

# Uncertain Supply Chain Management

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## Intelligent matching: Supply chain management and financial accounting technology

Murad Ali Ahmad Al-Zaqeba<sup>a\*</sup>, Nehad Ibrahim Ineizeh<sup>a</sup>, Baker Akram Falah Jarah<sup>a</sup>, Husam Mahmmud Jamil Abu Hamour<sup>b</sup> and Zeyad Almatarneh<sup>a</sup>

<sup>a</sup>Faculty of Business, Amman Arab University, Amman -Jordan

<sup>b</sup>Al-Balqa Applied University, Jordan

### ABSTRACT

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The main objective of this paper is to investigate the effect of accounting Fintech, Financial Technology Matching (FTM) and Supply Chain Management (SCM) in Jordanian manufacturing corporations. A questionnaire was created in order to meet the goal of this article to collect the data related to the financial technology and supply chain management and 850 questionnaires out of 1300 distributed questionnaires were collected from respondents, working in Jordanian manufacturing corporations. Linkways hypothesis testing indicates that financial technology and company size had a positive effect on the management of supply chain towards adoption of fintech. In addition, the results also found that integrated supply chain management strategy and environmental uncertainty are significantly affecting the adoption of fintech for supply chain management. However, supply chain optimization uses technologies and resources such as blockchain, artificial intelligence, and Internet of things in the best possible way to improve the efficiency and performance of a supply network.

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## 1. Introduction

The supply chain of a company is a critical business operation that ensures a positive client experience. A high-performing supply chain allows organizations to be more efficient and responsive to their consumers, ensuring that they get what they want, when and when they want it, in a way that is profitable for the business and adds to the organization's and supply chain's long-term sustainability (Alzaqebah et al., 2018a). Nevertheless, the fast advancement of financial technology in recent years has led to the emergence of a new class of financial services or products delivered over the Internet. Indeed, the global financial crisis that began in 2008 might be a watershed moment, ushering in a new generation of market participants that use technology to financial services and products (Frame et al., 2018; Al-Zaqeba & AL-Rashdan, 2020).

Various financial technology approaches may be utilized to tackle complicated problems such as information searching, supply chain management, and changing client demand that produces uncertainty across the supply chain. In addition, the usage of financial technology is expanding among financial services firms since they are no longer concerned about evaluating massive amounts of system-critical data (Malkawi et al., 2019). Meanwhile, technology is being used in financial practices to improve working capital and liquidity management for cooperating business partners in the supply chain (Alzaqebah & Abdullah, 2015; Dutta, et al., 2020). Abad-Segura et al. (2020) argued that financial technology refers to companies that use technology to improve the efficiency of financial services. The term “FinTech” may be traced back to the “Financial Services Technology Consortium” in the early 1990s. Regulators, customers, and investors have all been paying close attention to the industry since 2014.

\* Corresponding author

E-mail address [m.alzeqiba@aaau.edu.jo](mailto:m.alzeqiba@aaau.edu.jo) (M. A. Al-Zaqeba)

The use of financial technology in institution administrations has become an unavoidable matter, and one of the most important of these departments, supply chain management, is gaining traction because it is viewed as an entity that describes the integration of activities that began with initiating the planning and control processes over materials and services, as well as the flow of information from the supplier to the purchaser (Al-Zaqeba et al., 2018b; Alaaraj et al., 2018; Alzaqebah et al., 2020). Goyal et al. (2018) defined the SC as a collection of all individuals, activities, resources, organizations, and technologies involved in the creation and sale of a product. Kain and Verma (2018) stated that supply chain management encompasses all operations connected to the movement and transformation of raw materials into end goods, as well as their delivery to the final customer.

Recently, the notion of a financial supply chain has gained traction, it also entails the transfer of funds from a client to a supplier in the opposite direction (Xu et al., 2018). However, FTs are internet enterprises that leverage new technology and innovation to improve supply chain funding and streamline financial operations (Al-Zaqeba & AL-Rashdan, 2020a; Rijanto, 2021). Financial technology functions as a bridge between businesses and their suppliers, allowing both the buyer and the seller to boost their working capital by allowing the former to stretch its payables and the latter to receive payment more rapidly. This provides the benefits for both buyer and the supplier, the benefits including less variability and greater liquidity in payments timing (Dbouk, et al., 2020).

Previous literature contains several studies which investigate the supply chain and supply chain management with different issues such as information technology, decision making process, firm performance, competitive advantages, financing methods and block chain, but to the knowledge of the researcher, there is no study that investigates the matching of financial technology and supply chain management in Jordan. As a result, a comprehensive paper is required to consider the limitations of previous research to improve and update the research of financial technology and supply chain management in Jordan, as well as to include some recent variables that have not been addressed by previous studies and articles. Therefore, this paper comes to investigate the matching of financial technology and supply chain management in Jordanian Industrial companies.

