

CHAPTER 30

Successful Vendor Management System Implementation: What to Consider?

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ABSTRACT

A vendor management system (VMS) is a tool to help manage business, specifically between buyers and vendors. It helps organizations take appropriate measures to control costs, reduce potential risks related to vendors, ensure efficient service deliverability, and derive value from vendors in the long run. To successfully implement VMS, this study utilizes the analytic hierarchy process (AHP) to examine key factors influencing successful VMS implementation and their importance weights. Experts (buyers and vendors) provide data for analyses. The results reveal that joint cooperation between buyers and vendors, especially in setting up long-term relationships and continuous improvement, is crucial to implementing VMS successfully. Buyers and vendors should have the same mutual goals and create preventive programs to ensure VMS's effectiveness. Buyers should also use customers' feedback to develop effective vendor development system. The study results are expected to help buyers and vendors understand key factors necessary for successful VMS implementation and effectively plan for cooperation to achieve long-term benefits.

Keywords: Analytic hierarchy process; Buyer; Joint cooperation; Vendor; Vendor management system.

1.0 Introduction

Vendor Management System (VMS) is a cloud-based software platform that solves common problems for many global enterprises, including how to find, engage, and manage their external workforce. It manages operations and management procedures and eliminates typical issues and inefficiencies of workforce management. It allows an organization to secure and manage staffing services on a temporary, permanent, or contract basis. It provides seamless access to cost-effective, qualified human resources while facilitating efficient recruitment and long-term growth (SAP, 2022). According to HCM Works (2022), VMS helps increase visibility, automate processes, control spending and costs, and effectively manage human resources.

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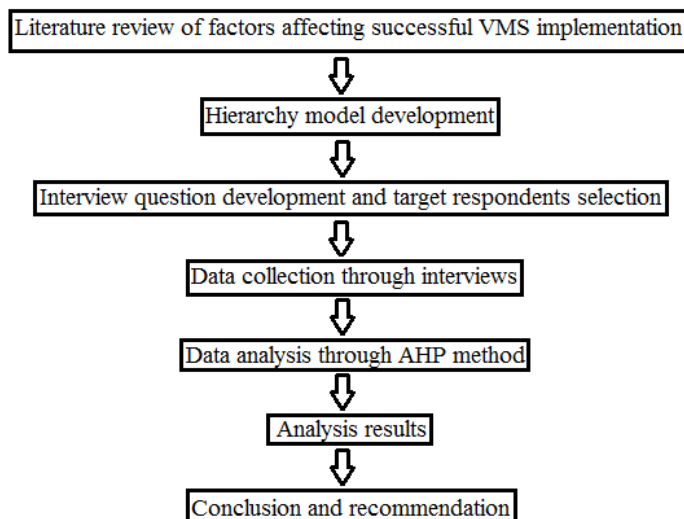
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VMS helps manage, create, and share reports, which can be a resource-intensive activity requiring significant upkeep and modification to meet differing and competing requirements. It can also build and customize charts and graphs for better understanding. Typical features of VMS include order distribution, consolidated billing, and significant enhancements in reporting capability that outperform manual systems and processes (Dalawai et al., 2019).

Several research studies have examined the benefits and barriers of VMS, key factors affecting VMS implementation, and VMS applications. Dalawai et al. (2019), for example, utilized machine learning to enhance VMS. The developed vendor dashboard helped improve quality assurance and quality control of products delivered by multiple vendors. Kinuthia and Kihara (2019) determined factors affecting procurement optimization in selected county governments in Kenya. They concluded that vendor management positively and significantly affects procurement optimization in selected county governments in Kenya. Early supplier involvement plays a significant influence in increasing customer satisfaction and reducing costs.

Angrian and Sahroni (2019) developed a vendor management and e-procurement system using the Android platform to fulfill customers' needs and reduce costs. Udomleartprasert and Sommecha (2016) utilized VMS to enhance just-in-time implementation by considering qualifying, measuring, analyzing, implementing, and maintaining steps to ensure supplier performance. SCG Chemicals (2015) developed a vendor manual and mentioned five key VMS functions, namely pre-qualification, vendor claim and complaint, post-evaluation, hold and blacklist, and VMS report.

Figure 1: Research Steps of this Study



In Thailand, VMS is not widely utilized. To achieve better company performance, examining key factors affecting successful VMS implementation is necessary. This study, therefore, utilizes the analytic hierarchy process (AHP) to determine key VMS factors and their importance in achieving effective VMS implementation in companies. The research steps of this study are shown in Figure 1. Key factors affecting successful VMS implementation are extracted from the literature and are used to develop the hierarchy model of VMS implementation. Target respondents for data collection are selected based on experiences of VMS implementation and company positions. Interviews are conducted, and the analyses are performed utilizing the analytic hierarchy process (AHP) method to examine the importance of each factor in successfully implementing the VMS. A conclusion and recommendation are reached at the end of the paper.

