DEVELOPING SCALES FOR MEASURING KNOWLEDGE ACCEPTANCE AND USE IN PROJECTS

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ABSTRACT

Knowledge sharing and ways to measure the outcomes thereof is still a topic that needs further research. In an attempt to provide a better understanding of measuring the outcomes of knowledge sharing, this study draws from the theory of reasoned action and proposes that knowledge users first need to indicate that they have the intention to use knowledge being transferred before they actually use it. This behavioural intention is defined as the individual's subjective probability that he or she will perform a specified behaviour. This intention is stimulated by the individual's attitude. Davis introduced a well-known technology acceptance model based on the theory or reasoned action, which comprises three elements namely perceived usefulness, perceived ease-of-use and the intent-to-use a new technology. Although the model is intended for technology transfer, it can be argued that knowledge can be associated with the same model because technology constitutes knowledge, and that all technologies are embodiments of some form of human knowledge. The purpose of this paper is therefore to define a measurement framework for knowledge acceptance and use, and to determine dimensions for the elements of this framework. Through a literature review, the dimensions for the concept of perceived value is identified as knowledge uniqueness, relevance, comprehensiveness, decision making and source credibility. Furthermore, understandability, speed and economics of knowledge transfer are identified as dimensions for the concept perceived ease-of-use whereas the degree of possible use is identified as dimension for the third concept intent-to-use of the knowledge. Hereafter a set of items were derived that could measure the dimensions. The literature review therefore resulted in a total of nine dimensions to be used in the framework and a total of 81 items were compiled that could be used to measure the three concepts. Through an empirical study, using a survey design, 321 respondents were requested to judge the items with regards to their applicability to the definition of the relevant dimensions. The majority of the respondents were post graduates from technology related organisations and considering their relevant engineering and project management experience, made them suitable respondents for the purpose of this research. The data analysis is done through mean comparison and mean ranking and resulted in a suitable and smaller set of items to be used as part of a measurement instrument for

measuring knowledge acceptance and use in projects. The resulting items are limited in the sense that it is based on the identified dimensions, therefore possible other dimensions are not addressed. The practical application of the research is that a measurement instrument can developed that can be used for further studies on knowledge transfer and knowledge use in projects.

Key words: Scale development; knowledge acceptance; knowledge use; measurement framework; measurement instrument; project environment.

INTRODUCTION

Van Wijk et al. (2008) maintain that after two decades of investigations in the knowledge management field, a systematic overview of the underlying mechanisms and outcomes of knowledge transfer is still lacking (Formentini and Romano, 2011). This seem still the case as in a global study on future research needs in the field of knowledge management and business performance, one of the issues mentioned is knowledge transfer and ways to measure the outcomes thereof (Heisig et al., 2016). In an attempt to provide understanding of measuring the outcomes of knowledge transfer, and drawing from the theory of reasoned action by Fishbein (1967), knowledge users first need to indicate that they have the intention to use of knowledge being transferred before they actually use it. This behavioural intention is defined as the "individual's subjective probability that he or she will perform a specified behaviour" (Fishbein and Ajzen, 1975, p.288). This intention is stimulated by the attitude, which refers to "an individuals' degree of evaluative affect toward the target behaviour" (Fishbein and Ajzen, 1975, p.216). Davis (1985) introduced a Technology Acceptance Model based on the theory or reasoned action by Fishbein (1967). Davis (1985) added two variables (which were informed by existing published studies in the Management Information Systems and Human Factors Fields) which impact on the user's attitude, namely "perceived usefulness" and "perceived ease-of-use" (Davis, 1985; Venkatesh and Davis, 2000). Perceived usefulness is defined as "the degree to which individuals believe that using a particular system or technology would enhance his or her job performance' whereas perceived ease-of-use is defined as "the degree to which an individual believes that using a particular system or technology would be free of physical and mental effort" (Davis, 1985, p.26). Both these elements affect the attitude towards using the technology and the perceived ease-of-use can also affect the perceived usefulness. Only after the user is motivated to use the system or technology, the actual and spontaneous use thereof can materialise. The technology acceptance model has been used, modified and improved on through previous studies and has been confirmed empirically in many different settings (Davis, 1985; Venkatesh and Davis, 2000; Kelleher and O'Malley, 2005). Consequently, there is a high probability that the underlying relationships between the different elements of the model are valid.

