Development Sophistication Degree of New Components of Technometrics Using Concept Mapping

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Abstract

Sharif (1986) defined technology into Technoware (physical thing), Humanware (human), Infoware (knowledge), and Orgaware (social component) or simply as THIO. Further, Sharif (2012), Huang dan Cox (2016), and Gudanowska (2016) added that one component which makes organization system may collaborate electronically through Cysnetware called as THIOC. Kilubi (2015) and Kilubi and Haasis (2016) identified 2 (two) other components to be united into THIO's frame, they were Manageware (M) and Partnerware (P), called as THIOCMP. All of those components of technology was used to measure technology contribution in an industry, called by Technometrics. The technology contribution in Technometrics is called as Technology Contribution Coefficient (TCC). In measuring the TCC, the first thing to do is measure the level of sophistication to know the company's position in terms of technology utilization. Sharif (2012) uses the degree of sophistication of technological components as a measure of technological innovation. Sharif (2012) conducted sophistication degree of THIOC components. However, there is no any research in developing sophistication degree for M and P components yet. This paper aims to develop the sophistication degree of M and P components of technology using Concept Mapping (CM). Trochim and McLinden (2017) explained that CM is a unique integration of qualitative and quantitative methods designed to enable a group of people to articulate and depict graphically a coherent conceptual framework or model of any topic or issue of interest. Furthermore, Jackson and Trochim (2002) described that this method appears to be especially well suited for the type of text generated by open-ended questions as well for organizational research questions that are exploratory in nature, aimed at scale or interview question development, and/or developing conceptual coding schemes. Six steps to estimate the sophistication degree of M and P components using CM consist of Preparation; Generation; Structuring; Representation; Interpretation; and Utilization. Preparation step focused to identify the specific elements and identify the participants that will be related with the sophistication degree of M and P components. The generation step is used to generate the statement that represents the supporting component of M and P, respectively. There are 6 (six) supporting components of M, and 14 (fourteen) components of P. The third step, structuring the statement by adjusting the scoring of the statement. Each participant scores each statement on a 5-point Likert-type response scale for each desired scoring. In the representation step, the score result of the statement is processed using XLStat software and the results of multidimensional scaling (MDS) configuration are obtained. The results of processing the score of M and P components are valid because the Kruskal's stress value is greater than the probability value of 0.05. In the interpretation step, the statement grouping is shown on the point rating map. The position of the point shows closeness because of similarity between statements. Then statements are combined in the form of clusters and given names. The

scale names of M components include company management style, managerial competence, top management involvement, and top management decision-making and control. Then, the scale names of P components include alliance experience, the pattern of cooperation inter-partners, interfirm's commitment and trust, and combining of intangible and physical assets. The last step, utilization step determined that the resulting scale refers to the focus of the statement described in the first step, namely: the determination of specific elements related to the scale of the sophistication of the components of the M and P.

Biographies

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