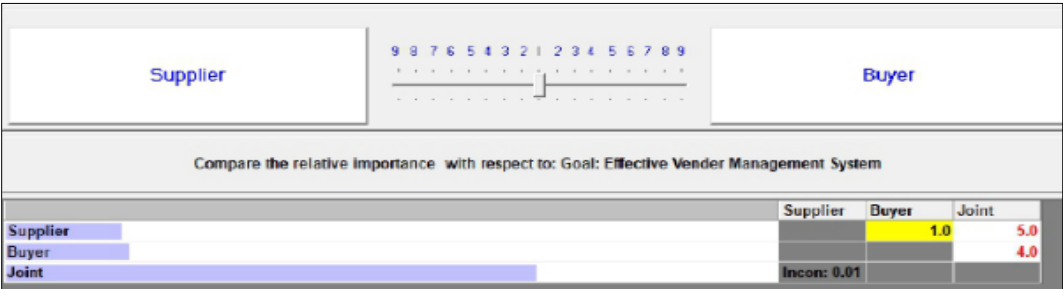
2.0 Materials and Method

2.1 Analytic hierarchy process

The AHP method is utilized in this study to examine the importance of key factors affecting successful VMS implementation. It supports decision-making in a multi-criteria way. It is an effective approach to simplify complex problems by dividing problems into factors and levels (Ebrahimi & Bridgelall, 2021). Factors in the same hierarchy level are compared to determine the most significant factor and choice. Ammarapala et al. (2018) concluded its advantages, including ease of use, accuracy of the results, ability to deal with both qualitative and quantitative factors, and ability to test the consistency of the responses.

Many business-related studies have been conducted using the AHP method. For instance, Yap et al. (2016) utilized the AHP method for business site selection in Malaysia. Baj-Rogowska (2015) selected the IT system to support business operations in the logistics enterprise using the AHP method. Longaray et al. (2015) used the AHP method to evaluate the quality of services provided by outsourced companies. Kaewfak et al. (2021) applied the AHP method in the route selection of coal transportation in Thailand.

Figure 2: Example of Expert Choice Program



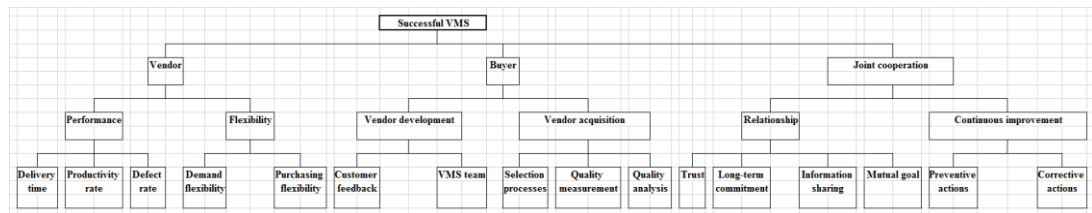
The Expert Choice software is used in the AHP analysis in this study (see Figure 2). The expert interview is used as a data collection method. Each interviewee is asked to provide the score in each pairwise comparison using the scale 1-9, where 1 represents equally important, 5 represents strong importance of a factor over another, and 9 represents extremely important of a factor over another (Ammarapala et al., 2018).

Eight experts are involved in the interviews. They are buyers and vendors in the home decoration industry with more than 10 years of working experience. Buyers include a project manager, procurement manager, logistics manager, and warehouse manager, while vendors include a warehouse manager, project manager, and executive manager.

2.2 Key Factors Affecting Successful VMS Implementation

Vendors' and buyers' relationships are crucial for better work performance. Understanding buyers' and vendors' business goals helps save resources and improve business performance (Humphreys et al., 2019; Patowary & Doshi, 2022). In this study, vendor, buyer, and joint cooperation are key factors affecting successful VMS implementation (see Figure 3).

Figure 3: Hierarchy Model of Successful VMS Implementation



2.2.1 Vendor factor

In enhancing the VMS, vendor's performance and flexibility should be considered (Wieteska, 2016; Tanti & Patel, 2019). Performance of vendors is the potential indicator to demonstrate the company's readiness and can be measured through delivery time, productivity rate, and defect rate in this study (PWC, 2013; Connor et al., 2020). Connor et al. (2020), for example, stated that most businesses focus on on-demand service and on-time delivery to customers. PWC (2013), on the other hand, mentioned that defect rate is an indicator of accuracy used to measure the supplier's performance.

