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Applying the RBV theory to explore how fulfilment processes affect digital logistics performance in emerging economies

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Abstract: The rapid growth of e-commerce, accelerated by COVID-19, has challenged logistics operations, prompting companies to adopt fulfilment services to enhance performance. While well-studied in developed countries, their impact in emerging economies remains underexplored. This study examines fulfilment processes in improving digital logistics performance in Kazakhstan using the resource-based view (RBV) theory and a quantitative approach. A survey of 106 logisticians evaluates the relationship between fulfilment processes and key logistics performance indicators (LPIs) through four multiple linear regression models. Results show delivery and inventory management significantly affect production cost growth (0.00*), while delivery strongly influences information support, document turnover (0.00*), and innovative technologies (0.00***). All models are statistically significant (F-values exceed thresholds, significance $F < 0.05$). Findings provide insights into logistics dynamics in developing markets, emphasising the role of fulfilment processes in operational efficiency and customer satisfaction.

Keywords: logistics; fulfilment processes; logistics performance indicators; LPIs; RBV theory; Kazakhstan.

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1 Introduction

In today's dynamic market environment, the rest of the logistics processes, such as warehousing, picking, packing, and handling returns have become challenging due to the rapid increase in online shopping impacted by the pandemic during COVID-19 (Kawa, 2021). This forces companies to fulfil many more orders, which require careful processing in both traditional and online retail (Chopra and Meindl, 2020). Moreover, modern consumers demand fast delivery, which leads to increased pressure on logistics systems (Christopher, 2016). In addition, the rapid advancement of information technologies, growing business competition, and faster transaction speeds have driven companies to look for new approaches to maintain high logistics performance (Fadile et al., 2018). In response, many local and multinational businesses have increasingly turned to outsourcing, including logistics functions, as a common practice to remain competitive (Fadile et al., 2018). Logistics outsourcing is a growing trend among modern companies due to its numerous benefits (Qureshi et al., 2008). It allows a company to delegate tasks or services to an external provider that could otherwise be handled internally (Rajesh et al., 2013). In addition, logistic operators will be able to achieve maximum efficiency through outsourcing (Constantin et al., 2010).

In this regard, fulfilment services have attracted broad interest from logistics service providers, whose managers have noticed that this is a growing part of the logistics services market (Kawa, 2021; Yu et al., 2017). Because fulfilment has the potential to integrate the different sales and distribution channels into one coherent system to provide high logistics performance (Agatz et al., 2008), it is treated as 'an important driver of customers' behavioural intentions' (Vasić et al., 2020).

Despite its importance, few studies examine the adoption of fulfilment in logistics because this concept is new and began to be actively implemented with the rise of e-commerce (Yu et al., 2017). More empirical research needs to be conducted to assess how fulfilment affects logistics performance (Kawa, 2021). This study, however, is focused on Kazakhstan, an emerging economy that, while strategically located in Central Asia, has yet to be extensively explored in the context of modern logistics and fulfilment. By focusing on Kazakhstan, the research provides new insights into the logistics dynamics of an emerging economy undergoing rapid growth and industrialisation. It fills a significant gap in existing literature by focusing on a less-explored region, offering a nuanced understanding of how global fulfilment strategies can be adapted to local contexts of emerging economies. Thus, the study aims to evaluate how fulfilment processes affect the logistics performance indicators (LPIs) in the Republic of Kazakhstan.

1.1 Kazakhstan's distinct institutional and infrastructural context

Beyond its general classification as an emerging economy, Kazakhstan represents a distinctive logistics environment. The country's geographic position along the Trans-Caspian International Transport Route ('Middle Corridor') provides strategic connectivity between China and Europe, but also exposes firms to multi-jurisdictional customs and transit complexities (Raimbekov et al., 2018). Logistics performance is shaped by long domestic transport distances and uneven regional infrastructure, creating variability in service quality. At the same time, the country's e-commerce market is expanding rapidly, with digital platforms and postal operators investing in warehouse automation, parcel lockers and route-optimisation technologies (Moldabekova et al., 2021). These institutional and technological conditions make Kazakhstan a pertinent case for testing the resource-based view (RBV) in fulfilment, as firms must build capabilities that compensate for infrastructural bottlenecks while leveraging fast digital adoption.

