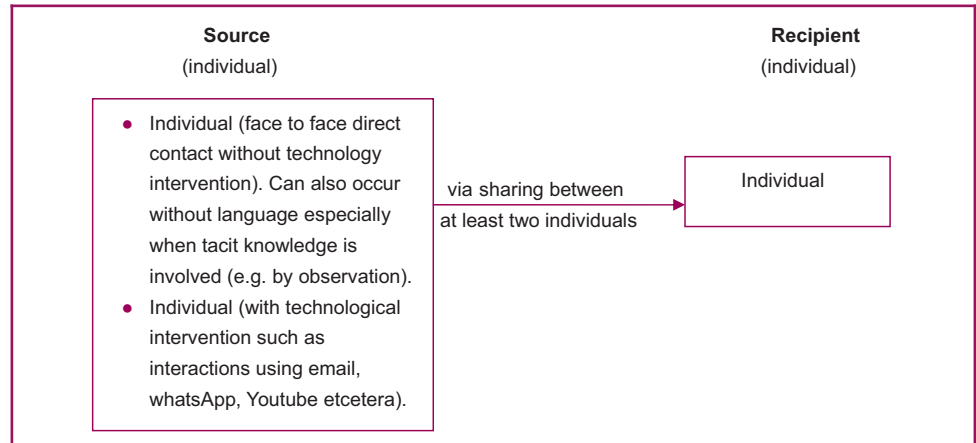
**Table III** The core elements of KS

<i>Author (Year)</i>	<i>Definition</i>	<i>Perspective</i>	<i>Core elements</i>
Bock and Kim (2002, p.16)	"The degree to which one actually shares one's knowledge"	Unidirectional	Involves knowledge provider's sharing actions Active source (knowledge provider) Occurs at individual level Giving/donating knowledge to others in one direction
Chennamaneni (2006, p. 30)	"The degree to which knowledge worker actually shares knowledge with other members within the organization"	Unidirectional	Involves knowledge provider's sharing actions Active source (knowledge provider) Occurs at individual level Giving/donating knowledge to others in one direction
Lin (2007, p. 315)	"KS is a social interaction culture, involving the exchange of employee knowledge, experiences, and skills through the whole department or organization" (p. 315)	Bidirectional	Involves knowledge exchanging actions between two or more individuals Active source (knowledge provider and knowledge recipient) Occurs beyond individual level involving both knowledge provider and knowledge recipient Involves knowledge donating and knowledge collecting actions in two-way directions
Tohidinia and Mosakhani (2010)	KS occurs when organizational members exchange organization-related information, ideas, suggestions and expertise with each other. It is an actual KS behaviour involving knowledge donating and knowledge collecting processes	Bidirectional	Involves knowledge exchanging actions between two or more individuals Active source (knowledge provider and knowledge recipient) Occurs beyond individual level involving both knowledge provider and knowledge recipient Involves knowledge donating and knowledge collecting actions in two way directions
Suppiah and Sandhu (2011, p. 464)	"KS is an act of making knowledge available to others within the organization"	Unidirectional	Involves knowledge provider's sharing actions Active source (knowledge provider) Occurs at individual level Giving/donating knowledge to others in one direction
van den Hooff and de Ridder (2004, p. 209)	"KS is the process where individuals mutually exchange their (implicit and explicit) knowledge" and it involves two processes, namely, knowledge donating and knowledge collecting	Bidirectional	Involves knowledge exchanging actions between two or more individuals Active source (knowledge provider and knowledge recipient) Occurs beyond individual level involving both knowledge provider and knowledge recipient Involves knowledge donating and knowledge collecting actions in two-way directions
Tangaraja <i>et al.</i> (2015, p. 124)	"KS involves an exchange of knowledge between individuals through the actions of knowledge donating and knowledge collecting" (adapted from van den Hooff and de Ridder, 2004)	Bidirectional	Involves knowledge exchanging actions between two or more individuals Active source (knowledge provider and knowledge recipient) Occurs beyond individual level involving both knowledge provider and knowledge recipient Involves knowledge donating and knowledge collecting actions in two-way directions

Source: Adapted from Tangaraja *et al.* (2015, p. 126)

Based on these arguments, therefore, in the context of this paper, the term KT (codification strategy) is operationalized as explicit knowledge that is transferred to a recipient from codified materials. However, in personalization strategy, the source's act of sharing is one of the key processes to enable KT, which was the main reason for such misconception in the literature so far.

