

A Systematic Exploration of Knowledge Management in Competency Development

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Abstract:

In this paper, we undertake a systematic mapping review to present a review on knowledge management practice and its relation to competency development. It explores the research methodologies used, its findings and results, as well as the research contributions in these two domains. Thirty four articles in various sectors were identified. We concluded that various research methodologies were used for researches on KM and competency development. The paper is intended to practitioners and academics investigating the field of KM and competency development. Specifically, it contributes to direct efforts for future research in knowledge management and competency development.

Keywords: — knowledge management, competence, competency development, sustainability, knowledge management success

I. INTRODUCTION

In order for an organization to be competitive and sustainable in the rapidly changing industry, it needs to empower its personnel through proper competency development. An organisation's capabilities are built upon the existing knowledge and accumulative experiences of its employees. A competent employee is generally more empowered to meet customers' needs, provide fast responses and quality service, and usually involved in job enrichment programs that expand their skills. In competitive market, retaining competent workforce is important resulting in companies to allocate their investments and focusing strategies on strengthening competencies on long term basis.

Knowledgeable and skilful personnel especially with years of experiences are highly important to organizations as these staffs will be valuable assets to the organizations [1]. This is due to the justification that they possess the knowledge, skills and attributes that are extremely beneficial in their daily working tasks. Furthermore, organizations are shifting towards knowledge intensive with increasing needs for leveraging the value of knowledge [2].

Given the great importance of knowledge and its potential benefits towards competency development, this paper aims at identifying the state-of-the art of Knowledge Management (KM) in relation to competency development by performing a mapping study. A mapping study

allows researchers to plot the evidence in a domain at a high level of granularity that will eventually lead to identification of focus for future systematic reviews and to identify areas for more primary studies to be carried out [3]. In other words, the results from this mapping study serves as a direction to appropriately position new research through the identified gaps.

From the literature review, it is observed that various studies have been conducted in measuring KM success, which includes identification of critical success factors in various fields such as public sector [4], healthcare [5] and education[6]. This is in line with the resource-based view of firm, which suggests organisational resources and capabilities including employees' core competencies as the main component of competitive advantage and sustainability [7]. Thus, the organizations must have the strategies for building core competencies and the retention of their employees' expertise.

Riverra-Ibara et al. (2010) defined the term competency through their competency framework as the set of knowledge, abilities, and behaviours in performing employees' job functions[8]. From the perspective of knowledge management, the concepts of knowledge and competencies are closely related [9], whereby competencies of employees are considered knowledge assets; it means when staff leave, the organisation loses a huge amount of knowledge. Consequently, KM is viewed as having the capability to support competency building through KM processes: knowledge creation, storage, sharing, retaining, and reuse. Prior research on KM did not provide insights on how KM can be integrated with competency development, and therefore, there is limited knowledge and understanding on the issues of KM and its relation to competency development.

In this paper, we intend to provide a systematic review of studies of knowledge management and

its relation to the competency development. This paper scrutinized the research work done by various authors and researchers in KM and competency development over the past five years. The outcome of this research provides insights on the gaps in methodologies, findings, contributions and limitations highlighted from these studies that will be helpful to the researchers and practitioners in designing competencies programmes for employees.

II. RESEARCH METHOD

The research method for this mapping study is based on Kitchenham and Charters's (2007) guideline [3], which involves three main phases as shown in Figure 1.

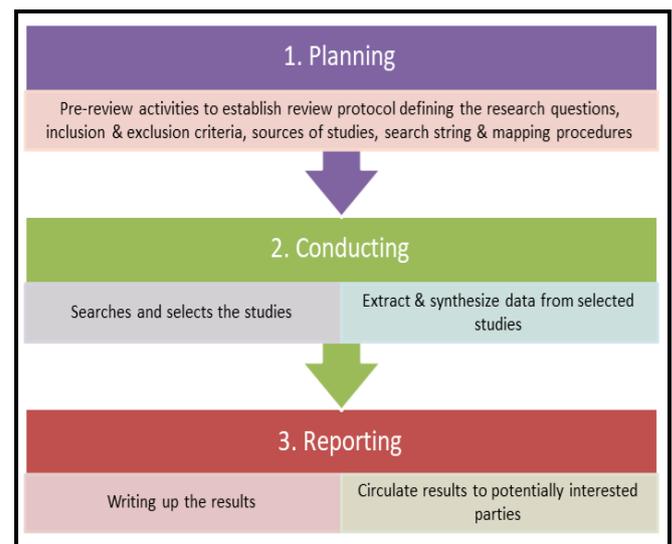


Figure 1 Mapping Study Phases

In this section, the main steps that we performed for this mapping study will be presented with the research questions, search strategy, inclusion and exclusion criteria, study selection, data extraction and synthesis.