## 2. Literature Review

### 2.1 Financial Technology

The financial services combination and Information Technology (IT) brings financial technology. The financial technology industry is a group of companies that use modern technologies to introduce innovation into financial services. Ahluwalia et al. (2020) argued that Financial Technologies (FTs) are online enterprises that use cutting-edge technology and innovation to simplify financial operations and improve supply chain finance. Some financial technology firms compete directly with banks, while others have partnered with them or provide goods or services to them. Financial technology businesses, by offering new ideas, allowing for speedier delivery, and boosting competition, are clearly benefiting the financial services market. Financial technology incorporates a variety of financial services into the daily lives of clients (Gozman et al., 2018). In addition, subsequent generations are accustomed to technology and prefer to manage their money quickly and easily, rather than walking to physical branches to conduct other operations and transactions (Alaaraj et al., 2016; Rubini, 2018; Alzaqebah et al., 2020).

The term “financial technology” relates to 21st-century financial services. Originally, the word referred to the technology utilized by established commercial and consumer financial institutions in their back-end operations (Anshari, et al., 2020). It has grown to include various technological advancements such as the Internet of Things, cryptocurrencies, and machine learning. When it comes to financial technology history, it can be said that the 1950s are a good starting point. In the 1950s, the credit card was born. In the 1960s, the first ATMs arrived. In the 1970s, companies started trading stocks through the internet. Banks began to deploy mainframe computers and other cutting-edge data and record-keeping systems in the 1980s. The internet and e-commerce business models grew in popularity in the 1990s (Soleimani, 2018).

Kaur et al. (2021) argued that the amount of money invested in financial technology throughout the world has risen from \$930 million in 2008 to more than \$3.4 billion for 2014, whereas reached \$22 billion in 2015 and nearly \$33 billion in 2016 (Al-Zaqeba et al., 2018). Most financial technology investments were initially located in the United States. Since 2016 China is rising as the dominant force in financial technology values and European countries, especially the UK and Germany, have, in similar vein, significant new technologies in recent years. Wang, et al. (2021) stated that in accordance with a recent PwC study, financial technology platforms now manage over 12% of all SCF initiatives in Europe.

### 2.2 Supply Chain and SCM

SC is a collection of all activities, individuals, resources, organizations, and technologies involved in the creation and sale of a product, like a supplier is someone who provides goods or services to company for manufacturing, a distributor works as a link between a product's maker and another organization in SC, such as a reseller or retailer, a customer is a corporation or individual that purchases services, goods, and can be a retailer, and the consumer who ultimately consumes the goods or services. Consequently, SC consists of all parties involved, indirectly or directly, to fulfill customer requests. However, SC includes retailers, warehouses, suppliers, transporters, the manufacturer, and even customers themselves (Zhang et al., 2020; Chien et al., 2022). The supply chain includes all function involved in receiving customer request, marketing, finance, filling

a customer request, operations, new product development, distribution, and customer service are examples of these functions (Alaaraj et al., 2016a; Alzaqebah et al., 2021; Rushton et al., 2022).

Cohen et al. (2022) determined the process of supply chain in details, and argued that the elements of the supply chain consist of five main elements, which are client and this includes the forecasting of customer order quantity and time, supplier (source), and this includes the process of selecting suppliers to ship or deliver needed products and services to create the product and provide the service, in addition to determining the appropriate price. Create processes for inventory management of services and products that will be received from suppliers, including verifying and receiving shipments, manufacturing step, in which the activities necessary for testing, production, preparation, and packing for delivery are also scheduled, as well as shipments and payments to suppliers, and improving relationships with suppliers (Mohammad et al., 2020). This is the most time-consuming element of the supply chain, since it involves receiving returns from defective or excess products, as well as receiving consumer complaints about the products sent to them and working to resolve them.

SCM, according to the definition, includes all activities linked to the flow and transformation of raw materials into finished goods, as well as their delivery to the final consumer (Rushton et al., 2022). Additionally, the transfer and storage of raw materials, inventories during manufacturing, and completed goods from point of origin to point of destination is covered by supply chain management. Selecting an acceptable supplier and having a strong connection with them is one of the most critical components for supply chain firms. This is because the supplier provides raw materials for the company and any problem can bring bad impacts for the production process. As a result, the use of financial technology techniques can play a critical role in selecting the best supplier (Alaaraj, 2018a; Salam & Khan 2018).