2 Literature review

2.1 RBV theory

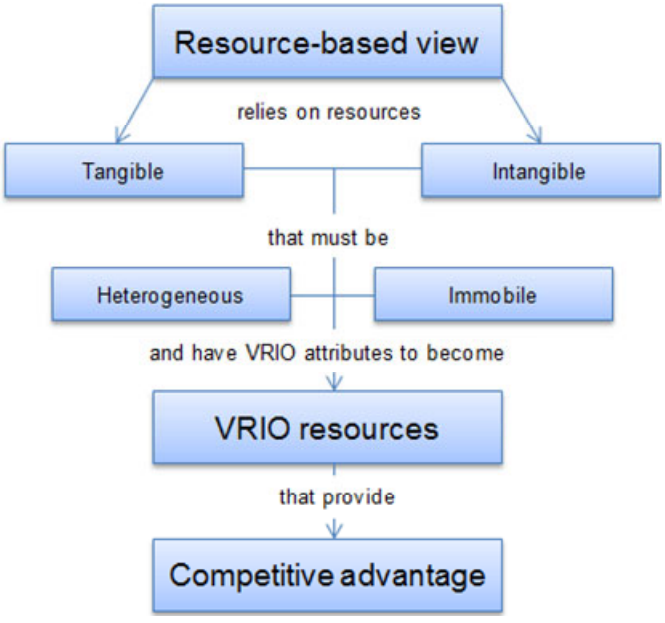
RBV theory was used to evaluate the relationship between fulfilment processes and logistics performance. The RBV theory, developed by Barney (1991), is foundational in strategic management and operations. It argues that a firm's resources and capabilities, such as fulfilment processes, are key drivers of competitive advantage and performance. In logistics, RBV can explain how leveraging advanced fulfilment capabilities (inventory management, delivery efficiency, etc.) improves logistics performance by optimising resource use and meeting customer demands effectively. The model in Figure 1 illustrates the RBV framework, focusing on its core components.

This model highlights how organisations leverage tangible and intangible resources to build distinctive capabilities. It underscores the alignment of resource allocation with strategic objectives as a pathway to superior performance (Barney, 1991).

However, very few empirical studies have used this model to assess the relationship between fulfilment processes and logistics performance. For instance, fulfilment processes in e-commerce logistics, such as efficient warehousing, inventory management, and last-mile delivery, have been analysed by Kawa (2021) under RBV to demonstrate how distinctive operational resources can enhance logistics performance. The author explores how fulfilment services impact e-tailers' logistics and firm performance. It provides insights into how companies can utilise fulfilment processes as strategic resources to enhance operational efficiency and customer satisfaction. However, this study focuses primarily on e-commerce companies, which may only partially represent fulfilment dynamics in other industries, such as manufacturing or B2B logistics. In addition, Kawa (2021) emphasises the perspectives of e-tailers, potentially neglecting insights from fulfilment providers or third-party logistics (3PL) companies.

Therefore, drawing on global experience and addressing the lack of local empirical research, this study highlights the practical importance of fulfilment processes and their influence on LPIs in Kazakhstan.

Figure 1 The framework of RBV theory (see online version for colours)



Source: Barney (1991)

2.2 Fulfilment processes and their role in logistics

Fulfilment services are primarily offered by companies whose core activity is providing logistics support for e-commerce (Kawa, 2017). Fulfilment is a whole range of logistics operations performed to process and fulfil customer orders, including storage of goods, packaging, transportation and delivery (Bowersox et al., 2013). Table 1 presents the processes of the fulfilment.

The abovementioned processes aim to ensure efficient and timely customer delivery while maintaining operational accuracy and cost-effectiveness. Since existing research shows that implementing fulfilment services can significantly reduce order processing time, improve delivery accuracy, and reduce inventory costs (Yang et al., 2020). Critical components of a fulfilment system, such as automating warehouse operations, using technology to monitor inventory in real-time, and optimising delivery routes, help significantly improve the overall quality of logistics processes (Gu et al., 2010). These changes are especially relevant for emerging economies, where traditional logistics models often need help to cope with growing order of volumes and delivery complexity.

