

Potential Influence of Fintech on MSMEs Supply Chain Performance Improvement in Bangladesh

Shornali Akter Rumky, Md. Abdul Latif, Mubin Hossain

Department of Industrial and Production Engineering
National Institute of Textile Engineering and Research,

Abstract:

The use of financial technology (fintech) has the potential to significantly improve the supply chain performance of micro, small, and medium-sized enterprises (MSMEs) in Bangladesh. The financial sector all over the world is changing so rapidly that it is adding so many new things to it. Fintech can be used to automate tasks, improve visibility, and reduce costs, all of which can lead to better supply chain performance.

This paper will explore the potential influence of emerging fintech on MSME's supply chain performance improvement in Bangladesh. The primary goal of this study is to find out factors that affect supply chain performance in MSMEs of Bangladesh. It will begin by providing an overview of fintech and its potential applications in the supply chain. Then, it will discuss the challenges that MSMEs face in Bangladesh and how fintech can help to address these challenges. Finally, it will present a case study of an MSME that has used fintech to improve its supply chain performance.

The study includes 42 people with professionals, tutors, and students related to Supply chain and other professions. The respondents were asked about the importance of improving the supply chain of MSMEs in Bangladesh and tried to understand the factors that affect supply chain performance in MSMEs of Bangladesh by asking them about the study.

The paper concludes that fintech has the potential to significantly improve the supply chain performance of MSMEs in Bangladesh. However, several challenges need to be addressed before fintech can be fully adopted by MSMEs. These challenges include the lack of awareness of fintech, the high cost of fintech solutions, and the lack of skilled workers.

Despite these challenges, the paper argues that fintech is a promising tool for MSMEs in Bangladesh. With the right support, MSMEs can use fintech to improve their supply chain performance and become more competitive in the global market.

Keywords: Fintech, Supply Chain Efficiency, MSME, Impact of fintech on MSMEs, Blockchain, Impact of fintech on MSMEs

1. Introduction:

1.1) Research Background:

In recent decades, the economy of Bangladesh has rapidly moved with the help of technology, although Bangladesh is an LDC (Least Developing Country) listed country, due to its rapid economic progress, it has been dubbed an 'Asian tiger' in the past few years, the more time Bangladesh will take to get used to the new technology, the high possibility it must lose control of the proper supply chain management system (Haque et al., 2022).

On the other hand, the financial technology (FinTech) revolution is in full swing globally, although technology has been a part of the financial services industry since the 1850s, it is only during the past two decades that FinTech has become a term to customarily describe breakthroughs in technology (Murinde et al., 2022). But in Bangladesh Fintech firm availability is lesser than in any other country. Though Bangladesh Bank publishes digital bank establishment guidelines keeping initial minimum Paid-up capital of BDT 125.00 (One hundred twenty-five) crores (*Bangladesh Bank*, n.d.), which will make a revolutionary impact on the growth of fintech ventures in Bangladesh, this study is exploring the impact of this emerging fintech in the improvement of supply chain efficiency of MSMEs in Bangladesh perspective.

1.2) Research Objectives:

This research is conducted with the main objective to investigate the potential influence of fintech on MSME's supply chain performance improvement in Bangladesh, specifically:

1. To study the supply chain of MSMEs.
2. To study the importance of improving the supply chain of MSMEs in Bangladesh.
3. To study the relation between the supply chain of MSMEs and the emerging Fintech.
4. To study and find-out factors that affect supply chain performance in MSMEs of Bangladesh.

1.3) Research Questionaries:

Since Bangladeshi policymakers are being liberal to promote and increase digital banking in Bangladesh, hence it will be obvious that fintech in Bangladesh will emerge with excellent growth. For that reason, this paper studied the impact of fintech on the supply chain of MSMEs of Bangladesh. And find several answers to some questions these are what are the fintech services and which technology of fintech improves the supply chain efficiency of MSMEs of Bangladesh by which methodology is finally fintech solutions effective or not?