Supply chain flexibility is defined as the supply chain's promptness and the degree to which it can adjust its supply chain speed, destinations, and volumes in response to changes in customer demand (PWC, 2013; Fayezi & Zomorodi, 2015). This study considers demand and purchasing flexibility to enhance the VMS implementation (PWC,

2013; Wieteska, 2016). Buyers prefer vendors who can offer volume and mix flexibility to ensure product availability to the customers (Wieteska, 2016).

2.2.2 Buyer factor

Buyers should have clear vendor development and acquisition processes to achieve an effective VMS. Vendor development is initiated to ensure effective partnerships with suppliers. It prioritizes vendor improvement through training, product development and innovation, capacity planning, delivery time, and quality of products (Raj & Seetharaman, 2015). Udomleartprasert and Sommecha (2016) stated that customer feedback affects the VMS. It is a criterion for company improvement. A vendor management team should be set up to implement the vendor development processes effectively (Udomleartprasert & Sommecha, 2016). Supplier selection is one of the crucial activities for an organization, as successful selection can provide competitive advantages in the market in terms of high quality, customer responsiveness, and low costs (Felice et al., 2015). Clear vendor acquisition processes are also needed for effective VMS. They include the procurement process, quality measurement, and quality analysis (Udomleartprasert & Sommecha, 2016). Supplier selection criteria, such as certification, quality, and experience, should be clearly stated (Alsuwehri, 2011; Felice et al., 2015). Quality analysis could also be used to acquire the vendor by analyzing its past performance in terms of, for example, delivery time and defect rate.

2.2.3 Joint cooperation factor

Vendors and buyers should cooperate to achieve successful VMS. Their long-term relationship and commitment to continually enhance the VMS implementation are necessary to achieve better performance in the long term. Setting mutual goals, sharing key information, and gaining trust is crucial for long-term relationships (Doney & Cannon, 1997; Walter et al., 2000). Walter et al. (2000), for example, stated that trust positively affects commitment in customer-supplier relationships as trust diminishes the perceived risk and vulnerability in a relationship, leading to a higher commitment to the relationship. Migwi and Kwasira (2016) mentioned that mutual trust, shared interest, differing resources, two-way symmetrical communication, and cognitive ties must be considered to establish a long-term relationship.

Powers and Reagan (2007) stated that mutual goals are the degree to which partners share goals that can be accomplished through joint action and relationship maintenance. Continuous improvement of VMS is needed to eliminate the causes of non-conformities or undesirable situations. It requires clear preventive and corrective actions to reduce reworking costs and return materials and products, thus enhancing the companies' efficiency (Majanoja et al., 2017).

The corrective action process is designed to prevent the recurrence of nonconformities or undesirable situations. In contrast, the preventive action process aims to prevent nonconformities or situations that do not yet exist (Majanoja et al., 2017).

2.3 Data collection

Interviews are conducted to gather expert information for the AHP analysis. Buyers and vendors in the home decoration industry with more than 10 years of working experience are involved in the interviews. They are project managers, procurement managers, logistics managers, warehouse managers, and executive managers. They have experience with the VMS in terms of its advantages and obstacles.

Each expert is asked to rate his/her opinions on a number of pairs of factors or sub-factors, pair-by-pair, using the Saaty score (see Table 1) (Ammarapala et al., 2018). For example, the interviewee is asked to compare the importance of the buyer with the vendor to achieve a successful VMS. If the interviewee considers the buyer as having extremely most importance in achieving successful VMS, he/she then gives the score of the Buyer factor of 9. This, vice versa, gives the score of the Vendor factor of 1/9 (see Table 2). Sub-factors are also compared in each hierarchy level, pair-by-pair, using a scale of 1 to 9. For instance, if the interviewee considers “vendor performance” as having equal importance to “vendor flexibility,” he/she gives a score of 1 to both.

Table 1: Saaty Score for the AHP Analysis

Scale	Definition	Explanation
1	Equal importance	Two factors contribute equally to the objective
3	Moderate importance of one over another	Experience and judgment favor one factor over another
5	Essential or strong importance	Experience and judgment strongly favor one factor over another
7	Very strong importance	A factor is strongly favored, and its dominance is demonstrated in practice
9	Extreme importance	The evidence of favoring one factor over another is of the highest possible order of affirmation
2, 4, 6, 8	Intermediate value	Intermediate values when compromise is needed

Table 2: Example of the Interview Scores

Factor	Score		
	Buyer	Vendor	Joint cooperation
Buyer	-	9	3
Vendor	1/9	-	1/6
Joint cooperation	1/3	6	-

3.0 Results and Discussion

Data collected from the interviewees are analyzed with the AHP analysis to examine the importance of each factor and sub-factor in successfully implementing the VMS. For each interviewee, the importance weights of factors and sub-factors in each level are calculated and confirmed with the random index (RI) values (Ammarapala et al., 2018). If the RI values are not in the acceptable ranges, the expert is requested to reconsider the scores of factors or sub-factors to adjust the RI values before the importance weights are finalized. The accepted importance weights of factors and sub-factors from eight interviewees are then normalized using the geometric mean to achieve the final hierarchical model of successful VMS (see Figure 4).

