

Chapter 17

Sustainable Automated Warehouse Material Handling Equipment Adoption Motives in Malaysia

Siti Norida Wahab

 <https://orcid.org/0000-0003-1065-6145>

UCSI University, Malaysia

Mohamed Syazwan Ab Talib

 <https://orcid.org/0000-0001-8190-9096>

Universiti Brunei Darussalam, Brunei

ABSTRACT

In the pursuit of sustainable industrial development, this conceptual piece aims to propose a conceptual model that explains the motivation behind warehouse automated material handling equipment (AWMHE) adoption in Malaysia. Through an extensive review of extant literature and contextual synthesis, and the application of TOE framework as the underpinning concept, an AWMHE conceptual model was developed. Five motives behind AWMHE adoption were identified namely perceived trustworthiness, perceived benefits, perceived cost, external pressure, and management support. This conceptual chapter could serve as a platform for future research, particularly in the warehouse management discipline. Likewise, this model could potentially provide valuable insights to warehouse providers in Malaysia on the need to adopt AWMHE operation. Currently, there are limited studies on the adoption of AWMHE in Malaysia using the TOE framework. Therefore, the current study could contribute to the existing warehouse AWMHE body of knowledge and serves as valuable information to both scholars and practitioners.

DOI: 10.4018/978-1-7998-4772-4.ch017

INTRODUCTION

Warehousing is one of the key components in the logistics system and an integral part of a supply chain. In the pursuit of sustainable operation and industrial development, firms are implementing automated warehousing (Tappia et al., 2015). Among the various approaches of automated warehousing, the use of automated warehouse material handling equipment (AWMHE) is of interest (Saputro & Rouyendegh, 2016). AWMHE refers to the automated operation that aims to lessen and ultimately remove the need for manual labour in the movement and handling of goods within the confinement of a warehouse. Besides, AWHME approach is intended to achieve faster handing, movement control and improve security (Atieh et al., 2016). Therefore, AWMHE has long been recognized as one of the ways to support firms to achieve sustainable operation and simultaneously reduce costs and improve warehouse efficiency (Scavarda et al., 2012).

According to Ankit and Ravindra (2018), AWMHE offers a variety of operational advantages including labour and utility costs reduction, increase employee safety and improves work capacity. Despite the advantages, the adoption of AWMHE among warehouse providers is scarce and minimal in Malaysia. Albeit the lack of acceptance, several firms have begun to build and adopt automated warehouse and AWMHE (Krishnan and Wahab, 2019). Unlike in countries like China, Japan, and South Korea, warehousing firms have long and successfully implemented AWMHE. According to Estolatan et al. (2018), 70 percent of the total sales volume of robotic applications in 2017 comes mostly from these countries. For Malaysia, the country is spending RM80.8 billion in 2010 to RM118.6 billion in 2015 and expected to reach RM176.9 billion in 2020 in the category of technological readiness in the Global Competitiveness Index Report 2017-2018 (Zaidi and Faizal, 2017). The term technological readiness indicates the measurement of agility, by which, if an organization adopts the latest technology, it could improve the operational efficiency of an organization (Wang et al., 2010a).

Presently, there is a huge disparity between the Malaysian and the global logistics automated machinery trends and AWMHE adoption. Additionally, there are also limited academic research and industry report on the AWMHE adoption, particularly in highlighting the implementation motives. Past AWMHE literature has yet to report on Malaysia's AWMHE adoption as scholar often focus on the technical aspect of the discipline (Chao & Lin, 2017; Chong & Chan, 2012; Hassan, 2010). Most recently, Boysen et al. (2018) researched on the minimum order spread sequencing in relation to the automated sorting system.

Therefore, in an effort to narrow the academic-industry gaps, this research paper aims to identify the motivation behind AWMHE adoption by means of proposing a conceptual model. In line with the commitment towards sustainable industrial development, a conceptual model that scrutinizes the motivation to AWMHE adoption could potentially benefit stakeholders within the Malaysian warehousing business and the logistics industry. Finally, as this research effort appears to be among the first to examine the motivation to AWMHE adoption in Malaysia, it could enrich the AWMHE literature and contributes to the overall body of knowledge.

Onwards, the paper starts with reviewing past literature that is associated with AWMHE and simultaneously highlights the motivation and importance to adopt new and innovative technological invention. Then, the paper continues by describing the underpinning research theory that grounds the AWMHE adoption and subsequently proposes a conceptual model. Lastly, the paper concludes by highlighting several theoretical and practical implications necessary for future research initiatives.

12 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/sustainable-automated-warehouse-material-handling-equipment-adoption-motives-in-malaysia/261535

Related Content

Entrepreneurial Opportunities in Metaverse

Shivani Inder (2023). *Promoting Consumer Engagement Through Emotional Branding and Sensory Marketing* (pp. 52-62).

www.irma-international.org/chapter/entrepreneurial-opportunities-in-metaverse/314504

Microfinancing Global Observation on the Interplay Between Service Quality and Customer Delight

Demissie Admasu, Sasmita Samantaand Shikta Singh (2023). *Handbook of Research on the Interplay Between Service Quality and Customer Delight* (pp. 272-289).

www.irma-international.org/chapter/microfinancing-global-observation-on-the-interplay-between-service-quality-and-customer-delight/318112

Social Influence: Decisions of Online Brand Communities and Millennials

Deepak Sood, Dinesh Tandonand Perna Sood (2022). *Applying Metalytics to Measure Customer Experience in the Metaverse* (pp. 161-172).

www.irma-international.org/chapter/social-influence/309312

Internal Communication and Happiness at Work: What's Changing in the Organization's Contexts?

Natália Costaand Marisol Costa (2024). *Connecting With Consumers Through Effective Personalization and Programmatic Advertising* (pp. 75-93).

www.irma-international.org/chapter/internal-communication-and-happiness-at-work/336644

Creative and Innovative Ways of Consumer Engagement

Ruchita Pangriyaand Aditi Priya Singh (2021). *Insights, Innovation, and Analytics for Optimal Customer Engagement* (pp. 117-132).

www.irma-international.org/chapter/creative-and-innovative-ways-of-consumer-engagement/273290