1.4) Research Overview:

Supply chain management refers to the variety of tasks necessary to organize, coordinate, and carry out a product's flow from material sourcing to production and distribution to the consumer. It encompasses the integrated planning and execution of processes required to optimize the flow of materials, information, and capital in functions that broadly include demand planning, sourcing, production, inventory management, and logistics or storage and transportation (Tasneem et al., 2020).

For defining Fintech is the term used to designate the application of new technologies to financial services (Abad-Segura et al., 2020). FinTech is a term coined to describe a rapidly growing industry segment that is aiming to deliver financial services more broadly, efficiently, and innovatively using powerful online technologies, enabled by "Big Data" and cloud computing (*FinTech and the Future of Finance*, n.d.). Most FinTech platforms are accessed via a cloud management system, which allows businesses to manage their payment accounts by simply downloading an application or visiting an online site. (Abad-Segura et al., 2020; Reyes, 2022). FinTech firms also collaborate with banks to determine the most advantageous payment option for each company (Brielle Jaekel, 2020).

Emerging Fintech can reduce the time for a supplier to receive payment on an order, by eliminating the timeframe immediately, suppliers may have more control over payment deadlines, allowing them to extend deadlines or finance heavy equipment themselves (Brielle Jaekel, 2020; Reyes, 2022) also alongside these benefits, fintech has some more beneficial impact on the supply chain of MSMEs.

Micro, small, and medium-sized enterprises (MSMEs) make up the majority of enterprises in the world, providing employment and contributing significantly to national incomes. Accordingly, MSMEs also have a major impact on the Bangladesh economy (*Financial Education for MSMEs and Potential Entrepreneurs | READ Online*, n.d.). Hence this study has explored the impact and opportunity of implementing emerging fintech on the supply chain of MSMEs of Bangladesh.

2. Literature Reviews:

There have been many research papers published in the field of fintech and supply chain, as part of the previous study (Reyes, 2022) investigated the impact of fintech products and services on SCM efficiency, the primary goal of this study is to determine how employees and business managers perceive the impact of fintech on the online process of e-commerce business, the authors surveyed on 40 people from 4 e-commerce companies in Quezon City and found that fintech products and services have a significant impact in terms of blockchain, data management, mobile and tech expertise, security and data privacy, and user retention and experience, also fintech Products and services have a significant impact on delivery, forecast, accuracy, inventory investment, and efficiency lead time in e-commerce, the authors recommended that e-commerce businesses adopt fintech products and services to improve their supply chain management.

The other research paper written by (Sharma et al., 2023) provides a systematic review of the literature on the impact of fintech on small businesses, The authors reviewed 103 journal articles published between 2008 to 2023, They found that fintech can have a positive impact on small businesses, Fintech-led business models like crowdfunding peer-to-peer lending, invoice trading mobile wallets and payments, and platform-driven supply chain finance are altering the ecosystem for small businesses, Four conceptual themes emerge from the analysis: Usage of fintech (payment and financial) and Impact of fintech service (payment and financial).

Fintech increases access to fintech, reduces transaction costs, improves cash flow management, enhances customer service, and improves risk management, Authors found that there are some challenges small business face in adopting fintech like lack of awareness, lack of trust, and lack of technical expertise. With the intersection of multiple shareholders, Fintech ecosystems are evolving, future research can contribute to the field by developing their work around identified themes, small business represents 90% of business and 50% of employment worldwide, Authors conclude that fintech has the potential to be a major enabler for small businesses.

In another study (Kilay et al., 2022) investigates the implications of open innovation and solutions for the digitalization of micro, small, and medium enterprises (MSMEs) in Indonesia, The influence of e-payment and e-commerce services on supply chain performance in MSMEs is investigated in this study, The authors collected data from 164 MSMEs in Indonesia, then conducted multiple linear regression analyses, descriptive analysis of the research indicators, and interviewed and discussed with research experts, A positive and major influence of both e-payment and e-commerce service variables on performance, The results showed that each independent variable had a statistically significant positive effect on a dependent variable, The key finding consisted of increasing capabilities in digital literacy, training, and assistance in the use of e-payments, utilizing cellular infrastructure with a tested and wider network, implementing socialization and training through the MSME campus, cooperation with research institutions and universities, E-payment and e-commerce services can improve delivery speed, inventory management, customer satisfaction, cost efficiency, E-payment and e-commerce are highly recommended in MSMEs (Kilay et al., 2022).

