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## A Human Capital Perspective on Behavioral Factors Affecting Customers' Acceptance of Crowd Logistics: A Systematic Literature Review

Arvid Muzanenhamo<sup>1</sup>, Marcia Mkansi<sup>1</sup>

<sup>1</sup>Operations Management, University of South Africa, South Africa

**Corresponding Author:** Arvid Muzanenhamo; Email: [arvidmuzanenhamo@gmail.com](mailto:arvidmuzanenhamo@gmail.com)

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### ABSTRACT

This paper provides a systematic review of the customer's behavioral deliberations that govern their choice to participate in a crowd-logistics market. Little attention has been given to the crowd logistics platforms and small businesses. This paper presents the analysis of customers' crowd logistics adoption from a behavioral perspective. The study applied a systematic literature review method and examined previous literature on crowd logistics from Science Direct and Taylor and Francis. Systematic literature review involve the principles of transparency, rigor, and replicability, which bring significant benefits over traditional literature reviews through greater objectivity. The findings suggest that customers' ability to use technology, safety considerations, desire to make social connections, trust, and convenience are the factors that influence people's decisions to participate in the crowd-logistics market. The findings of this study are valuable for empirical research in a particular setting and strengthen the body of knowledge on the adoption or acceptance of the crowd-logistics concept.

### INTRODUCTION

The last trip of a parcel between the local depot and the client poses some challenges for service providers (Bates et al. 2018). As a result, the distribution of parcels, particularly in cities, is coupled with countless challenges viz socio-economic, technological, and ecological (Baldi et al., 2019). The exorbitant charges of the entire supply chain have triggered service providers to create precise methods of distribution such as pick-up stations. This way, the movement of parcels to their final stages is left to the purchaser. Additional routes to be covered, delivery time, and incurred costs, as well as the loss of convenience, deter customers who end up opting for home delivery (Wang et al., 2019). An annual increase of 8% average growth rate per year is predictable globally between 2020 and 2025 (Deloison et al., 2020). While 103 billion packages were distributed in 2019, this figure has the potential to double by the year 2025. The combination of these two factors, aggravated by other trends which include the growth of cities, suggests that delivery cars in the

top 100 towns and cities are likely to grow by 36% by the year 2030 (Deloison et al., 2020).

Against this background, it seems to be difficult for service providers to decrease the times for parcel distribution without incurring costs. This is because customers seem to be unwilling to pay high prices for delivery services (Tokar et al., 2020). In this evolving environment of e-commerce, management advocates for innovative resolutions that can challenge traditional business practices (Harrington, 2019). However, crowd logistics presents itself as an innovative and advanced solution. Crowd logistics is an information connectivity-enabled marketplace concept that bridges the supply and demand for logistics services (Buldeo Rai et al., 2017). This evolution in crowd logistics has prompted this study to focus on behavioral factors influencing customers' acceptance of crowd logistics.

According to Rai et al. (2018), not many studies have focused on crowd logistics, and some research questions remain unaddressed (Mehmann et al., 2015). Therefore, this paper seeks to discuss

behavioral aspects that influence the acceptance or adoption of crowd logistics in the current digitalization era. Numerous writers have employed several theories and models such as the Health Belief Model (HBM), the Theory of Reasoned Action, and the Multi-Attribute Utility Model (MAU) to understand behaviors. The Health Belief Model was not used in this study due to the inability to determine behavioral differences. Theory of Reasoned Action is limited in that it only predicts positive behavioral intentions and the Multi-Attribute Utility Model presumes that rational decision-making takes place. This study centers on Self-Efficacy theory which asserts that individual mastery and achievement are determining factors of behavior (Bandura, 1982). In addition, the study suggests that persistence, determination, and the ability to learn are some of the key aspects needed to support the crowd logistics concept. Furthermore, perceived self-efficacy determines the amount of effort individuals will expend on a task and how persistent they will be when facing obstacles, which is important in this new concept of crowd logistics. Moreover, self-efficacy affects a person's emotional reaction to a task (Salazar, 1991).

A significant number of studies provided more understanding of crowd logistics from various perspectives. These perspectives include transport reduction by crowd logistics (Paloheimo et al., 2016), the contribution of social crowds in logistics activities (Mladenow, Bauer, Strauss 2016), how crowd logistics platforms create value (Li et al, 2019), the future of crowd logistics (Michel, et al., 2022; Kunze, 2016). It is vital to have an appreciation of the aspects of crowd logistics acceptance or adoption to implement strategies that aim to support the crowd logistics concept. This review sought to add knowledge to the concept of crowd logistics by finding the research gap to give direction for further studies.