Additionally, several recent regional studies enrich our understanding of how digital transformation is unfolding in Kazakhstan's logistics sector. Saktaganova et al. (2025) examine the nationwide digital transformation of transport and logistics, noting accelerated cargo processing via AI, customs automation, and digital platforms, alongside remaining infrastructural challenges and the potential to integrate into global logistics chains. Mamrayeva et al. (2022) investigate the digital transformation of logistics companies in Kazakhstan, highlighting the application of technologies such as IoT, blockchain, cloud services, big data, robots, RFID and noting constraints in skills and

ICT uptake. Finally, an OECD (2023) review of the 'Digital Kazakhstan' strategy identifies institutional and infrastructure barriers: small firms face limited broadband access, regulatory fragmentation, and low digital uptake, despite governmental efforts to create a comprehensive digital governance framework. These region-specific insights augment global literature by revealing context-dependent obstacles and enablers in Kazakhstan's digital logistics journey.

Table 1 Fulfilment processes

Process	*Description*
Receiving of goods/products	This is the first step in the fulfilment process where products are delivered to the warehouse or fulfilment centre. Includes inspecting shipments for discrepancies and entering the products into the warehouse management system (WMS) for inventory tracking (Bowersox et al., 2013).
Storage of goods/products	After receiving, products are stored in designated areas within the warehouse. Efficient storage systems (e.g., shelf storage, pallet racking) ensure quick access and organisation (Gu et al., 2010).
Packaging of goods/products	This process involves packaging the products according to customer specifications or standard procedures and reduces the risk of damage during shipping (Christopher, 2016).
Delivery of goods/products	Optimising delivery routes and transport modes can reduce delivery time and costs, enhancing the efficiency of the fulfilment process (Chakravarty, 2014).
Inventory management	Effective inventory management relies on real-time data and forecasting models to ensure that stock levels meet customer demand without overburdening storage capacities (Chopra and Meindl, 2013).
Preparing sales documents (e.g., invoices)	This process involves generating sales documents such as invoices, packing slips and receipts (Bowersox et al., 2013).
Processing customer orders	Order processing includes receiving customer orders, verifying product availability, picking the items, and preparing them for shipment (Harrison and van Hoek, 2014).
Dealing with returned goods	This process handles products that customers return due to defects, incorrect orders or dissatisfaction (Srivastava and Srivastava, 2006).
Liaising with transport companies/external operators	This involves communication with third-party logistics (3PL) providers, shipping companies, or other external partners to coordinate the movement of goods from the fulfilment centre to the customer (Gu et al., 2010).
Deferral services	Deferral services allow a product to be held in the fulfilment process or in a temporary location before being dispatched (Christopher, 2016).

Source: Own compilation based on the research

2.3 Logistics performance indicators

Further, it is crucial to identify core LPI. The selection of LPIs such as production cost growth rate, level of information support, document turnover speed, and availability of innovative technologies reflects their significance in evaluating key operational and

strategic dimensions of logistics efficiency (Beyca et al., 2018). The list of chosen indicators is presented in Table 2.

Table 2 Logistics performance indicators

Type of LPIs	*Description*
Production cost growth rate	Assesses cost efficiency, a critical measure of profitability and sustainability. Monitoring this metric helps identify cost-saving opportunities and areas of inefficiency in logistics (Arsova and Temjanovski, 2023).
Level of information support	Measures data availability and decision-making efficiency (Chatterjee et al., 2023).
Document turnover speed	Evaluates administrative efficiency, directly impacting lead times. Digitised workflows reduce turnover times by 40%, streamlining workflows (Jhawar and Garg, 2016).
Availability of innovative technologies	Captures a firm's ability to adapt to industry advancements and includes AI and IoT in optimising logistics performance (Mohsen, 2023).

Source: Own compilation based on the research

Together, these four LPIs capture cost efficiency, information visibility, administrative speed and technological readiness – core dimensions of logistics performance used in prior studies and applicable across sectors.

The availability of innovative technologies LPI reflects a single-item, respondent-rated assessment of technological enablement in logistics processes; it does not enumerate concrete tools (Hrušecká et al., 2017).

When assessed against Barney's (1991) VRIN criteria, several processes can be considered valuable (reducing costs, improving accuracy, enabling innovation). In the Kazakhstani context, some capabilities such as advanced inventory management and integrated handling of returns are still applied unevenly across firms, which makes them relatively rare. This reflects broader patterns noted in prior research, where digital adoption in logistics remains heterogeneous across sectors and regions (Moldabekova et al., 2021; Raimbekov et al., 2018).