Inspired by a number of concepts used in Davis' Technology Acceptance Model, it can be argued that 'knowledge' can be associated with the same concepts because 'technology constitutes knowledge', and that all technologies are embodiments of some form of human knowledge (Parayil, 1991). For this research, the word 'system or technology' is replaced with 'knowledge' in both definitions mentioned by Davis, therefore these new definitions could represent knowledge transfer and the acceptance of the knowledge by the receiver of the knowledge. Such an adapted framework is used as theoretical construct for defining the perceived and possible use of knowledge as a motivational step towards the actual use of the knowledge which are all part of the broader concept of knowledge transfer outcomes. From a project viewpoint, one therefore needs to determine whether receiving projects

and project team members are motivated in the possible use of the knowledge received from other projects and project related sources in terms of the perceived value and perceived ease-of-use and the receiver's intention to use the knowledge. It therefore implies that the recipient(s) of the knowledge must be able to understand the knowledge received and have experience with the surrounding conditions and influences in which the knowledge is generated and used, for the knowledge to be meaningful (Nonaka, 1994). Although this adapted framework can be applicable to any knowledge transfer process and the relationships between elements should be investigated to validate the framework within a certain context, this study does not test these relationships but defines the three elements namely "perceived value", "perceived ease-of-use" and "intent-to-use" in terms of dimensions and also develops a measurement scale for these dimensions. Through this study a valid and prioritised set of initial questions can be derived that can measure knowledge acceptance and possible use of the knowledge in projects.

KNOWLEDGE ACCEPTANCE ELEMENTS

Perceived Value

Perceived value, as a knowledge effectiveness parameter, can be defined as the degree to which a recipient of knowledge believes that the knowledge is relevant and that the use of the knowledge would add value and enhance their work or project performance. The perceived value can have multiple dimensions as indicated below:

Uniqueness: The rareness of the transferred knowledge including the difficulty to obtain or copy it (inimitability) and to find a substitute for it (non-substitutability) (Barney, 1991) . The more unique the knowledge, (i.e. higher the inimitability and non-substitutability of the knowledge), the more the perceived value of the knowledge and subsequent competitive advantage it can create or sustain (Ford and Staples, 2006; Gupta and Govindarajan, 2000). Unique knowledge is often tacit, complex and highly product specific (Han, Jo and Kang, 2016) and embedded within a firm's knowledge reservoirs like people, tasks, tools and networks (Argote and Ingram, 2000). The ambiguity caused by the tacitness of the knowledge objects, often makes knowledge transfer difficult, especially when there is no overlapping process compatible with both actors of learning (Uygur, 2013).

Relevance: Relevance can be viewed as the extent to which the knowledge is applicable and salient to project and subsequent organizational success (Pérez-Nordtvedt, Kedia, Datta and Rasheed, 2008) and whether the subsequent recipient organisation (including projects and teams) will learn a great deal about the technological or process know-how held by the source project (Simonin, 1999, 2004). It can be argued that the more relevant the knowledge is to a particular problem at hand or application, the more valuable it is (Ford and Staples, 2006).

Comprehensiveness: The comprehensiveness of the knowledge pertains to the correctness and level of detail of the knowledge that is transferred and should lead to a deeper understanding of the knowledge content as defined by (Zahra, Ireland and Hitt, 2000). It should therefor include the know-what, know-why and know-how of the knowledge objects. In general, the more detail provided, the higher the comprehensiveness but the more time and resources it will take in providing such details. Too much information may also lead to wasted effort and information overload. The correctness of knowledge artefacts and the inclusion of contextual meaning adds to the perceived value (Jennex, Smolnik and Croasdell, 2016).

Decision making: For the decision maker, the value of knowledge lies in the question whether the received knowledge will improve the ability of decision maker to make better decisions (Jennex, Smolnik and Croasdell, 2007).

Source Attractiveness: The recipient of the knowledge is more likely to be enthusiastic about acquiring and using the knowledge being transferred when the recipient deems the knowledge source to be attractive and/or authoritative. This could increase the recipient learning intent (Pérez-Nordtvedt et al., 2008; Gupta and Govindarajan, 2000). Source attractiveness can also be seen as the value and organisation or project attach to specific employees or team members in terms of their influence and ability to perform their work and achieve organisational or project goals (Ford and Staples, 2006).