Besides what is shown in Figures 2 and 3, the present review also revealed that KT is a broader concept if compared with KS. KS itself is one of the processes involved in KT using the personalization strategy. Table IV depicts some of the definitions provided for KT and what it entails.

**Figure 2** A simple KT model using codification strategy**Figure 3** A simple KT model using personalization strategy

From the reviews, it was found that the three elements which constructed KT is dependent on the strategy used, namely:

1. *The processes involved:* In KT (codification strategy), five core processes are crucial to ensure complete KT i.e. knowledge identifying, recognizing, acquiring/absorbing, assimilating and applying/utilizing by the recipient, whereas in KT (personalization strategy) six core processes are crucial i.e. knowledge identifying, recognizing, sharing, acquiring/absorbing, assimilating and applying/utilizing. KS itself is a subset of KT (using personalization strategy). Therefore, KT is a broader concept and involves various processes unlike KS.
2. *The characteristic of KT:* KT is not an entirely behavioural attribute because it involves both behavioural features (KS, knowledge application), as well as non-behavioural features (knowledge identification, knowledge recognition, knowledge acquisition/ absorption and knowledge assimilation), which occur in the minds of the recipient through sense-making and are non-visible.
3. *Occurrence level:* KT can occur at both the individual level and at higher levels, such as group, team, department and organization, depending on the strategy used. For example, in KT (codification) if an employee reads a reading material/handbook on his own, the transfer of knowledge occurs at individual level. At the same time, if an organization arranges an online course using repository system for a whole team, then it occurs at group level. In KT (personalization) transfer of knowledge usually occurs at the higher level,

involving at least two individuals (sharer and recipient) or group (group training). Therefore, KT (personalization) is a people-to-people process, unlike KT (codification).

### 3. Findings

The present study agrees with previous findings that KT is a broader concept as compared with KS. KS itself is one of the processes involved in KT (using personalization strategy) but not in KT (using codification strategy) (Figure 4). It was also found that KT (personalization) is a people-to-people process, so is the KS (both unidirectional and bidirectional); however, KT (codification) is not a people-to-people process.

**Table IV** The core elements of KT

Author (Year)	Definition	Core elements
Minbaeva <i>et al.</i> (2003, p. 587)	"The process that covers several stages starting from identifying the knowledge over the actual process of transferring the knowledge to its final utilization by the receiving unit. Transmission of knowledge from source to recipient has no value if recipient does not use the new knowledge". Focused on transfer of knowledge from MNC headquarters and other subsidiaries	KT using both personalisation and codification strategies Involves processes of identifying of knowledge, actual process of transfer and the final utilization of knowledge by the recipient Recipient's ability to absorb and utilize knowledge is the key for successful KT Occurs at the individual level or higher levels
Syed-Ikhsan and Rowland (2004)	KT requires the willingness of individuals to work with others and share knowledge for mutual benefits and the knowledge absorption capacity of the recipient	KT using personalization strategy Involves knowledge provider's sharing action and the processes of acquiring/absorbing knowledge by the recipient Active source (knowledge provider and knowledge recipient) At higher level involving at least two individuals (sharer and recipient) or group Successful KT may results change in behaviour in recipient
Peng <i>et al.</i> (2014)	"The process through which the knowledge state of one actor is affected by that of another and the outcome is, knowledge is passed from the source to the destination" (p.11) without the source losing his/her knowledge	KT using personalization strategy Involves knowledge provider's sharing action and the processes of identifying, acquiring/absorbing, assimilating and utilizing knowledge by the recipient Active source (knowledge provider and knowledge recipient) At higher level involving at least two individuals (sharer and recipient) or group
Chang <i>et al.</i> (2012)	KT involves both transmission (source) and receipt of knowledge (recipient)	KT using personalization strategy Involves knowledge provider's sharing action and the processes of recognizing, absorbing, assimilating and applying knowledge by the recipient Active source (knowledge provider and knowledge recipient) At higher level involving at least two individuals (sharer and recipient) or group Successful KT depends on the sharer i.e. on his/her competency in passing the knowledge