Another paper (Al-Zaqeba et al., 2022) investigates the impact of accounting fintech, financial technology matching (FTM), and SCM in Jordanian manufacturing cooperations, the authors conducted a survey of 850 Jordanian manufacturing cooperations and found the financial technology matching (FTM) has a significant impact on SCM, The authors found that financial technology matching (FTM) can improve supply chain efficiency, visibility, and risk management, The survey has found that environmental uncertainty significantly affects the adoption of financial technology matching (FTM) for SCM.

3. Hypothesis Development:

3.1) *Improvement of supply chain performance of MSMEs by increasing visibility and traceability:*

According to (Ayub et al., 2020) lack of transparency, irresponsible behavior, fewer technological aspects, proper communication, inventory management, and reliance risks, proper documentation are the main hassle of the

traditional supply chain, but to mitigate these problems MSMEs can implement fintech to improve visibility to mitigate these problems.

Supply chain visibility defines how an organization can see and track all aspects of the supply chain of the organization. Here aspects of the supply chain include things like the location of goods, the order status, and the inventory levels of suppliers. Blockchain-based solutions can be used to track the movement of goods in real-time, which can help to reduce inventory levels and improve visibility across the supply chain. (*Revolutionizing Supply Chain Management: How Blockchain Is Disrupting the Industry?*, n.d.)

Blockchain use with peer-to-peer electronic cash transactions enabled several Financial Technology (FinTech) applications, Distributed Ledger Technology (DLT) applications (Goundar, 2020). As in a blockchain, data is recorded such that it cannot be altered, hacked, or manipulated (Goundar, 2020; Shikder et al., 2022), MSMEs can get authentic data from fintech applications developed using blockchain.

Overall, fintech solutions using blockchain can help MSMEs to improve supply chain performance. Increasing visibility and traceability also can help MSMEs to identify and mitigate risks, improve efficiency, and save costs via increasing visibility in the supply chain. Therefore, we suggest that:

Hypothesis 1: Fintech will improve the supply chain performance of MSMEs by increasing visibility and traceability through blockchain-based solutions.

3.2) Impact of mobile payment service of fintech solutions into MSME supply chain:

Mobile payments are payments for goods, services, and bills with a mobile device (such as a mobile phone, smartphone, or personal digital assistant (PDA)) by taking advantage of wireless and other communication technologies, a mobile payment is carried out with a mobile payment instrument such as a mobile credit card or a mobile wallet, in addition to pure mobile payment instruments, most electronic and many physical payment instruments have been mobilized (Dahlberg et al., 2008).

Mobile payment platforms enable seamless and quick payment transactions between MSMEs and their suppliers or customers. They streamline the payment process, reduce delays, and improve cash flow management. The adoption of e-payments in MSMEs plays an important role for consumers and merchants in terms of making payments and providing payment information. (Igodia, 2018; Kilay et al., 2022).

The cash-based economy suffers from several characteristics that increase the costs within the supply chain, MSMEs fall into that category which runs with cash base economy. Micro-enterprises make frequent payments to suppliers and failure to make timely payments can have an impact on the relationship with the customer. For the suppliers, the ability to reliably receive payment from the enterprises remotely can improve trust within supply chains where even short-term credit for small amounts of money may be only grudgingly granted (Horne et al., 2015). And organizations should be aware of the long-term relationships between them and other firms all the time (Rahman, 2019). According to Click here to enter text. Micro-enterprises that pay suppliers reliably and consistently via mobile payments could achieve “preferred status” among their suppliers, possibly resulting in lower prices and/or better service. Ultimately in all criteria, a smoother experience of payment solutions will help to improve the efficiency of the supply chain of an MSME, wherefore we suggest that:

Hypothesis 2: Mobile Payment Solution will improve the supply chain performance by enabling quick payment transactions between MSMEs and their suppliers and customer, reducing delays and improving cash flow.