Perceived Ease-of-Use

Perceived ease-of-use, as a knowledge efficiency parameter, can be defined as the degree to which an individual believes that the use of knowledge would be free of physical and mental effort. Physical and mental effort can be experienced in different ways as indicated below:

Comprehensibility: The comprehensibility or understandability of the knowledge is based on the easiness in obtaining a deeper understanding of the knowledge content (Zahra, Ireland and Hitt, 2000). It can therefore be defined as the extent to which new knowledge that is transferred can be fully understood by the recipient of the knowledge (Pérez-Nordtvedt et al., 2008). For project-based organisations, this means that knowledge generated and transferred by a sender project, team or individual is to be fully and easily understood by individuals and teams elsewhere in the project or across project boundaries (Jennex, Smolnik and Croasdell, 2007).

Speed: The speed of knowledge transfer signifies how quickly the recipient acquires new insights and skills (Zahra, Ireland and Hitt, 2000) or how quickly was knowledge searched and retrieved (Jennex, Smolnik and Croasdell, 2007). Should the recipient master useful knowledge, but does so slowly, early mover benefits are likely to be limited and the costs might even outweigh anticipated benefits (Pérez-Nordtvedt et al., 2008).

Economics of Transfer: The economy of knowledge transfer relates to the cost and resources used and associated with the searching for knowledge as well as the transferring the knowledge through the transfer process. (Hansen, Mors and Lovas, 2005; Szulanski, 1996), Excessive use of resources could also lead to the loss of early mover benefits similar to the speed of transfer (Pérez-Nordtvedt et al., 2008). The speed and easiness at which a recipient can obtain better understanding of the knowledge will motivate the recipient in utilising the knowledge to its full advantage but will also enhance the perceived value of the knowledge, (Szulanski, 1996).

The motivational effect of perceived value and perceived ease-of-use of the knowledge both lead to the intention by the recipient to use the knowledge and can assist in the transferring process.

Intent-to-Use, Actual Use and Added Value

Intention to use knowledge is a major factor in enhancing or limiting knowledge transfer as it can be argued that motivation positively influences knowledge transfer (Gupta and Govindarajan, 2000), while the lack of motivation in accepting knowledge leads to ‘stickiness’ or difficulties in the transfer process.

The recipient's intent-to-use the knowledge needs to manifest in the application of the knowledge to existing situations and/or the creation of new knowledge (Daigle-LeBlanc and Kelloway, 2002; Jennex, 2008) and should ultimately add value to subsequent projects and the organisation at large.

The notion of value should be observed in increased work performance and productivity, improved project deliverables, products and services, the improvement of technological, project management and supporting processes and the improvement of the knowledge base of individuals and an increase in innovative ability and activity. The added value could also lead to an increase in competitive capacity and position in the market, increased customer and employee satisfaction (Heisig et al., 2016; Pérez-Nordtvedt et al., 2008; Simonin, 2004; Jennex, Smolnik and Croasdell, 2007, 2016).

Summary

In conclusion the above discussion leads to the following definitions for each of the dimensions of knowledge acceptance as depicted in Table 1.

Table 1: Dimensions and their Definition

Dimension	*Definition*
Knowledge Uniqueness	*The degree to which a recipient of the acquired knowledge believes that the knowledge is unique and rare to the current project*
Knowledge Relevance	*The degree to which a recipient of the acquired knowledge believes that the knowledge is relevant for use on the current project*
Knowledge Comprehensiveness	*The degree to which a recipient of the acquired knowledge believes that the knowledge is comprehensive in both content and context*
Decision Making	*The degree to which a recipient of the acquired knowledge believes that the knowledge aids in decision making on the project*
Source Credibility	*The degree to which a recipient of the acquired knowledge believes that the source or sender of the knowledge gives value to the knowledge*
Comprehensibility of the Knowledge	*The degree to which a recipient of the acquired knowledge believes that the knowledge is comprehensible and understandable by different project team members*
Speed of Knowledge Transfer	*The degree to which a recipient of the acquired knowledge believes that the knowledge is received and comprehended in a timeous manner*
Economics of Knowledge Transfer	*The degree to which a recipient of the acquired knowledge believes that the knowledge is acquired in an effortless and optimal way*
Intent-to-Use	*The degree to which a recipient of the acquired knowledge has the intention of using the acquired knowledge*

The next section deals with the research methodology in identifying appropriate items to measure each of the established dimensions.