2.4 Hypothesis development

Due to the impact of several factors like supply chain strategies, customer demand, and technological adoption, companies utilise fulfilment processes with varying or consistent frequency. For instance, Ndubi et al. (2016) explain variability in fulfilment processes due to factors like limited resources, logistical challenges and region-specific demand. Al Humdan et al. (2020) support this idea and emphasise the varying frequency of fulfilment processes in sectors with dynamic operational environments, such as telecommunications, where responsiveness and agility in fulfilment processes are vital. On the other hand, Hopstack Team (2024) argue that many companies strive for consistent fulfilment utilisation by implementing technologies such as warehouse management systems (WMSs), robotics, and barcode scanning, which help streamline processes, minimise errors, and consistently meet customer expectations.

In addition, Shanmugamani and Mohamad (2023) explore the role of technology, particularly WMS, in ensuring uniformity and reducing errors in order fulfilment processes. They found that such technologies can provide high consistency among companies from different industries.

While LPIs in different companies may be at the same level in highly standardised industries or supply chains, variations generally exist due to company size, technology investment, geographic location and management strategies (World Bank, 2023).

And most importantly, due to the lack of literature containing empirical studies assessing the relationship between fulfilment and logistics, it is difficult to say whether there is a positive relationship between them. Based on above mentioned studies and literature, the study sets the following three hypotheses for this research:

$H_0$1 The respondent companies utilise fulfilment processes with the same frequency.

H_a1 The respondent companies utilise fulfilment processes with varying frequency.

$H_0$2 The respondent companies evaluate LPIs in the same way.

H_a2 LPIs vary among the respondent companies.

$H_0$3 Fulfilment processes do not influence LPIs in Kazakhstan.

H_a3 Specific fulfilment processes tend to impact LPIs in Kazakhstan.

The subsequent analysis will test these hypotheses and contribute to addressing the existing research gap.

3 Methodology

The data for this study were collected through a structured survey administered via Google Forms between September and December 2023. Out of 173 distributed questionnaires, 112 responses were received (65% response rate), of which 106 were valid and used for analysis. The sample covers a wide cross-section of the logistics sector in Kazakhstan: trading companies (38.7%), warehousing enterprises (34.9%), transport operators (27.4%), logistics centres (10.4%), manufacturing firms (5.7%) and distribution centres (2.8%), with 17% reporting other types of activity. All surveyed firms were locally owned and operated in Kazakhstan, reflecting the domestic logistics environment. Information on firm size (e.g., small, medium or large enterprises) was not systematically collected, which represents a limitation and an avenue for future research.

This scientific article specifically examines fulfilment processes and LPIs, which were chosen as the explanatory and response variables based on findings from prior studies and literature review.

Fulfilment processes outlined above are selected as independent variables for the subsequent analysis.

Types of LPIs mentioned in Table 4 are selected as dependent variables for the subsequent analysis.

Table 3 Explanatory variables X (fulfilment processes)

Parameter (explanatory variables X)	*Sub-parameters of X (types of fulfilment processes)*
Fulfilment processes	Receiving of goods/products
	Storage of goods/products
	Packaging of goods/products
	Delivery of goods/products
	Inventory management
	Preparing sales documents (e.g., invoices)
	Processing customer orders
	Dealing with returned goods
	Liaising with transport companies/external operators
	Deferral services

Source: Compiled by the authors according to the relevant literature

Table 4 Response variables Y (LPIs)

Parameter (response variables Y)	*Sub-parameters of Y (types of LPIs)*
Logistics performance indicators (LPIs)	Production cost growth rate
	Level of information support
	Document turnover speed
	Availability of innovative technologies

Source: Compiled by the authors according to the relevant literature

The LPI availability of innovative technologies in this study was measured as a self-assessment on a 1–10 scale. The survey did not request firms to list specific tools or platforms. Accordingly, the indicator should be interpreted as a general measure of digital readiness rather than the adoption of particular systems.

The methodology applied in this research is a quantitative approach, wherein the necessary data were systematically gathered through a survey conducted with the selected respondent companies. Targeted companies provided feedback on their utilisation of fulfilment processes within their organisations using a Likert scale from 0 to 5, where 0 indicates ‘never use’ and 5 indicates ‘always use’. A Likert scale from 1 to 10 was also employed in the survey to assess the perceived effectiveness of various LPIs, with 1 characterising ‘low effectiveness’ and 10 showing ‘high effectiveness’.

