Hoshin Kanri’s Strategic Planning Methodology through Dijkstra Algorithm within Industrial Engineering and Stakeholder Perspectives

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Abstract. Hoshin Kanri is defined as strategic planning methodology to reinforce strategic work. This paper elaborates Hoshin Kanri’s strategic planning methodology through Dijkstra algorithm within industrial Engineering and stakeholder perspectives. Dijkstra’s algorithm is categorized as the single source shortest path algorithm. This algorithm is beneficial to measure the shortest distance on a directed and undirected path within delivery optimization. This paper objective is to evaluate strategic planning in term of delivery optimization and scheduling. Subsequently, by implementing the strategic planning, it is expected to improve existing distribution process in supply chain. Other than that, it is expected to reduce and optimize delivery’s cost within its scheduling process through lens of industrial engineering and stakeholder priority. The research methodology in this paper refers to the quantitative approaches. These approaches are within sales performance’s data collection in modern market and its customer address. Furthermore, the data analysis proceeds to purchasing power of each customer. Ultimately, the mentioned analysis scheduling method through routing planning is using Dijkstra’s Algorithm. The mentioned Dijkstra Algorithm’s delivery optimization and scheduling is through lens of industrial engineering and Stakeholder. The result and discussion of this paper elaborates analysis and its decision making toward strategic planning in order to accommodate stakeholder perspectives.

1. Introduction
Hoshin Kanri is defined as strategic planning methodology to reinforce strategic work. This paper elaborates Hoshin Kanri’s strategic planning methodology through Dijkstra algorithm within industrial Engineering and stakeholder perspectives.

Dijkstra’s algorithm is categorized as the single source shortest path algorithm. This algorithm is beneficial to measure the shortest distance on a directed and undirected path within delivery optimization.
Table 1. Hoshin Kanri Methodologies Involvement in Selected Scholar Works

|   |   |   |
|---|---|---|
| [1] | Saraph, Benson, and Schroeder (1989) | [12] | Dow, Sampson, and Ford (1999) |
| [2] | Anderson, Schroeder, and Deverage (1995) | [13] | Wilson and Collier (2000) |
| [3] | Choi and Liker (1995) | [14] | Cua, McKone, and Schroeder (2001) |
| [4] | Flynn, Schroeder, and Sakibara (1995) | [15] | Ghobadian and Gallear (2001) |
| [5] | Powell (1995) | [16] | Kaynak (2003) |
| [6] | Black and Porter (1996) | [17] | Sebastianelli and Tamimi (2003) |
| [7] | Adam et al. (1997) | [18] | Taylor and Wright (2003) |
| [8] | McLachlin (1997) | [19] | Achanga, Shehab, and Nelder (2006) |
| [9] | Ahire and O’Shaughnessy (1998) | [20] | Ahrens (2006) |
| [10] | Zbaricki (1998) | [21] | Nair (2006) |
| [11] | Dale, Broaden, Wilcox, and McQuarter (1999) | [22] | Shah and Ward (2007) |

Hoshin Kanri (HK) as strategic planning encompass wide spectrum of strategic planning; Leadership and management involvement; attitudes and communication; involvement, commitment and responsibility; goals and plans [23].

Hoshin Kanri is a methodology that was coined in Japan. Currently this methodology constitutes indispensable strategic management systems that are integrated in several systems. The integrated systems refer to the following but not limited to Total Quality Management (TQM), Lean Management, Six Sigma and Balanced Scorecard (BSC). Its implemented has produced successful implementation in wide spectrum of institutions [24].

This paper focuses the HK’s strategic planning methodology through Dijkstra algorithm within Industrial Engineering and Stakeholder Perspectives.

Searching algorithms or query process in probabilistic roadmaps are selected through the scholar work representative. The implementations of aforementioned searching algorithms are referring scholar work. Precisely, the implementation of, A* and Dijkstra algorithms are merely within the specified circumstances.

Those circumstances refer to the problem solving process, in which A*, Dijkstra algorithm or heuristic-based algorithms are frequently capitalized. To some extent, the optimal approaches are capitalized for problem solving process within coordinate system. There are wide spectrum and extensive research that elaborates searching algorithms for several circumstances in reasonable time. The algorithms, several wide spectrum of research, are categorized into its capacity as classic algorithms or heuristic-based algorithms [25, 26, 27].