### 3. Hypothesis Development

The physical supply chain and the Financial Supply Chain (FSC) are the two elements of the supply chain. The physical supply chain involves the transfer of commodities from a supplier to a client, the FSC is a concept that has only recently gained popularity and operates in the opposite the transfer of money flows from client to supplier takes place in one direction (Alaaraj et al., 2016b; Qasim et al., 2017; Brahm et al., 2020). However, FT are internet enterprises that leverage new technology and innovation to improve supply chain funding and streamline financial operations. In recent years, financial technology firms have gained a stranglehold on the financial services industry, and they are rapidly expanding their sphere of influence and achieving market dominance. Financial technology functions as a bridge between businesses and their suppliers, allowing both the buyer and the seller to boost their working capital by allowing the former to stretch its payables and the latter to receive payment more rapidly. This has advantages for both the buyer and the supplier, including increased liquidity and decreased fluctuation in payment time (Fosso-Wamba et al., 2021). Elliot et al. (2020) indicated that in accordance with a recent PwC study, financial technology platforms now manage over 12% of all supply chain finance initiatives in Europe.

Size of the company is one of the most organizational factors that may have an impact on the adoption of financial technology. In addition, Chang et al. (2020) larger firms, it is believed, have the financial means to invest in new technology, such as risk and financial technologies, to absorb the accompanying risk. Furthermore, large firms may have spare capacity to spend on adopting and implementing new technologies, as well as to reap the benefits of adoption economies of scale. Alternatively, Muita et al. (2015) have proposed that smaller companies are more likely to adopt financial technology due to the freedom given by smaller size and lower bureaucratic levels, through this paper the researcher is trying to evaluate the size of company and the adoption. Danese et al. (2020) argued that past performance of the company is another organizational factor that may have an impact on the matching of financial technology with supply chain. In addition, Roh, et al. (2014) argued that the alignment of an integrated SC with the strategy of the company is a vital factor for company success as well as realization of increased competitiveness from SC integration with overall firm strategy may increase the need for the adoption of financial technology. Gutierrez et al. (2015) argued that environmental factors vary, such as environmental uncertainty, industry concentration, economic conditions, transaction climate, global competitiveness, and may increase the need for the adoption of new technologies such as financial technology. Ahammad et al. (2021) stated that the environmental uncertainty is an unpredictable change such as unpredictable competitor actions, volatile price fluctuations, supply chain partners pressure, customer demand, and rapid shifts in production processes. Kouhizadeh et al. (2021) stated that the pressure from supply chain partners or the industry may influence the adoption of SC and FT. Abdel-Basset, et al. (2018) stated that to overcome imperfect and uncertain information of supply chain, companies may institute a variety of technologies. Dash et al. (2019) stated that advanced supply chain technology enables organizations to communicate demand data, sales predictions, and production plans more rapidly and precisely, allowing for better real-time inventory and demand awareness. As a result, this paper adopts the following hypotheses:

**H<sub>1</sub>:** *Financial technology has a positive effect on the management of the supply chain.*

**H<sub>2</sub>:** *The company size greatly influences the adoption of fintech.*

**H<sub>3</sub>:** *Integrated supply chain management strategy significantly influences the overall strategy of the financial technology company.*

**H<sub>4</sub>:** *Environmental uncertainty significantly affects the adoption of fintech for supply chain management.*

#### 4. Methodology

This paper aims to assess the effect of financial technology on SCM in manufacturing corporations in Jordan. In order to achieve the objective of this paper, the population and sample of this paper are the manufacturing corporations in Jordan which consists of 33 corporations listed on the ASE. However, a descriptive analytical approach was used to test the hypotheses of the paper. A questionnaire was designed and 850 questionnaires out of 1300 distributed questionnaires were collected from respondents, working in Jordanian manufacturing corporations.

#### 5. Results

The first three main hypotheses were subjected to simple linear regression analysis.

##### 5.1 The first and the second hypotheses of the survey

The first hypothesis of the survey investigates the effect of financial technology on the management of supply chain. Moreover, the second hypothesis examines the effect of company size on the adoption of fintech. Table 1 presents the summary of the results of our survey.

**Table 1**

The summary of examining the first and the second hypotheses of the survey

I.V	Model Summary		ANOVA		Coefficients			
	R	R <sup>2</sup>	F	Sig F*	B	standard error	T	Sig T*
Supply Chain	0.741	0.650	174.364	0.000	0.412	0.028	14.681	0.000
Adopt Financial Technology	0.735	0.613	161.597	0.000	0.438	0.031	17.689	0.000

\*The statistically significant effect at level ( $\alpha \leq 0.05$ )

Table 1 shows the R-value of the first dimension were (0.741), which indicates a positive correlation between the dimension of financial technology and the dimension of supply chain. It turns out that the result of the coefficient of determination was ( $R^2 = 650$ ), which means that the financial technology domain explained 65% of the variance in supply chain when all other variables remain constant. It was also proved that at the level of confidence (sig=0.000), the (F) value reached (174.364), which confirms the importance of the regression at significance level of ( $\alpha \leq 0.05$ ).