A. Research Questions

Research questions (RQs) and their respective rationales for this study are shown in Table 1.

TABLE I
RESEARCH QUESTIONS AND THEIR RATIONALES

No.	Research Questions (RQs)	Rationales / Motivations
RQ1	What are the methodologies utilized in the study?	To get an overview on the types of research being conducted.
RQ2	What are the findings or results from the study?	Investigates the research facet being explored throughout the research.
RQ3	What are the research significances?	To reveal the benefits associated with integration of knowledge management with competency development.
RQ4	What are the limitations, future works or improvements being suggested by the study?	Provides an overview of the limitations and future research opportunities regarding KM in competency development.

B. Search Strategy

The search strategy for this mapping study consists of search string, sources and inclusion and exclusion criteria.

The search string was applied in title, abstract and keywords meta-data using ‘OR’ and ‘AND’ Boolean operators that considers two (2) areas –

Knowledge Management and Competency Development for studies conducted or published in the last five years (2015 – 2019). The purpose of restricting the search to the last five years duration is to discover latest KM initiatives supporting competency development within dynamically changing environment. The search string for this paper is shown in Table 2.

TABLE 2
SEARCH TERMS OF THE MAPPING STUDY OF KM IN COMPETENCY DEVELOPMENT

Areas	Search terms
Knowledge Management	“knowledge management” OR “knowledge reuse” OR “knowledge sharing” OR “knowledge transfer” OR “organizational knowledge”
Competency Development	“competency development” OR “competenc*” OR “competent”
Search String	TITLE-ABS-KEY ((“knowledge management” OR “knowledge reuse” OR “knowledge sharing” OR “knowledge transfer” OR “organizational knowledge”) AND (“competency development” OR “competenc*” OR “competent”)) AND (LIMIT-TO (PUBYEAR , 2019) OR LIMIT-TO (PUBYEAR , 2018) OR LIMIT-

Areas	Search terms
	TO (PUBYEAR , 2017) OR LIMIT-TO (PUBYEAR , 2016) OR LIMIT-TO (PUBYEAR , 2015)) AND (LIMIT-TO (ACCESSTYPE(OA)))

List of five online databases being used in the search process is as listed below:

- (i). Scopus
- (ii). IEEE Xplore
- (iii). ACM Digital Library
- (iv). Emerald Insight
- (v). Wiley Online Library

The selection criteria consists of one inclusion criteria (IC) and five exclusion criteria (EC) as shown in Table 3.

TABLE 3
SEARCH INCLUSION CRITERIA (IC) AND EXCLUSION CRITERIA (EC)

Criteria	ID	Description
Inclusion Criteria	IC1	The study discusses about KM in competency development
Exclusion Criteria	EC1	The study does not have an abstract
	EC2	The study is just published as an abstract
	EC3	The study is not written in English
	EC4	The study is an older version of other study already considered
	EC5	The study is not a primary study. It is an editorial, summaries of keynotes, workshops or tutorials.

III. RESULTS AND DISCUSSION

Initially, a total of 495 studies were retrieved from the abovementioned online databases using the search strategy. However, after extensive elimination over the title and abstracts, only 45 studies were found to be potentially relevant. Then,

elimination was conducted over the full text article where 11 papers were excluded as the studies are just published as an abstract and not written in English, leading to only 34 papers to be further analysed for the purpose of this study. Figure 2 shows the Systematic Literature Review (SLR) process flow.