Based on the defined explanatory and response variables, we applied a chi-square goodness-of-fit test to examine Hypotheses $H_0 1$ and $H_0 2$ regarding the uniformity of response distributions. To test $H_0 3$, we estimated four multiple linear regression models (one for each LPI), with fulfilment processes as predictors. To address potential multicollinearity, we checked correlation matrices among predictors and excluded variables with strong overlap. Statistical significance of predictors was evaluated through p-values.

Thus, based on the results of the regression analysis and the F-test, either $H_0 3$ or $H_a 3$ will be accepted.

4 Results

According to the selected independent (X) and dependent (Y) variables, as well as the formulated hypotheses, the first step will involve testing Hypothesis $H_0$1 for the uniformity of response distribution among surveyed respondent companies in the context of their use of fulfilment processes at the enterprise level.

Table 5 Chi-square test for uniformity in responses across fulfilment process types

No.	*Types of fulfilment processes (explanatory variables X)*	*Chi-square (df = 5)*	*Asymptotic significance*	*Hypothesis decision*
1	Receiving of goods/products	$\chi^2(5) = 47.623$	< 0.01	$H_0$1 rejected, H_a1 accepted
2	Storage of goods/products	$\chi^2(5) = 46.830$	< 0.01	$H_0$1 rejected, H_a1 accepted
3	Packaging of goods/products	$\chi^2(5) = 61.887$	< 0.01	$H_0$1 rejected, H_a1 accepted
4	Delivery of goods/products	$\chi^2(5) = 36.642$	< 0.01	$H_0$1 rejected, H_a1 accepted
5	Inventory management	$\chi^2(5) = 36.189$	< 0.01	$H_0$1 rejected, H_a1 accepted
6	Preparing sales documents (e.g., invoices)	$\chi^2(5) = 31.547$	< 0.01	$H_0$1 rejected, H_a1 accepted
7	Processing customer orders	$\chi^2(5) = 34.038$	< 0.01	$H_0$1 rejected, H_a1 accepted
8	Dealing with returned goods	$\chi^2(5) = 40.491$	< 0.01	$H_0$1 rejected, H_a1 accepted
9	Liaising with transport companies/external operators	$\chi^2(5) = 30.642$	< 0.01	$H_0$1 rejected, H_a1 accepted
10	Deferral services	$\chi^2(5) = 47.509$	< 0.01	$H_0$1 rejected, H_a1 accepted

Source: Own compilation based on IBM SPSS Statistics software

Chi-square tests indicate non-uniform usage distributions for all ten fulfilment processes (< 0.01). We therefore reject $H_0$1 and accept H_a1.

Next, it is necessary to determine whether the data analysis of survey results on the frequency of respondent companies' use of LPIs aligns with the existing Hypothesis $H_0$2.

Table 6 Chi-square test for uniformity in responses across LPIs types

No.	*Types of LPIs (response variables Y)*	*Chi-square (df = 5)*	*Asymptotic significance*	*Hypothesis decision*
1	Production cost growth rate	$\chi^2(9) = 21.170$	0.12	$H_0$2 accepted
2	Level of information support	$\chi^2(9) = 18.717$	0.28	$H_0$2 accepted
3	Document turnover speed	$\chi^2(9) = 41.170$	< 0.01	$H_0$2 rejected, H_a2 accepted
4	Availability of innovative technologies	$\chi^2(9) = 17.774$	0.38	$H_0$2 accepted

Source: Own compilation based on IBM SPSS Statistics software

The chi-square results indicate that most LPIs are evaluated by companies in a similar way, with the exception of document turnover speed, where noticeable differences are observed among respondents.

In regard to the identified parameters (X and Y), we will conduct a multiple linear regression analysis and then develop regression equation models.

Table 7 Regression models for LPIs based on fulfilment processes

Model	*Regression equation*	*Interpretation of the factors*	
Production cost growth rate	$y = 3.19 – 0.36x_1 + 0.54x_2 + 0.52*x_3 + E$	x_1	Receiving of goods/products
		x_2	Delivery of goods/products
		x_3	Inventory management
Level of information support	$y = 3.26 + 0.62x_1 + 0.22x_2 + E$	x_1	Delivery of goods/products
		x_2	Inventory management
Document turnover speed	$y = 4.44 + 0.63x_1 + 0.54x_2 – 0.33*x_3 + E$	x_1	Delivery of goods/products
		x_2	Inventory management
		x_3	Liaising with transport companies
Availability of innovative technologies	$y = 3.55 + 0.65x_1 + 0.33x_2 – 0.35*x_3 + E$	x_1	Delivery of goods/products
		x_2	Inventory management
		x_3	Receiving of goods/products

Source: Own compilation based on the results of the survey

As a result of the regression analysis using the chosen explanatory and response variables, four regression equation models were developed. Some explanatory variables were excluded from the final models to address multicollinearity issues. Table 8 presents the optimal p-values of the factors in each resulting regression model.