(continued)

**Table IV**

<i>Author (Year)</i>	<i>Definition</i>	<i>Core elements</i>
Gera (2012, p. 257)	"KT is about identifying (accessible) knowledge that already exists, acquiring it, and subsequently applying this knowledge to develop new ideas or enhance the existing ideas to make a process or action faster, better or safer than they would otherwise been". "Conveyance of knowledge from one place, person, or ownership to another"	<p>KT using both personalization and codification strategies</p> <p>In personalization strategy, active sources are both the sharer and recipient, therefore, involves great participation of sharer and recipient</p> <p>In codification strategy, active source is recipient, and source is an object, for example, book/articles/online materials, etc., therefore it does not involve any participation</p> <p>Processes involved in personalization strategy are identifying, recognizing, sharing, acquiring/absorbing and applying</p> <p>Processes involved in codification strategy are identifying, recognizing, acquiring/absorbing and applying</p> <p>At individual level or higher levels, such as group, team, department, organization</p>
Wang (2015, p. 137)	KT covers processes starting from how a practice in one organization is transferred to another organization initiated at individual level. "Two actors are involved i.e. the transferor and the recipient. The transferor communicates his idea/practice and the recipient evaluates it. Whether the shared knowledge is adopted depends whether the transferor can access knowledge and communicate it effectively and whether the recipient evaluate the knowledge positively"	<p>KT using personalization strategy</p> <p>Involves knowledge provider's sharing action and the processes of evaluating, recognizing, absorbing, assimilating and adopting knowledge/practice by the recipient</p> <p>Active source (knowledge provider and knowledge recipient)</p> <p>At higher level involving at least two individuals (sharer and recipient) or group</p>

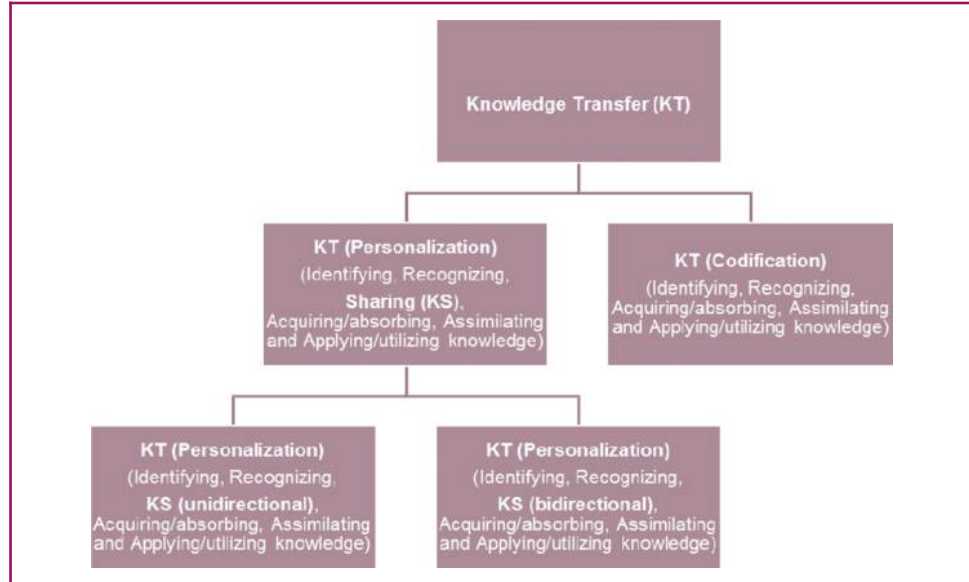
In addition, the present review revealed that KS (unidirectional) occurs at the individual level. As for KT (codification), it can occur either at the individual level (recipient's own reading) or at the group level through organization's repository system for a team. On the other hand, KT (personalization) and KS (bidirectional) only occurs at the higher level, involving at least two individuals. Other findings include the attribute of the construct/concept whether it is reflective or formative. In the past, KS (unidirectional) has been viewed as a reflective concept, whereas KS (bidirectional) and KT (both codification and personalization) as formative concepts. The findings of the present review are detailed in the [Table V](#) below.