METHODOLOGY

A scale development methodology is applied to this study. Hinkin et.al (1997), described a process for developing reliable and valid measurement instruments that can be used in a research setting. They propose a scale development process consisting of (1) item generation, (2) content adequacy assessment, (3) questionnaire administration, (4) factor analysis, (5) internal consistency assessment, (6) construct validity and (7) replication. This paper only deals with the first step namely item generation.

Item generation is the process of creating items or statements to be used to measure a construct under examination. When creating items, care should be taken with respect to each item that it addresses only one issue. Furthermore, all items should be consistent in terms of perspective and should be simple and as short as possible. Items should be written in a language that is familiar to the target group and negatively worded items should be avoided. The number of items to be compiled must ensure that the measure is internally consistent and parsimonious and should comprise the minimum number of items that adequately assess the dimension of the construct (Hinkin, Tracey and Enz, 1997). As a general rule and used by different authors, 3 to 4 items per dimension should provide adequate internal consistency reliability (Hinkin, Tracey and Enz, 1997; Saha, Kumar, Dutta and Dutta, 2017).

As part of the literature review, nine dimensions were identified that could measure the three elements of perceived value, perceived ease-of-use and intent-to-use of the proposed knowledge acceptance model. From the literature, groups of items or statements were derived in a deductive manner that could measure each dimension. Items were formalised in such a way that each statement related to one dimension only. This was done to ensure that the content adequacy assessment step followed hereafter, could be simplified. This will be discussed in the next section. A schematic representation of the framework and the dimensions of the elements is depicted in Figure 1. A total of 81 Items were compiled for the different dimensions. These items are listed in Table 2, Table 3 and Table 4 for each of the three elements.

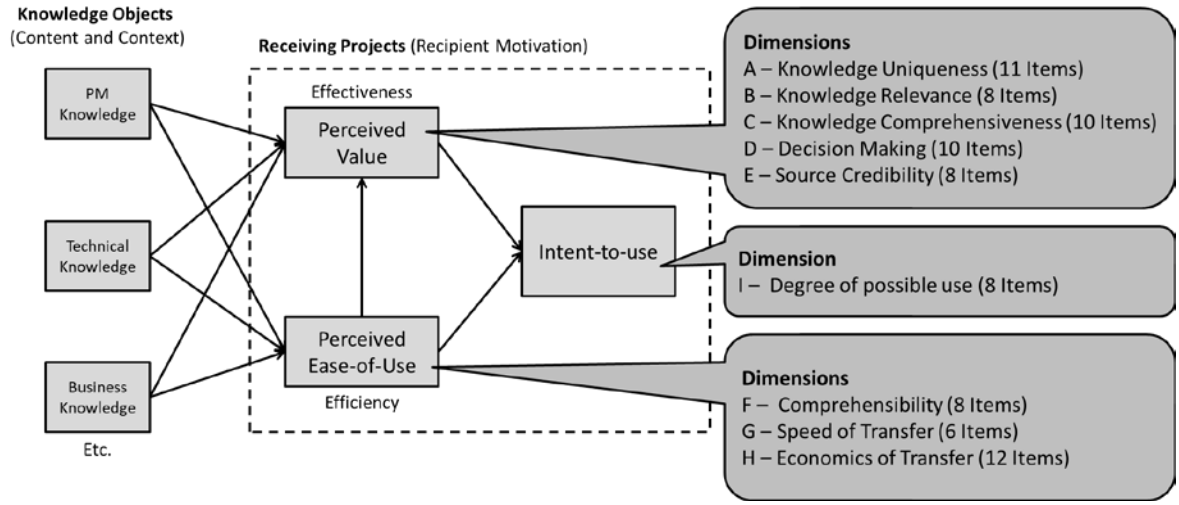

Figure 1: Elements and their Dimensions for Measuring Knowledge Acceptance and Use