The next wave of goods delivery innovation is likely to be impacted by emerging paradigms such as delivery by ground drones, e-scooters, vehicle automation, pick-up boxes, and crowd logistics (Savelsbergh & Van Woensel, 2016). For each of these innovations, a range of operational, business, and behavioral problems must be tackled (Punel & Stathopoulos, 2017). Rougès & Montreuil (2014) also suggest several challenges that affect crowd logistics including trust and liability issues,

maintaining a critical mass of couriers and customers in tandem, and fostering acceptability of new delivery models. As innovative as it is, the crowd logistics movement requires further emergent research agenda on public reactions and acceptability. Understanding the acceptance of crowd logistics is vital to gaining insights into customer preferences for innovative shipping services and permits demand forecast in the context of emerging logistics initiatives. Furthermore, behavioral perceptions contribute to advanced operational models exploring crowd-sourcing and help to promote the underlying business models of crowd-shipping logistics (Rougès & Montreuil, 2014).

#### *Personal Characteristics*

Recognizing personal features is vital to start forecasting the willingness to try and the transition to persistent crowd logistics use. As an app-based service, crowd logistics entices younger segments, and users of ride services, such as Uber, tend to be younger than the general population (Rayle et al., 2016; Shaheen et al., 2016). Similarly, a study by Punel et al (2018) revealed that crowd-shipping is more prevalent among young people. This is an age component affecting crowd logistics' acceptance (Wang et al., 2023). Very few studies investigated the nature of baby boomers and millennials concerning the adoption or acceptance of crowd logistics. In addition, the Self-Efficacy theory provided that personal characteristics have a greater influence on people's decisions. While the millennial generation is more likely to adopt sharing systems, it also appears that people with higher levels of education are more likely users (Rayle et al., 2016). These factors influence an individual's behavior to engage in crowd logistics as they have a strong effect on people's self-efficacy.

#### *Social Environmental Factors*

Miller et al. (2017) found that women tend to be more hesitant to use crowd logistics platforms for night deliveries. This is likely due to safety issues (Panda et al., 2015; The Heights Board, 2016). However, this has been discussed without emphasis on its effect on crowd logistics' adoption. The public participates in sharing initiatives for reasons, ranging from pecuniary to opportunities for making social connections (Bellotti et al., 2015). Social influence positively impacts behavioral intentions (Zhou, 2020). This aligns with the Self-

Efficacy theory that social factors can influence individuals' judgments (Schunk & DiBenedetto, 2021). Alternatively, these personal considerations may influence behavior and drive acceptance or adoption which this study seeks to highlight in crowd logistics. The influence of crowd logistics is highly dependent on the transport behavior of the crowd (Jeremic & Andrejic, 2019). Furthermore, individuals who have a strong sense of community and environmental concern are more likely to use crowd-shipping (Zalia et al., 2021; Punel et al., 2018).

#### *Behavioral Factors*

Computer Self-Efficacy can affect people's behavioral intentions to use computers. Those who perceive computers as difficult to use are more likely to avoid using them (John, 2013; Karsten et al., 2012; Loar, 2018). In contrast, "the higher the individual's computer Self-Efficacy, the greater his/her usage of computers" (Teo et al., 2010). In the context of computer usage, "Computer Self-Efficacy" (CSE) refers to a person's confidence to perform tasks using a computer (Karsten et al., 2012). Self-efficacy has an important impact on how a user perceives the usability of a new platform or technology (John, 2013; Karsten et al., 2012; Romero et al., 2009). However, Punel et al. (2018) provided that individuals who have reservations regarding trust are less likely to use crowd-shipping. Similarly, Cebeci et al. (2023) concluded that trust has a partially mediating effect on the adoption of the service. These are behavioral aspects this study seeks to review as they are seldom addressed in many studies, particularly in the context of crowd logistics adoption or acceptance.

A review of the literature was done using a systematic approach as it provides a reproducible and transparent process that reduces bias (Tranfield et al. 2003). Employing this approach, the study aims to dissect the behavioral matters that influence the adoption of the crowd logistics concept.

## **METHODS**

The study followed a five-step method used in a systematic review which seeks to give a robust, unbiased synthesis of applicable studies in one document (Tricco 2011, Khan, 2003).

### **Formulation of Research Question**

A systematic review aims to provide answers to particular questions, rather than a general

summary of the literature (Khan, 2003, Joanna Briggs Institute, 2001). When formulating the research question, literature was gathered in the area of crowd logistics to determine the research gap. Through discussion with other colleagues in logistics, a question for the study was identified as follows: What are the behavioral factors that influence consumers' adoption or acceptance of crowd logistics?