2. Materials

This paper objective, through Hoshin Kanri, is to evaluate strategic planning in term of delivery optimization and scheduling. Subsequently, by implementing the strategic planning, it is expected to improve existing distribution process in supply chain.

Other than that, it is expected to reduce and optimize delivery’s cost within its scheduling process through lens of industrial engineering and stakeholder priority, through CEO and Leadership Team of Unit Analysis of Organization in Figure 1 [28].
3. Methods

The research methodology in this paper refers to the quantitative approaches. In these approaches, Hoshin Kanri and CEO Leadership for Strategic Planning play a vital role in its one policy through priority issue and objectives through strategy and action plan. These approaches are within sales performance’s data collection in modern market and its customer address. Furthermore, the data analysis proceeds to purchasing power of each customer [29], [30], [31], [32].

4. Result and Discussion

This algorithm is beneficial to measure the shortest distance on a directed and undirected path within delivery optimization. This paper objective is to evaluate strategic planning in term of delivery optimization and scheduling. Subsequently, by implementing the strategic planning, it is expected to improve existing distribution process in supply chain. Other than that, it is expected to reduce and optimize delivery’s cost within its scheduling process through lens of industrial engineering and stakeholder priority.

In term of classic algorithms; Dijkstra Algorithm is deemed as capitalized algorithm toward problem solving [33] This algorithm provides the network and its optimal outcome, during the situation in which 100% of its distances are positive. The A* algorithm is capitalized toward the problem solving in finding the shortest path problem on network [34].

Furthermore, in term of heuristic based algorithm; There are many heuristic-based methods for the collision-free path planning (CFPP) problem. Wavefront algorithm is one of the heuristics algorithms that are originated from potential field ideas within its wide spectrum specifications. Precisely, the aforementioned Wavefront algorithm is capitalized toward problem solving with 3D normal distributions transformations [35]. Wide spectrum of the metaheuristic are implemented toward the collision-free path planning (CFPP) problem within its algorithm of either network or coordinate system.
Evolutionary algorithms, such as the Genetic algorithm (GA), are frequently scrutinized within network system [36] that are relevant CFPP. In addition to the other circumstances, the wide spectrum of algorithms are deployed under coordinate system conditions [37]. Some novel algorithms within Genetic algorithm are generated from related scholars outcomes [38].

5. Conclusion

Hoshin Kanri is defined as strategic planning methodology to reinforce strategic work. This paper elaborates Hoshin Kanri’s strategic planning methodology through Dijkstra algorithm within industrial Engineering and stakeholder perspectives. Dijkstra’s algorithm is categorized as the single source shortest path algorithm.

This algorithm is beneficial to measure the shortest distance on a directed and undirected path within delivery optimization. This paper objective is to evaluate strategic planning in term of delivery optimization and scheduling. Subsequently, by implementing the strategic planning, it is expected to improve existing distribution process in supply chain. Other than that, it is expected to reduce and optimize delivery’s cost within its scheduling process through lens of industrial engineering and stakeholder priority.

The research methodology in this paper refers to the quantitative approaches. These approaches are within sales performance’s data collection in modern market and its customer address. Furthermore, the data analysis proceeds to purchasing power of each customer.

Ultimately, the mentioned analysis scheduling method through routing planning is using Dijkstra’s Algorithm. The mentioned Dijkstra Algorithm’s delivery optimization and scheduling is through lens of industrial engineering and Stakeholder. The result and discussion of this paper elaborates analysis and its decision making toward strategic planning in order to accommodate stakeholder perspectives.

In term of classic algorithms; Dijkstra Algorithm is deemed as capitalized algorithm toward problem solving. This algorithm provides the network and its optimal outcome, during the situation in which 100% of its distances are positive. The A* algorithm is capitalized toward the problem solving in finding the shortest path problem on network. Furthermore, in term of heuristic based algorithm; There are many heuristic-based methods for the collision-free path planning (CFPP) problem. Wavefront algorithm is one of the heuristics algorithms that are originated from potential field ideas within its wide spectrum specifications. Precisely, the aforementioned Wavefront algorithm is capitalized toward problem solving with 3D normal distributions transformations. Wide spectrum of the metaheuristic are implemented toward the collision-free path planning (CFPP) problem within its algorithm of either network or coordinate system.

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