The results confirm joint cooperation's importance in successfully implementing VMS with an importance weight of 0.45. Long-term relationships between buyers and vendors and continuous improvement of VMS are crucial to achieving a successful VMS. To create long-term relationships, buyers and vendors should have a mutual goal (the importance weight = 0.35) and trust (the importance weight = 0.27) in joint VMS implementation. This is consistent with Ghondaghsaz and Engesser (2021), that trust leads to collaboration and long-term relationships. Powers and Reagan (2007) added that trust is one of the common success variables, and the mutual goal is one of the specific success variables in building the relationship between sellers and buyers.

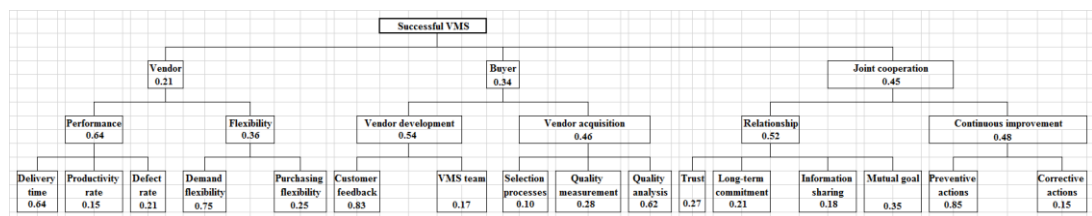
Preventive actions are also encouraged for effective VMS implementation (the importance weight = 0.85). The interviewees agreed that preventive actions are necessary for effective VMS implementation in the home decoration industry, as changes in demand and delivery time frequently occur, and management is rather complicated. Udomleartprasert and Sommecha (2016) added that preventive actions should be integrated into the VMS to enhance customer satisfaction.

Buyers are also crucial in achieving successful VMS. Both vendor development and acquisition processes should be carefully set up and monitored to acquire effective vendors. Customer feedback on what products to be developed, maintained, and changed should be included in the vendor development processes as it has a strong importance weight of 0.83. On the other hand, quality analysis (an important weight of 0.62) is essential in the vendor acquisition process, as it helps identify potential vendors before the long-term relationship is initiated.

Chaudhary and Deshmukh (2016) concluded that factors for vendor selection, including delivery reliability, quality/price ratio, general reputation, geographical location, technical ability and knowledge, technical inventiveness, supply of information, and market surveys, the extent of previous contact with the buyers, importance as a client, and extent of personal benefits to the buyer.

Vendors should enhance their performance, especially in delivery time, and offer demand flexibility to cooperate with buyers and achieve successful VMS effectively. This is consistent with Wieteska (2016), who states that supplier flexibility in volume, mix, delivery, and product is necessary to respond effectively to customers' requirements and changes. PWC (2013) stated that companies that can invest in flexibility in their supply chain can endure disruptions better than those that fail to do so. They also mentioned that delivery, efficient production processes, and flexibility are key suppliers' operational and technical competencies for supplier relationship management.

Figure 4: Final hierarchy model of successful VMS implementation



4.0 Conclusion

Cooperation between vendors and buyers is crucial to achieving high market competitiveness. VMS is a tool to bring closer relationships between suppliers and vendors. This study examines key factors influencing successful VMS implementation utilizing the AHP method. The importance weight of each factor is also calculated to plan for VMS implementation effectively. The study results reveal that buyers and vendors must cooperate to enhance VMS efficiency. Long-term relationships and continuous improvement are two key factors necessary for successful VMS implementation. Buyers and vendors should have the same mutual goals and trust in the VMS implementation. Preventive actions should be co-planned and implemented to avoid possible mistakes. Buyers should also have clear vendor development and acquisition processes to enhance the VMS further. In contrast, vendors should focus on improving their performance, especially in delivery time, and provide demand and purchase flexibility.

This study contributes to the body of knowledge in various ways. Key factors influencing successful VMS implementation and their importance weights are concluded in this study, thus providing a better understanding for buyers and vendors in planning for successful VMS implementation. The importance weights of factors and sub-factors can be used to pinpoint key stakeholders involved in the VMS implementation and prioritize the implementation plans, thus saving time and cost.

This study has a limitation. Data used in the AHP analysis are from experts in the home decoration industry, one of the market's dynamic industries. Data from different industries may result in different key factors and importance weights.

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