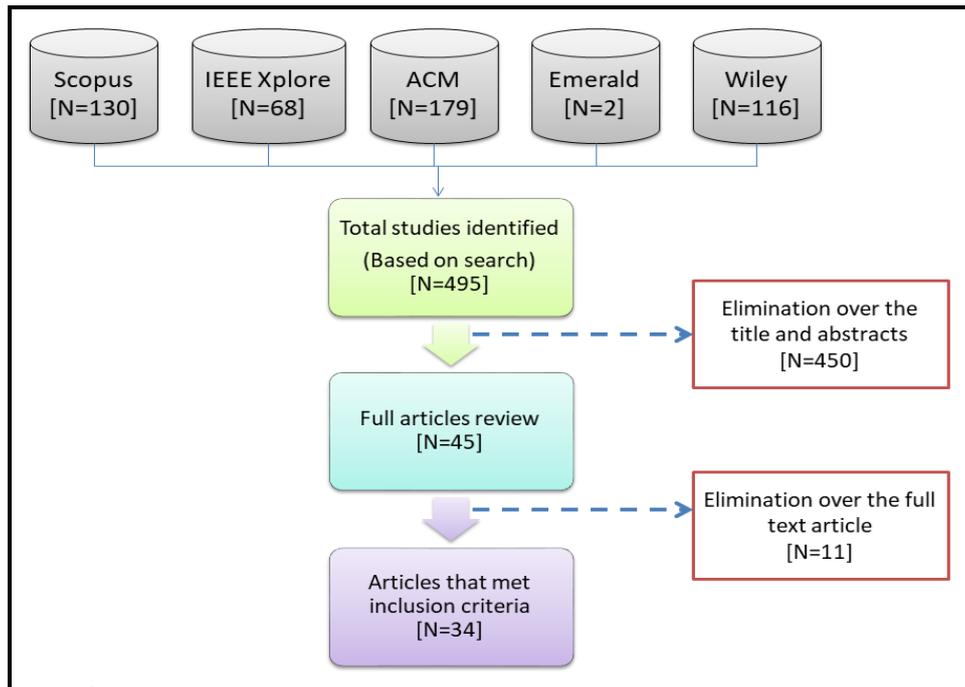


Figure 2 Systematic Literature Review (SLR) Process Flow

The list of 34 selected papers used for this study is listed in **Appendix A**. From the keywords being specified by authors from these papers, we generated a word cloud of papers' keywords using an online tool (www.wordle.net) which is shown in Figure 3. The font or size of each keyword remarks the number of times it has appeared in the keywords of the selected studies. Following, we discuss how each research question was answered.

RQ1: What are the methodologies utilized in the study?

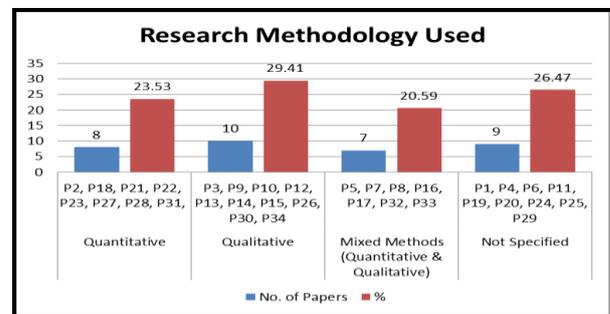


Figure 4 Research Methodology Utilized

Figure 4 presents the type of research methodology utilized by the selected studies. Out of 34 studied papers, 10 papers (29.41%) utilized qualitative methodology, 8 papers (23.53%) used quantitative methodology, and 7 papers (20.59%) carried out mixed methodology (quantitative and qualitative). As there is almost a balance between the reported methodologies, this indicates that various research methodologies are applicable for the study of KM and competency development without any restrictions.



Figure 3 Word Cloud of Papers' Keywords

RQ2: What are the findings or results from the study?

The findings or results from the reviewed studies were categorized according to the classifications

established by Wieringa et. al. [10], which are validation research, evaluation search, and solution proposal. Table 4 presents the details of these categories.

TABLE 4
FINDINGS BASED ON CLASSIFICATION OF RESEARCH FACET

Findings or Results Category	Category Description	Paper ID	No. of Papers	%
Validation research	Investigates the attributes of a proposed solution that has not yet been implemented.	P7, P11, P15, P17, P19, P20, P23, P25, P26, P34	10	29.41
Evaluation research	Discusses the implementation of a technique or a method and its evaluation in terms of benefits and drawbacks.	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P12, P13, P14, P21, P22, P23, P27, P28, P29, P30, P33	21	61.76%
Solution proposal	Proposes a solution for a specific problem and discuss its relevance without thorough validation.	P16, P24, P29	3	8.82%

Table 4 shows that majority (61.76%) of the reviewed studies (21 out of 34 papers) (61.76%) present their evaluation results and findings in terms of the benefits and the weaknesses. On the other hand, 10 out of 34 papers (29.41%) are categorized as validation researches as they discussed on possible solutions that have not yet been implemented and 3 out of 34 papers (8.82%) present their results towards proposing proof-of-concept solution. In nutshell, it can be seen that researches are continually conducted to validate possible concepts, evaluate previous work conducted and propose for new solutions.

RQ3: What are the research significances?

The third research question for this review paper is evaluated from the perspective or relationship

between KM and competency development in the included paper.