#### 4. Discussions

The authors agreed that KS is an entirely behavioural concept because it involves observable actions, whereas KT is not entirely a behavioural concept because it encompasses both behavioural and non-behavioural features through various processes. KS as a behavioural attribute is also supported by other scholars ([Akhavan et al., 2013](#); [Ford and Staples, 2008](#); [Kumar and Che Rose, 2012](#); [Yi, 2009](#)), whereas KT as a process is supported by [Szulanski \(1999\)](#).

Further, the authors also agreed that KT (personalization) is a people-to-people process. Likewise, both the KSs (unidirectional and bidirectional) are also people-to-people process because it is a subset of KT (personalization). However, KT (codification) is not a

**Figure 4** A diagram showing the interconnections of KT and KS i.e. the processes involved



people-to-people process because the source is codified material and not an individual. Overall in KT (personalization), the active participation of knowledge provider and recipient is crucial. This is because KT (personalization) also involves other active processes, such as knowledge acquisition, assimilation and application, involving the knowledge recipient apart from the sharer's active sharing action. Similarly, KS (bidirectional) too stresses the active participation between knowledge provider and recipient because it captures the two processes of knowledge donating and knowledge collecting. In contrast, knowledge recipient is more passive in KS (unidirectional), and the active role is only played by the knowledge provider. Thus, there is not much participation between the knowledge provider and knowledge recipient in KS (unidirectional).

Using the same arguments as above, next, this study also supported that the occurrence level of KT and KS differ according to the perspective of KS and strategy used to transfer knowledge. It should be recalled that the active source in KS (unidirectional) is only the knowledge provider, thus it occurs at the individual level. As for the KT (codification), it can occur either at the individual level (recipient's own reading) or at the group level (if an online course was arranged by the organization using its repository system). KT (personalization) and KS (bidirectional) occurs at the higher level, involving at least two individuals at any one time because the recipient also plays an active role.

Additionally, past literatures on KS (unidirectional) have regarded the concept as reflective. On the other hand, the KS (bidirectional) and KT (both codification and personalization) have been regarded as formative concepts. However, the attribute of a concept, whether it is reflective or formative, is also dependent on the operational definition given to the concept by a researcher and the lens used to view the concept. So, researchers should ensure that the operational definition comprises of all the elements that constructed the concept and does not leave out something that should be included or vice versa (Ary *et al.*, 2011). KTs (codification and personalization) are formative concepts because they involve various processes as outlined in Table V, in contrast to KS (unidirectional) which involves only one process i.e. giving knowledge.

In KS (unidirectional), the items that measure this one-way action of providing knowledge are interchangeable because they measure the same process i.e. giving knowledge. Deleting one

**Table V** The differences between KS and KT

<i>Concept</i>	<i>Characteristics</i>
KS (unidirectional)	<p>A critical stage in KT (personalization)</p> <p>Active source knowledge provider</p> <p>Involves one-way sharing action (one process i.e. giving knowledge)</p> <p>Occurs at individual level</p> <p>People-to-people process</p> <p>A behavioural attribute</p> <p>Has been viewed as a reflective concept so far</p>
KS (bidirectional)	<p>A critical stage in KT (personalization)</p> <p>Active source (both knowledge provider and knowledge recipient)</p> <p>Involves two processes i.e. knowledge donating and knowledge collecting</p> <p>Involves great participation of source and receiver (they can exchange their role during the exchange process)</p> <p>Occurs beyond individual level involving at least two people</p> <p>People-to-people process</p> <p>A behavioural attribute</p> <p>A formative concept (should capture the two processes to avoid construct underrepresentation).</p>
KT (personalization)	<p>A broader concept than KS</p> <p>Active source (both knowledge provider and knowledge recipient)</p> <p>For complete KT, six processes are crucial, namely, knowledge identification, recognition, sharing, acquisition/absorption, assimilation and application</p> <p>Involves great participation of source (sender who shares the knowledge) and receiver (who identifies, recognize, acquires/absorbs, assimilate and apply the knowledge)</p> <p>Conveyance of knowledge from one person to another person (involving two individuals) or a group of people simultaneously (training)</p> <p>Occurs at higher level involving at least two individuals (sharer and recipient) or group (group training)</p> <p>People-to-people process</p> <p>Behavioural (sharing, application) and non-behavioural features (identification, recognition, acquisition/absorption and knowledge assimilation)</p> <p>A formative concept (should capture all the six processes to avoid construct underrepresentation)</p> <p>Very crucial to transfer implicit and tacit knowledge, easily done for explicit knowledge.</p>
KT (codification)	<p>Active source is knowledge recipient only</p> <p>For complete KT, five processes are crucial, namely, knowledge identification, recognition, acquisition/absorption, assimilation and application (except sharing)</p> <p>Conveyance of knowledge from an ownership (for example book/articles/online materials etc.) to recipient via own reading, sense-making and understanding</p> <p>Occurs at individual level (recipient's own reading) as well as higher levels, such as group, team (organization's repository system for a team)</p> <p>Absorptive capacity of the recipient is very important to ensure KT</p> <p>A formative construct (should capture all the five processes to avoid construct underrepresentation)</p> <p>Well transferred for explicit knowledge, however merely impossible to transfer tacit knowledge</p>