### **Identifying, Selecting, and Evaluating Relevant Studies**

A library search and analysis of past studies on crowd logistics were applied, guided by a deliberate resolution to only select literature on crowd logistics in the study. When comparing secondary data analysis to other methods, it can be found that this method is cheap and modest (Neuman, 2011). The review centered on the relationship between crowd logistics and behavioral deliberations. The library search method made use of online articles and manual study materials. These are journal articles, textbooks, and newspaper articles. Databases for crowd logistics such as Taylor and Francis, and Science Direct were used to obtain research papers (with the keyword: crowd logistics). The search was between 2010 and 2022. The reason for selecting the year "2010" is that this is the era when the concept started to gain momentum. The study refined the search by adding the keywords "behavioral" and "human capital" from journal articles, book chapters, and conference papers.

### **Analyse and Synthesize Studies**

This paper restricts itself to summarizing the findings explanatorily to determine the behavioral factors influencing crowd logistics' adoption or acceptance. Very few studies have examined the influence of behavioral factors in crowd logistics' acceptance as a technologically innovative concept which this study seeks to analyze using a systematic literature review.

### **Report and Use the Results**

This section provides what is known and unknown about behavioral factors and crowd logistics. The findings and discussions are presented in the sections that follow. The analyzed papers below allowed the study to examine crowd logistics from a behavioral perspective as shown in the table above. The selected papers represent the main aspects of research.

<b>Authors Year</b>	<b>Focus of study on human factors affecting crowd logistics acceptance</b>	<b>Identified factors</b>
Punel et al, 2018	Studying determinants of crowd-shipping use	Behavioral factors
Zhou et al, 2020	Understanding consumers' behavior to adopt self-service parcel services for last-mile delivery	Social factors
Cebeci et al, 2023	The Effect of Trust on the Choice of crowd-shipping Services	Behavioral factors
Wang et al, 2023	Public acceptance of crowdsourced delivery from a customer perspective	Behavioral factors
Galkina et al, 2021	The factors influencing the potential willingness of people to become occasional couriers for the delivery of goods using crowd shipping technology	Personal factors
Alnaggar et al, 2021	Analysis of the current industry status of crowdsourced delivery	Behavioral factors
Le & Ukkusuri, 2019	The different behavioral considerations that govern the choice of people to engage in a crowd-shipping market.	Behavioral factors
Fan et al, 2022	Food-delivery behavior under crowd-sourcing mobility services	Behavioral factors
Buldeo et al, 2017	Developing a comprehensive definition for Crowd Logistics and identifying factors determining the sustainability of Crowd Logistics.	Behavioral factors
Punel et al, 2017	The factors that influence the acceptability and preferences for crowd-shipping	Behavioral factors
Hamari et al, 2016	People's motivations to participate in Collaborative Consumption.	Social factors
John, 2013	The antecedents and effects of computer self-efficacy	Social factors
Yuen et al, 2019	The determinants of customers' intention to use smart lockers	Behavioral factors

**RESULTS AND DISCUSSION**

The existing literature explains crowd logistics from different dimensions encompassing transport reduction by crowd logistics, its bearing on the environment, social crowds influence in logistics, value creation, and the future of crowd logistics. Much of the literature discusses crowd logistics without emphasizing the behavioral aspects that influence the acceptance of the crowd logistics concept. This section presents the results of the systematic review. The presentation is based on theoretical constructs provided in the literature. This paper effectively underscores aspects that influence the adoption or acceptance of crowd logistics. These include people's ability to use technology, the people's level of education, the desire to make social connections, trust, and safety considerations.

**Self-Efficacy Personal Factors**

People's proficiency with technology influences their desire to explore new things, including level of education, and generational gaps. These have a huge effect on the acceptance or adoption of crowd logistics since the concept heavily relies on digital applications. According to Macharis and Kin (2017), the shipping industry is gradually infiltrated by digitization which gives new shape to delivery concepts. Furthermore, millennials tend to be more accepting of technological advancement

compared to baby boomers which affects crowd logistics' acceptance. This confirms a study by Wang et al (2023) that age is an aspect that has a strong effect on crowd logistics adoption. This is evident in the high number of young people participating in Uber taxis. This reveals that many individuals who have strong self-efficacy can use

platforms of crowd-logistics (Romero et al., 2009; John, 2013) than people who have lesser self-efficacy. The theory of Self-Efficacy explains that people tend to judge their capability to use digital applications. However, people in developed nations seem to be more advanced in technology than people in developing nations.