Table 8 Key effects of fulfilment processes on LPIs

Parameter	*P-value (b_1)*	*P-value (b_2)*	*P-value (b_3)*
Production cost growth rate	*0.05*** (receiving of goods/products)	*0.00**** (delivery of goods/products)	*0.00**** (inventory management)
Level of information support	*0.00**** (delivery of goods/products)	*0.07*** (inventory management)	-
Document turnover speed	*0.00**** (delivery of goods/products)	*0.00**** (inventory management)	*0.08** (liaising with transport companies)
Availability of innovative technologies	*0.00**** (delivery of goods/products)	*0.06*** (inventory management)	*0.07*** (receiving of goods/products)

Note: *indicates significance at 0.10 level, **indicates significance at 0.05 level and ***indicates significance at 0.01 level.

Source: Own compilation based on the results of the survey

According to the results of the regression analysis assessing the impact of various fulfilment processes on LPIs, it is essential to highlight the most significant p-values in Section 5.

Identifying the fulfilment processes that significantly influence logistics performance allows for an in-depth evaluation of the quality of these models by comparing two F-statistics (F and significance F).

Table 9 presents the quality assessment of regression models using Fisher's test, showing F-values, critical F-values and corresponding significance levels for all four obtained models. In all cases, the obtained F-value from the final regression models exceeds > the critical F-values, accordingly, we reject $H_0 3$ and accept the alternative hypothesis $H_a 3$, confirming that specific fulfilment processes influence LPIs in Kazakhstan.

Table 9 Quality assessment of regression models using Fisher's test

Parameter	*Fisher's test (obtained F)*	*Fisher's test (critical F value)*	*Fisher's test (significance F)*
Production cost growth rate	8.75	2.70	0.000
Level of information support	19.63	3.09	0.000
Document turnover speed	11.33	2.70	0.000
Availability of innovative technologies	7.75	2.70	0.000

Notes: *Obtained F:* the calculated F-statistic, showing the strength of the variable relationship.
Critical F: the threshold value; if obtained F > critical F, the model is significant.
Significance F: the p-value; < 0.05 confirms the model's statistical significance.

Source: Own compilation based on the results of the survey

5 Discussion

Following the analysis conducted and the results obtained, the next stage is to provide an economic interpretation.

5.1 Results of chi-square test (fulfilment processes)

The chi-square tests confirmed that fulfilment processes are not used uniformly across Kazakhstani logistics companies ($p < 0.01$). This reflects structural differences. Market demand pushes firms in high-growth sectors such as e-commerce to prioritise delivery and inventory management, while smaller firms face cost barriers to adopting resource-intensive processes. Larger companies with more resources and better digital infrastructure are able to implement them consistently. In addition, operational strategies differ: some companies emphasise rapid turnover of fast-moving goods, others specialise in narrower niches. Finally, regional disparities in infrastructure and regulation also shape adoption; firms in less developed areas may lack the conditions to implement advanced fulfilment methods effectively.

5.2 Results of chi-square test (LPIs)

Most LPIs are evaluated in a similar way by companies, indicating broadly shared perceptions of efficiency. The only exception is document turnover speed ($p < 0.01$), where assessments diverge. This can be explained by differences in digitalisation and workflow automation: companies with advanced electronic document systems report higher efficiency, while those relying on manual processes experience delays.

The significant effect of the LPI availability of innovative technologies should be understood as differences in digital maturity between firms, not the uptake of specific systems.

5.3 Results of creating regression models

The regression analysis reveals a clear hierarchy of fulfilment effects. For production cost growth rate, receiving ($p = 0.05$), delivery ($p = 0.00$) and inventory management ($p = 0.00$) are significant, confirming that well-structured inbound, outbound and stock processes mitigate cost growth. For information support, delivery ($p = 0.00$) and inventory management ($p = 0.07$) are influential, reflecting the role of transport and stock systems in enabling data flow and visibility. Document turnover speed is strongly affected by delivery ($p = 0.00$) and inventory management ($p = 0.00$), while liaising with transport companies contributes negatively ($p = 0.08$), signalling bottlenecks when coordination remains paper-based or fragmented. Availability of innovative technologies is explained by delivery ($p = 0.00$), inventory management ($p = 0.06$) and receiving ($p = 0.07$), indicating that firms with stronger operational foundations are more likely to adopt innovations.