of the items will not change the meaning of the concept; as such, KS (unidirectional) has been viewed as a reflective concept in the past based on the lens used to view this concept. However, in KS (bidirectional), KT (codification) and KT (personalization) together a few processes cause the concepts. For instance, in KS (bidirectional), both the processes of knowledge donating and knowledge collecting are important to ensure that knowledge exchange occurs between individuals. In KT (codification) and KT (personalization), five and six processes, respectively, are crucial to ensure complete KT. Each item for the concepts may capture one of the processes involved. Therefore, it is not possible to delete one of these items as it will result in construct underrepresentation.

## 5. Conclusions

This paper concludes that KS and KT are two different concepts, although they are interconnected in some ways. The processes involved in each of these concepts differ



according to the perspective of KS and the strategy used to transfer knowledge as in KT. One of the key findings of this paper is that KS is a subset of KT (personalization); however, in KT (codification), KS is not one of the immediate processes during the actual transfer of knowledge because the real codification process has taken place in an earlier time.

This clarification is important because currently there are lots of confusions in the KM literature on what are the elements that constructed KS and KT, which consequently led to the misconception. As such, the present paper helps to solve the misconception in KM literature. It yielded a clear delineation on the differences and the overlapping contents of KT and KS. Further, it also outlined the key elements of each concept of KS and KT. Such explanation shall help future KM researchers to define the concepts accurately and choose the right instruments to measure the concepts because they are operationalized to ensure goodness of the measures of the instruments.

Besides, the findings of this study shall lead practitioners to undertake the right actions on how to foster KS and to enable KT in their organizations. Previous findings have somewhat guided HRD practitioners to focus on certain crucial factors. For example, knowledge self-efficacy, altruistic behaviour, commitment, trust, etc. to foster KSB (Lin, 2007; van den Hooff and van Weenen, 2004; Liu and Fang, 2010) and organizational culture, technology, organizational structure, etc. to enable KT (Syed-Ikhsan and Rowland, 2004). However, there appeared to be some blurriness in the literature which created confusions among the HRD practitioners. Therefore, having a clear notion of the concepts shall lead to development of future enhanced models explaining better how to foster KSB and enable KT in organizations.

### *5.1 Research limitations*

The findings of the present paper are purely based on the analyses of two previous attempts and a number of selected relevant articles in the past two decades that have provided clear definitions of KT and KS. Therefore, there are other papers that have provided clear definitions as well but were not included in the present review.

### *5.2 Implications for theory and practice*

Theoretically, the present paper helps KM researchers to get a clear notion of what constructed KS and KT. Such clarification shall assist researchers to explain the concepts rightly using the most suitable theory or theories, especially in deductive inquiries.

In terms of practice, the present paper helps to reduce current confusions in KM literature, which is essential to avoid misleading findings in the area of KS and KT. This is imperative because, as mentioned in Section 3 (Findings), the active source(s) for KS (unidirectional) is the knowledge provider, that for KS (bidirectional) and KT (personalization) are knowledge provider and knowledge recipient and that for KT (codification) is the knowledge recipient. Therefore, the focus of the research model differs according to the perspective of KS and strategy used in KT because it focuses on different active source(s).