Table 2: Perceived Value Dimensions and Item Statements

Dim	Identifier	Item Statement
Uniqueness	UNI1	The acquired knowledge is novel and rare
	UNI2	The acquired knowledge is scarce to obtain
	UNI3	The acquired knowledge is difficult to find
	UNI4	The acquired knowledge is difficult to copy or imitate by others
	UNI5	The acquired knowledge cannot be substituted by other knowledge
	UNI6	The acquired knowledge is highly content specific
	UNI7	The acquired knowledge is very tacit and difficult to write down
	UNI8	The acquired knowledge has a lot of complexity
	UNI9	The acquired knowledge is embedded in people
	UNI10	The acquired knowledge is embedded in the processes we use
	UNI11	The acquired knowledge is embedded in the systems we use
Relevance	REL1	The acquired knowledge is very applicable to the project
	REL2	The project can learn a lot from the acquired knowledge
	REL3	We can apply a lot of the acquired knowledge on the project
	REL4	The acquired knowledge is used regularly on the project
	REL5	The acquired knowledge is important to the outcomes of the project
	REL6	The acquired knowledge improved the success of the project
	REL7	I can apply the knowledge directly to the project
	REL8	There is no need to adapt the knowledge a lot
Comprehensiveness	CMH1	The acquired knowledge covers a wide scope
	CMH2	The acquired knowledge deals with many topics
	CMH3	The acquired knowledge explains a lot
	CMH4	The acquired knowledge provides good content
	CMH5	The acquired knowledge provides good context
	CMH6	The acquired knowledge has a lot of details
	CMH7	The acquired knowledge gives me a deeper understanding of the problem or situation at hand
	CMH8	The acquired knowledge takes a lot of time to go through
	CMH9	The acquired knowledge feels like an information overload
	CMH10	It is time consuming to find important aspects in the content of the acquired knowledge
Decision Making	DEC1	The acquired knowledge helps me to select the best options
	DEC2	The acquired knowledge helps me to supervise project activities better
	DEC3	The acquired knowledge helps me to make better judgments
	DEC4	The acquired knowledge helps me to make better choices
	DEC5	The acquired knowledge helps me to prioritise my work

Dim	Identifier	Item Statement
	DEC6	The acquired knowledge helps me to make informed decision
	DEC7	The acquired knowledge helps me to evaluate different project feasibility options
	DEC8	The acquired knowledge helps me to evaluate different procurement options
	DEC9	The acquired knowledge helps me to evaluate different technical options
	DEC10	The acquired knowledge helps me to understand the different options at hand
Source Credibility	SRC1	I believe in the knowledge because I believe in the person that sent me the knowledge
	SRC2	I believe in the knowledge because the project where the knowledge was generated was successful
	SRC3	I believe in the knowledge because programme or portfolio management places high value on it
	SRC4	I believe in the knowledge because the person or entity where the knowledge came from has the ability to influence the project and its objectives
	SRC5	I believe in the knowledge because the person or entity with the knowledge has a lot of authority
	SRC6	The source of the knowledge makes the knowledge attractive to me
	SRC7	The same person, entity or database helped me a lot the last time
	SRC8	I trust the source of the knowledge

Table 3: Perceived Ease-of-Use Dimensions and Item Statements

Dim	Identifier	Item Statement
Comprehensibility	UND1	I can easily understand the acquired knowledge
	UND2	The acquired knowledge makes sense to me and my team
	UND3	The acquired knowledge is provided in an understandable format
	UND4	The acquired knowledge is easy to interpret
	UND5	The acquired knowledge is provided on my level of understanding
	UND6	The acquired knowledge is provided according to my expectations
	UND7	My project team fully understands the message
	UND8	I could interpret the knowledge myself
Speed	SPD1	I acquired the new insights quickly
	SPD2	The transfer of the knowledge was done in a short period of time
	SPD3	I retrieved the knowledge relatively fast
	SPD4	I mastered the knowledge in a short period of time
	SPD5	I could identify important aspects quickly
	SPD6	When I asked for the knowledge, I received it quickly
Economics	ECO1	The knowledge acquired did not cost me a lot
	ECO2	I could acquire the knowledge without anybody's help
	ECO3	I could acquire the knowledge efficiently from the source

Dim	Identifier	Item Statement
	ECO4	*There were few restrictions in obtaining the knowledge*
	ECO5	*I did not have to motivate people to get access to the knowledge*
	ECO6	*I did not have to put in a lot of effort to obtain the knowledge*
	ECO7	*Acquiring the knowledge took little effort*
	ECO8	*The acquiring process for the knowledge was convenient*
	ECO9	*The knowledge repositories are easily accessed*
	ECO10	*It took little effort to identify the expert and to make contact with the person*
	ECO11	*I could acquire the knowledge in a direct and synchronous way from the source*
	ECO12	*I could acquire the knowledge without much investment*