It also shows that R-value of second dimension were (0.735), which indicates a positive correlation between the dimension of company size and the dimension of financial technology. It turns out that the coefficient result of determination is ( $R^2 = 0.613$ ), which means that the company size domain explained 61.3% of the variance in financial technology when all other variables remain constant. It was also proved that at the level of confidence (sig = 0.000), In addition F value reached (161.597), which confirms the regression importance at the significance level of ( $\alpha \leq 0.05$ ).

##### 5.2 The third hypothesis

The third hypothesis of the survey considers the effect of the integrated supply chain management strategy on the overall strategy of the financial technology. This hypothesis is examined using regression analysis and the results are given in Table 2.

**Table 2**

The results of examining the third hypothesis

I.V	Model Summary		ANOVA		Coefficients			
	R	R <sup>2</sup>	F	Sig F*	B	standard error	T	Sig T*
Adopt Financial Technology	0.597	0.361	183.384	0.000	0.410	0.034	15.543	0.000

\*The statistically significant effect at level ( $\alpha \leq 0.05$ )

The value of ( $R = 0.681$ ) indicates that there is a positive relationship between (Organizations that have integrated supply chain management strategy with overall corporate strategy will be more likely) and (adopt financial technology). It turns out that the coefficient value of determination is ( $R^2 = 0.361$ ), which means that the (Organizations that have integrated supply chain management strategy with overall corporate strategy will be more likely) field has explained (36.1%) of the variance in (adopt financial technology) when all other variables remain constant. It was also proved that at the level of confidence (sig=0.000), In addition, (F) value reached (183.384), which confirms the importance of the regression at the level of significance ( $\alpha \leq 0.05$ ).

### 5.3 The fourth hypothesis: The effect of environment uncertainty on the adoption of fintech for supply chain management

The fourth hypothesis was calculated using a simple linear regression test and the results are summarized in Table 3.

**Table 3**  
The summary of the results of testing the fourth hypothesis

I.V	Model Summary		ANOVA		Coefficients			
	R	R <sup>2</sup>	F	Sig F*	B	standard error	T	Sig T*
the management of supply chain.	0.641	0.368	163.891	0.000	0.384	0.028	13.672	0.000

\*The effect is statistically significant at the level ( $\alpha \leq 0.05$ )

Table 3 shows that R value ( $R = 0.641$ ) indicates that there is a positive relationship between (Organizations facing higher environmental uncertainty to adopt financial technology) and (the management of supply chain). It turns out that the value of the coefficient of determination is ( $R^2 = 0.368$ ), which means that the (Organizations facing higher environmental uncertainty to adopt financial technology) field has explained (36.8%) of the variance in (the management of supply chain) when all other variables remain constant. It was also proved that at the level of confidence ( $\text{sig}=0.000$ ), (F) value reached (163.891), which confirms the regression importance at the significance level ( $\alpha \leq 0.05$ ).

## 6. Discussion

The paper aimed to investigate the impact of Financial Technology Matching (FTM) and Supply Chain Management (SCM) on Jordanian manufacturing companies. The study has shown that fintech has a positive impact on supply chain management and this finding is in agreement with the study of Ahluwalia et al. (2020). The study has also found company size significantly influences fintech adoption and this finding agrees with Chang et al. (2020). The integrated supply chain management strategy also significantly influences the overall strategy of the fintech company (Kouhizadeh et al., 2021). Finally, the survey has found that environmental uncertainty significantly affects the adoption of fintech for supply chain management, agreeing with the study of Ahammad et al. (2021).

## 7. Conclusion

Intense competition in today's global market, introduction of products with shorter life cycles, and high customer expectations for products and services will force companies to invest and focus on their supply chains to achieve competitive advantages that can support their business continuity. At the same time, the rapid development of transportation and communication technologies, such as mobile communications and the Internet, has led to the continuous development of supply chain and related management technologies. In a real product chain, the raw materials are sourced and produced in a processing facility, then shipped to a finished goods warehouse and then shipped to a customer or retailer. As a result, in order to reduce prices and improve service quality, an effective supply chain strategy must take into account the interactions that occur at various levels in the supply chain. A supply chain, also known as a logistics network, consists of suppliers, manufacturing or manufacturing centers, warehouses, distribution centers, and retail stores, as well as raw materials, inventory work, and finished products. Supply Chain Management carefully studies each facility that has a significant impact and plays a role in making products that fit customer needs. Of course, in some supply chain analyzes, suppliers and customers are included because they have an impact and linkage on supply chain performance. Expected objectives of supply chain management.

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