#### **Self-Efficacy Social Factors**

Safety concerns, identified as a personal factor in the Self-Efficacy theory, have a great influence on Crowd Logistics' acceptance due to high crime rates in other parts of the world such as South Africa and Venezuela, to mention just a few. A study by Miller et al. (2017) found that females do not accept a delivery during evening hours. This brings another aspect of social/environment that influences behavior as identified in the Self-Efficacy theory. Trust has affected the adoption or acceptance of crowd logistics due to the high crime rate, as provided by Rougès and Montreuil, (2014) challenges such as trust among other challenges influence crowd logistics. However, in areas with low crime rates, Crowd Logistics seems to be accepted due to the need to make social connections. This is a recurring theme in this study. Social variables influence the desire to make connections (Schunk & DiBenedetto, 2021). These behavioral insights will help to contribute to the improvement of operational models that explore crowd-sourcing and help to advance the underlying business models of crowd logistics (Rougès and Montreuil, 2014). The study also revealed that crowd logistics acceptance is heavily influenced by the desire of certain individuals for environmental concerns. The campaign for going green by the government and private organizations has created awareness and the need for environmental sustainability among citizens. Consequently, as noted by Punel et al. (2018), an individual's concern for the community and environment has a significant influence on crowd logistics adoption.

#### **Self-Efficacy Behavioral Factors**

Despite the expansion of crowd logistics in the market, there are still factors that hinder its acceptance or adoption, which are behavioral aspects. The above factors encompassing both personal and social factors seem to be playing an equal role in influencing the behaviour of individuals to make choices of accepting or adopting crowd logistics. The fourth industrial

revolution is coupled with technology which favours the use of digital applications in crowd logistics. Consumers tend to highly consider traveling times, flexibility, convenience, reliability, and security when requesting a ride (Agatz et al., 2012, Yuen et al., 2019). Additionally, Punel et al. (2018) stated factors that distinguish users from non-users of crowd logistics, such as the socio-demographics and behavior of senders to the broader built environment. Furthermore, individual experiences of delivery impact the preferences for shipping attributes. The study also highlighted trust as a prominent behavioral aspect that affects crowd logistics acceptance. This aspect has been identified in the social context above that relates to the impact of crime on crowd logistics. It is important to note that the tracking and tracing feature of the crowd shipping service has a strong influence on acceptance. Consumers seem to trust a service that enables them to track their parcels. Subsequently, consumers also trust service providers with good reputations (Cebeci et al., 2023).

From the above discussion of social, personal, and behavioral aspects that affect crowd logistics acceptance or adoption, the study has established that behavioral aspects have a strong influence on crowd logistics. This study holds significant relevance in the crowd logistics concept as it has highlighted several behavioral aspects that require attention for continuous adoption of the concept.

#### **CONCLUSION**

On reviewing previous studies on crowd logistics, it becomes evident that there is still a need for a more comprehensive understanding of crowd logistics. The discussion on behavioral aspects that influence the acceptance or adoption of crowd logistics warrants significant attention. All concerned stakeholders need to take the initiative to tackle the behavioral aspects that influence crowd logistics adoption. Current literature discusses crowd logistics from various dimensions with little focus on behavioral factors that influence its acceptance or adoption. Countries have different contexts and settings that specifically affect the adoption of crowd logistics with behavioral matters. Thus, unique countries' peculiarities still require special attention which further empirical research may uncover. Matters of transport reduction, environmental sustainability, value creation, and the

future of crowd logistics remain important. This study suggested that behavioral aspects do have a greater influence on the acceptance of crowd logistics in this digital era.

An emerging contribution to theory is how behavioral factors affect the acceptance or adoption of crowd logistics. For example, the inability to use technology limits customers to accept and adopt crowd logistics applications. Appreciation of these factors can help to mitigate the effects of crowd logistics adoption. The study further reveals that behavioral factors such as trust, in a high-crime environment limit the acceptance of crowd logistics components. For instance, female customers do not trust other people for evening deliveries (Miller et al. 2017).

From a practice standpoint, the behavioral, personal, and social factors provide an outline for prospective entrepreneurs. They further clarify the importance of digital acceptance in conducting business. This is crucial for today's entrepreneurs and customers to adopt electronic business transactions. The insights for the practitioners are outlined below.

1. Education of customers on new technological applications can increase the acceptance of the crowd logistics concept. Previous research shows that the higher the individual's ability to use technology, the greater the usage of technological applications (Teo et al., 2010).
2. Organizational challenges such as cost reduction and unavailability of delivery transport can be minimized by crowd logistics acceptance.
3. Behavioral aspects have a great impact on the acceptance or adoption of the crowd logistics concept.
4. Acceptance and adoption of the crowd logistics concept can support the growth of e-retail.

The limitation of the study is that the research is literature-based, hence empirical test is required. Our findings suggest that behavioral factors have a great impact on the acceptance of technological applications such as crowd logistics. Future studies can perform an empirical study to explore how the performance of crowd logistics is affected by the behavior of customers. Other studies can further investigate what influences or motivates entrepreneurs to use the crowd logistics concept.

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