Table 4: Intent-to-Use Dimension and Item Statements

Dim	Identifier	Item Statement
Degree of possible use	INT1	*The acquired knowledge should be used in the project*
	INT2	*It will be a shame not to use the acquired knowledge in the project*
	INT3	*The acquired knowledge really enlightens my thinking*
	INT4	*I make an effort in trying to use the acquired knowledge*
	INT5	*The acquired knowledge is usable in the project*
	INT6	*I am motivated by the acquired knowledge*
	INT7	*The acquired knowledge provides me with new insights*
	INT8	*I think I can apply the acquired knowledge to the project situation*

Before doing content adequacy assessment (as the next step, but not part of this study), the number of item statements need to be reduced to those that are most relevant in measuring the different dimensions and their definitions and to get to a smaller set of questions to make the measurement instrument more practical as it currently has a total of 81 items statements and would make the completing of a questionnaire a timeous and cumbersome task with a high possibility of response bias caused by boredom or fatigue, or respondents prematurely ending the answering of the questionnaire resulting in a lower response rate. Reducing the item statements was done asking respondents, acting as judges, to evaluate each item in terms of its relevance to the definition of the dimension. For this purpose, a questionnaire was developed that would measure a respondent's judgement of the relevance using a six-point Likert scale. The Likert scale included the following elements namely (1) not relevant, (2) low relevance, (3) somewhat relevant, (4) moderately relevant, (5) very relevant and (6) extremely relevant. A questionnaire brief was also compiled to explain the objective of the research and also provided guidelines on the correct interpretation of the items. Respondents in the study where a total of 321 post graduate students and professionals in the field of Engineering, Technology and Project Management at a major university in South Africa. The panel had an average work experience in projects of just under 5 years which ranged from a few months involved in projects up to a total of 40 years involvement in projects. For a set of judges to be considered appropriate, it is required from them to possess sufficient intellectual ability to understand the statements and perform

their item rating task and that they should be relatively free from serious potential biases (Schriesheim et al., 1993; Saha et al., 2017). These requirements made the use of students an appropriate option. The statistical analysis was done through the comparisons of means and mean ranking and the results are discussed in the following section.

ANALYSIS AND RESULTS

For the statistical analysis, the software application SPSS was used to calculate the means and mean rank of each of the items. This was done for three groups namely (1) all respondents (2) respondents with less than five years project experience and (3) respondents with five or more years project experience. By comparing both subgroups, it will indicate whether there is bias between the two groups and whether the more project experienced group may view certain items different from the less experienced group. As mentioned earlier in the paper, there is no specific rule about the number of items to be selected, although there are helpful heuristics, as the measurement items need to be internally consistent and parsimonious and should comprise of the minimum number of items that adequately assess the domain of interest (Hinkin, Tracey and Enz, 1997). As this can be achieved by three to four items per dimension, the decision was to select the top ranked four items for each dimension but also verify that the means should be above 3.50 meaning that respondents judged the relevance of the item statement at least moderately relevant (score of 4) to the definition including very relevant (score of 5) and extremely relevant (score of 6). In addition, an independent sample t-test was performed on the two age groups to determine whether there is any significant difference between the two groups. In almost all cases, the t-test results showed no significant differences between the mean ratings of the responses of the two age groups. Where there was a significant difference, it occurred on the low ranked items which were not selected as part of the final list. The final lists of selected items that could be used in the measurement instrument are listed in Table 5, Table 6 and Table 7 respectively and includes the mean values as well as mean ranking.

Table 5: Items Selected for Perceived Value

Identifier	***Item Statement***	***Mean***	***Mean Rank***
UNI6	*The acquired knowledge is highly content specific*	*4.03*	*7.20*
UNI5	*The acquired knowledge cannot be substituted by other knowledge*	*3.86*	*6.78*
UNI1	*The acquired knowledge is novel and rare*	*3.89*	*6.70*
UNI4	*The acquired knowledge is difficult to copy or imitate by others*	*3.60*	*6.27*
REL1	*The acquired knowledge is very applicable to the project*	*5.18*	*5.82*
REL3	*We can apply a lot of the acquired knowledge on the project*	*4.86*	*5.23*
REL2	*The project can learn a lot from the acquired knowledge*	*4.66*	*4.89*
REL7	*I can apply the knowledge directly to the project*	*4.69*	*4.85*
CMH7	*The acquired knowledge gives me a deeper understanding of the problem or situation at hand*	*4.81*	*7.37*
CMH5	*The acquired knowledge provides good context*	*4.45*	*6.50*