Having said that the factors associated to KS and KT differ accordingly, though there could be some similarities. For instance, to enable KT (using codification strategy), factors, such as organization's repository system with up-to-date codified online materials, the absorptive capacity of the recipient, the recipient's motivation for career advancement, etc., are crucial in enabling KT using codification strategy. However, as for the KS (unidirectional), factors such as the altruistic behaviour of the knowledge provider, the intrinsic motivations of the knowledge provider, knowledge provider's time availability to share knowledge with others are among the important factors to foster KS (unidirectional). Nevertheless, there also could be some similar factors related to both the concepts, for example, commitment to the organization of both knowledge provider and knowledge recipient is important to foster both KSB and KT. However, having clear notion of these two concepts will certainly help organizations to focus on factors uniquely associated to knowledge provider and knowledge recipient and achieve better performances.

Therefore, the paper is an effort towards leading the HRD practitioners to embark on the right steps to foster KS behaviour among employees and to enable KT in their respective organizations.

### 5.3 Implications for future research

For future research, it is recommended to repeat the present effort with a more thorough and rigorous analysis using a different approach, such as a meta-analysis review, to obtain more comprehensive and complete findings.

In addition, for KS (unidirectional), so far previous scholars have only viewed it as a reflective concept. However, depending on the operationalization of the concept, KS (unidirectional) can also be viewed as a second-order formative construct, i.e. models that involve two layers of constructs (Hair *et al.*, 2014). This is because knowledge giving by a knowledge provider can occur in two ways – one way is when a knowledge provider provides his/her knowledge voluntarily without being requested and the second way is when a knowledge provider provides his/her knowledge only when requested by others. This is important because some employees may not share their knowledge voluntarily, but, when requested by colleagues, they are more inclined to share. Therefore, depending on the operationalization of the concept, KS (unidirectional) can also be viewed as a formative construct which in the past, researchers have overlooked.

The two possible dimensions for second-order formative KS (unidirectional) are voluntary KS and requested KS. The measurement items previously used for reflective KS (unidirectional) can be adapted for formative KS (unidirectional) with the addition of words, such as “voluntarily” or “when they ask me to”, to show the two ways of providing knowledge in formative KS (unidirectional). Therefore, this is one possible area for future research related to KS (unidirectional).

**Table VI** The measurement items for KS (unidirectional) and KS (bidirectional) for future researches

<i>Concept</i>	<i>Items</i>
KS (unidirectional) (reflective)	I share new knowledge that I gain with colleagues I share my explicit knowledge with colleagues I share my skills with colleagues I share my past work experiences with colleagues
KS (unidirectional) (formative)	<i>Voluntary KS</i> When I have learnt something new, I tell my colleagues about it voluntarily I share my explicit knowledge with colleagues voluntarily I share my skills with colleagues voluntarily I share my past work experiences with colleagues voluntarily <i>Requested KS</i> I share new knowledge that I gain with colleagues, when they ask me to I share my explicit knowledge with colleagues, when they ask me to I share my skills with colleagues, when they ask me to I share my past work experiences with colleagues, when they ask me to
KS (bidirectional)	<i>Knowledge donating</i> I share new knowledge that I gain with colleagues I share my explicit knowledge with colleagues I share my skills with colleagues I share my past work experiences with colleagues <i>Knowledge collecting</i> Colleagues share their explicit knowledge with me, when I ask them to Colleagues share their skills with me, when I ask them to Colleagues share their past work experiences with me, when I ask them to Colleagues share their newly gained knowledge with me, when I ask them to

Source: Adapted from Lin (2007); van den hooff and de Ridder (2004); van den hooff and van Weenen (2004)

As for the KS (bidirectional) or knowledge exchange among employees involving its two dimensions, i.e. knowledge donating and knowledge collecting, so far not much focuses have been given in the past. Therefore, it is recommended that future researches to focus on the KS (bidirectional) as well, to add knowledge to the existing KS (bidirectional) literature.

Hence, to assist future researches on KS, some measurement items for KS (unidirectional) and KS (bidirectional) are presented in Table VI below. However, as for KT (personalization) and KT (codification), it is recommended that future researches to look into developing suitable instruments for these concepts because previous instruments did not capture all the elements that KT entails.

Last but not the least, future researches on KS and KT could focus on the role of Information and Communication Technology (ICT) as in this technology-dominated era, ICT plays an essential role in both facilitating KS and enabling KT among employees.

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