Overall, delivery consistently emerges as the strongest driver across all models, while inventory management adds stability in cost and process control. Receiving and liaising with transport companies highlight weaker areas that constrain performance.

5.4 Results of significance tests (p-values and F-test)

The statistical checks confirm the robustness of these results. P-values demonstrate the importance of key processes, and the F-tests show that all four regression models are significant (obtained $F >$ critical F; $p < 0.05$). This underscores the substantial influence of fulfilment processes on logistics performance.

5.5 Comparison with previous studies

The regression results align with existing literature in several ways. For production cost growth, the significant role of delivery and inventory management supports earlier findings that streamlined fulfilment reduces costs by minimising delays and wastage (Christopher, 2016; Ivanov et al., 2020). In Kazakhstan, where infrastructural development is uneven, this optimisation is particularly critical (Akhmetova et al., 2022). For information support, the influence of delivery processes resonates with studies on integrated supply chain systems (Gunasekaran et al., 2017), while the contribution of inventory management reflects the role of robust stock control in ensuring data accuracy, a trend only gradually emerging in Kazakhstan (Moldabekova et al., 2021). For document turnover speed, the joint impact of delivery, inventory management and transport coordination is consistent with research on cross-functional integration (Mentzer et al., 2001) and regional evidence of logistical bottlenecks (Raimbekov et al., 2018). Finally, for technology adoption, the positive associations with delivery, inventory and receiving echo findings on the importance of IoT, automation and digital platforms in strengthening competitiveness (Ivanov et al., 2020; Kedziora, 2022; Krishnan et al., 2024). Similar trends are reflected in global evidence on intelligent automation (Kedziora and Hyrynsalmi, 2023). Bibliometric and applied studies confirm that the rise of e-logistics

and Logistics 4.0 (Golubtsov et al., 2023; Yanginlar et al., 2024) is already shaping business performance in Kazakhstan by enhancing agility, reducing costs and improving service quality.

6 Conclusions

This study examined how fulfilment processes influence logistics performance in Kazakhstan, applying the RBV framework and regression analysis to data from 106 logistics professionals. The results demonstrate that fulfilment capabilities are deployed unevenly across firms and that certain processes have a decisive impact on performance.

6.1 Key findings

Delivery consistently emerged as the strongest driver, significantly improving cost efficiency, information support, document turnover and technology adoption. Inventory management also proved critical, strengthening cost control and administrative efficiency, with positive associations to innovation. Receiving and liaising with transport companies showed weaker but notable effects, highlighting operational bottlenecks that require managerial attention.

6.2 Implications

For logistics firms in Kazakhstan, prioritising delivery and inventory management – supported by investments in digital tools and closer partnerships with technology providers and carriers – can yield substantial performance gains. Embedding fulfilment within broader strategic planning and maintaining continuous improvement practices will further enhance competitiveness in a dynamic market environment.

6.3 Hypotheses

The empirical analysis led to the following conclusions:

- $H_0$1 (same frequency of fulfilment processes) was rejected; H_a1 (processes vary by company) was accepted.
- $H_0$2 (same evaluation of LPIs) was retained for three LPIs but rejected for document turnover speed, where firms differ significantly.
- $H_0$3 (fulfilment has no influence on LPIs) was rejected; H_a3 (certain fulfilment influences LPIs) was accepted.

6.4 Future research

Further studies should broaden the scope by including additional fulfilment processes and a wider range of LPIs, ideally with longitudinal designs that capture how digital adoption evolves over time. Comparative research across other emerging economies would also

deepen understanding of how institutional and infrastructural contexts shape fulfilment strategies.

By combining empirical evidence with RBV theory, this paper demonstrates that fulfilment is not only an operational function but a strategic capability. In emerging economies such as Kazakhstan, aligning fulfilment strategies with organisational goals can become a decisive source of sustained competitive advantage.

Declarations

Conflicts of interest: All authors declare that they have no conflicts of interest.

Informed consent declaration: Participants provided verbal informed consent. The participants' opinions were recorded on a voice recorder.

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