Identifier	Item Statement	Mean	Mean Rank
CMH4	The acquired knowledge provides good content	4.40	6.44
CMH3	The acquired knowledge explains a lot	4.31	6.31
DEC1	The acquired knowledge helps me to select the best options	5.21	6.83
DEC6	The acquired knowledge helps me to make informed decision	5.20	6.75
DEC3	The acquired knowledge helps me to make better judgments	5.09	6.51
DEC4	The acquired knowledge helps me to make better choices	5.07	6.41
SRC8	I trust the source of the knowledge	4.43	5.61
SRC2	I believe in the knowledge because the project where the knowledge was generated was successful	4.17	5.21
SRC1	I believe in the knowledge because I believe in the person that sent me the knowledge	4.07	4.78
SRC6	The source of the knowledge makes the knowledge attractive to me	3.82	4.54

Table 6: Items Selected for Perceived Ease-of-Use

Identifier	Item Statement	Mean	Mean Rank
UND2	The acquired knowledge makes sense to me and my team	4.78	5.09
UND1	I can easily understand the acquired knowledge	4.80	5.09
UND3	The acquired knowledge is provided in an understandable format	4.70	4.90
UND4	The acquired knowledge is easy to interpret	4.67	4.76
SPD5	I could identify important aspects quickly	4.50	3.84
SPD1	I acquired the new insights quickly	4.45	3.78
SPD4	I mastered the knowledge in a short period of time	4.37	3.60
SPD2	The transfer of the knowledge was done in a short period of time	4.26	3.51
ECO3	I could acquire the knowledge efficiently from the source	4.44	7.72
ECO9	The knowledge repositories are easily accessed	4.24	7.28
ECO8	The acquiring process for the knowledge was convenient	4.22	7.14
ECO11	I could acquire the knowledge in a direct and synchronous way from the source	4.12	6.79

Table 7: Items Selected for Intent-to-Use

Identifier	Item Statement	Mean	Mean Rank
INT8	I think I can apply the acquired knowledge to the project situation	4.90	5.41
INT5	The acquired knowledge is usable in the project	4.61	4.85
INT7	The acquired knowledge provides me with new insights	4.52	4.83

Identifier	*Item Statement*	*Mean*	*Mean Rank*
INT1	*The acquired knowledge should be used in the project*	*4.43*	*4.65*

CONCLUSION

The contribution of this papers is that it proposes a measurement framework that is based on a well-known technology acceptance model that can be used to measure recipient motivation though a cognitive and effective response to the received knowledge that provides the link to the behavioural response of actually using the knowledge. Within the framework, three main elements exist that represent a view on the recipient's motivation for accepting and using received or acquired knowledge. These three elements are the perceived value of the knowledge, the perceived ease-of-use of the knowledge and the recipient's intention to use the knowledge. The second contribution of this paper is that it identifies, from literature, dimensions for the three elements where the dimensions for perceived value represent the perceived effectiveness of the received knowledge in terms of uniqueness, relevance, comprehensiveness, decision making and source credibility, while perceived ease-of-use represents the perceived efficiency in obtaining (speed and economics) and understanding the knowledge. The third contribution of this paper is that it defines items that can be used for measuring the relevant dimensions. This was done though an empirical study using a survey questionnaire and thereafter analysing the data. By comparing the mean values and through mean ranking, the most relevant items could be identified.

It should be noted that the outcome of this study is only a first step in developing a scale for knowledge use as the verification of independence that is truly part of a content adequacy assessment is still to be done. This is therefore a limitation to the study. Furthermore, as mentioned by Schriesheim et.al. (1999), scale development and content adequacy assessment can best be viewed as a never-ending process and this paper therefor does not claim to be a "content valid" measure, but rather an attempt to identify suitable item statements that will be able to measure the relevant dimensions. Further work will include a content adequacy assessment of the items statements through an empirical study and verifying independence through principle component analysis, as well as applying the results of this study within a larger framework of knowledge transfer within projects as specified by Van Waveren et.al. (2014), where the moderating effect of different transfer mechanism groups presented by the same authors (van Waveren, Oerlemans and Pretorius, 2017), can be tested in terms of the potential and positive effect on accepting project related knowledge using the different transfer mechanism clusters.

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