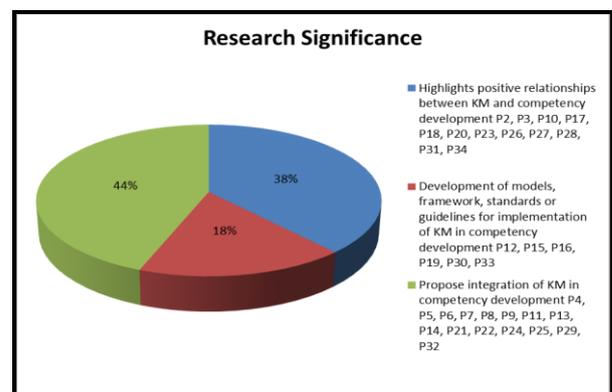


Figure 5 Research Significance From KM and Competency Development Perspectives

Figure 5 shows that there are little attempts (17.65%) been demonstrated on the development of models, framework, standards or guidelines for

KM implementation in competency development (6 studies). Meanwhile, 38.24% of the studies uncover the positive relationship between KM and competency development (13 studies) in various sectors and that majority (44.12%) of the reviewed papers proposed integration of KM in competency development (15 studies). This leads to potential studies on KM integration with competency development by other researchers and practitioners.

RQ4: What are the limitations, future works or improvements being suggested by the study?

Majority (91.17%) of the reviewed studies (31 out of 34 papers) included in this review paper typically provide insights on the limitation, future works or improvements for further undertakings. This is as shown in Table 5.

TABLE 5
RESEARCH LIMITATIONS, FUTURE WORKS OR SUGGESTED IMPROVEMENTS

Research Limitations, Future Works or Suggested Improvements	Paper ID	No. of Papers	%
Further in-depth research on the relationships between KM and competency development	P1, P7, P13, P21, P22, P24, P27, P30, P33, P34	10	29.41
Limited sampling size, requires comprehensive data collection to increase generalization of the findings	P3, P4, P5, P8, P12, P16, P26, P32	8	23.53
Integration with external system in competency development.	P6, P29	2	5.88
To promote and increase KM initiatives to support competency development	P2, P10, P11, P15, P19, P20, P23, P28	8	23.53
The need for strategic alliances between government, industry and academia to improve competency development through KM initiatives.	P9, P17, P25,	3	8.82
Not specified	P14, P18, P31	3	8.82

Of the 34 studies identified, 10 studies (29.41%) reported for more in-depth research on the relationships between KM and competence development, 8 studies (23.53%) were found expressing on limited sampling size that requires further comprehensive data collection activities to increase the generalization of the findings, 8 studies (23.53%) were found on promoting and increasing KM initiatives to support competency building, 3 studies (8.82%) urged the need for strategic cooperation between government, industry and academia to improve competency

development through KM implementations and 2 studies (5.88%) suggested for integration with external systems to support competency development.

IV. CONCLUSION

Based on rigorous analysis and systematic synthesize of the 34 papers, it is concluded that various research methodologies have been utilized to achieve the research objectives of studies on KM and competency development. Besides that, reviewed papers provide significant contributions

on evaluating and measuring previous related studies and proposing suggestions for further enhancement. It is apparent that majority of the reviewed studies proposed integration of KM in competency development with more in-depth research and comprehensive data collection on these domains. Therefore, further researches are suggested to explore the potential of integrating KM with competency development for specific professions or organizations. The technique used in this paper can be improved by using more searching keywords that reflects the meaning of knowledge management and competency development. Besides that, it can further enhanced by considering more databases to be included in the search process.

Appendix A List of all papers included in the SLR study

[P1] Mohammed, et al. [11], [P2] Sein-Echaluce, et al. [12], [P3] Gui, et al. [13], [P4] Agarwal and Islam [14], [P5] Doherty and Cormican [15], [P6] Judrups, et al. [16], [P7] Sokół and Figurska [17], [P8] Kinkel, et al. [18], [P9] Adman, et al. [19], [P10] Khatun, et al. [20], [P11] Rahmah [21], [P12] Hodosi, et al. [22], [P13] Patalas-Maliszewska [23], [P14] Nurunisa, et al. [24], [P15] Kaasinen, et al. [25], [P16] Lin and Ha [26], [P17] Rose and Winter [27], [P18] Lenzion [28], [P19] Goliński, et al. [29], [P20] Johannessen [30], [P21] Brijesh [31], [P22] Bussell [32], [P23] Huang, et al. [33], [P24] Rózewski and Jankowski [34], [P25] Alam, et al. [35], [P26] Martins [36], [P27] Hu, et al. [37], [P28] Shamsi [38], [P29] Dorn [39], [P30] Jonsson, et al. [40], [P31] Teeranantawanich and Phimolsathien [41], [P32] Dowson [42], [P33] Dagenais, et al. [43], and [P34] Gatarik [44].

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