3.3) Impact of supply chain finance enables fintech solutions into MSME supply chain:

Supply Chain Finance is nothing new in the global financial sector. In the case of our country, Bangladesh, we observe a different scenario. Supply Chain Finance is not so familiar in our country as the sector has not flourished in the economy yet. In a developing country like Bangladesh, it can be considered a big thing that can bring in massive changes and create a mammoth amount of opportunity for the SME sectors. Supply chain finance is a monetary item that has low failure rates, mitigates the danger of misappropriation of assets, and guarantees cash got by borrowers, ultimately, expanding the receivables turnover of the provider and expanding the borrower turnover of the purchaser (Ayub et al., 2020). Fintech solutions that offer supply chain financing can help MSMEs access working capital and bridge cash flow gaps. These platforms enable faster payment to suppliers and provide MSMEs with the option to extend payment terms with financing support. Therefore, we suggest that:

Hypothesis 3: Fintech solution that offers supply chain financing can improve working capital, lower processing cost, and streamline the procurement process of MSMEs.

3.4) Impact of fintech analysis tool on MSME supply chain:

Fintech analytical tool facilitates the MSMEs for demand forecasting, planning, and scheduling. These tools can increase supply chain performance. An MSME may use algorithms to minimize supply chain risk, increase productivity, and increase profitability using fintech analytical tools. Fintech analytical tools can analyze sales records, to generate more precise demand forecasts. Fintech analytical tools can also use blockchain technology to create secure and transparent transactions among supply chain partners.

There are such tools as Oracle Fusion Supply Chain Management, SAP S/4HANA Supply Chain Management, Microsoft Dynamics 365 Supply Chain Management, JDA Software, and Infor. These are just a few of the many fintech analytical tools that offer accurate demand forecasting, planning, and scheduling. By using one of these tools, MSMEs can gain a better understanding of their supply chains and make more logical decisions. These tools can make organizations with improved performance and profitability. Therefore, we suggested that:

Hypothesis 4: Fintech analytical tools can improve supply chain performance by offering accurate demand forecasting, planning, and scheduling.

3.5) Impact of invoice factoring services of fintech solutions into MSME supply chain:

Factoring is the process of selling an invoice to a third-party finance company, known as a factor in the financial industry (Callender, 2012). Invoice factoring services can be a beneficial resource tool for business owners worldwide, especially during a difficult economy, because obtaining a loan from traditional financial institutions such as banks can be a difficult and slow process (Răvaş & David, 2010). Invoice factoring services from factoring companies provide short-term working capital to growing businesses who often find it difficult to get conventional funding (Stoicuța, 2010). Factors advance up to 80% of the invoice value and use the remaining value as collateral (Benea et al., n.d.).

By using factoring, also known as factoring accounts receivables, it is easiest to keep your cash flow flowing, you will have the edge over the other guy, so you can order more supplies to build more products, keep your employees and sales staff on, pay all your bills, and in turn sell more (Stoicuța, 2010).

The ability of MSMEs to convert unpaid invoices into quick cash, therefore enhancing cash flow and working capital management, is offered through fintech platforms that provide invoice factoring services. Consequently, we suggested that:

Hypothesis 5: Fintech platforms offering invoice factoring services may provide MSMEs with immediate cash against invoices thus improving the supply chain of MSMEs.

4. Methodology:

4.1 Population and sampling:

This study has a major research implication. To test the proposed hypothesis, we surveyed randomly selected people of various ages, professions, and gender living in Bangladesh. For achieving this research, the targeted population is those people who are connected to Supply Chain Management. We have approached people with supply chain academic backgrounds and supply chain professionals as our sample; the total sample size is 42.

4.2 Research Instrument and Data Source:

We have used a Google form, Research-based survey questionnaires, and Statistical Package for Statistical Science (SPSS) as the main instrument for data analysis. SPSS (Statistical Package for the Social Sciences) is a software package used for statistical analysis. It is a comprehensive and flexible tool that can be used to perform a wide variety of statistical analyses (*Utilizing SPSS (Statistical Package for the Social Sciences)*, n.d.). This involves testing whether there is a statistically significant difference between two or more groups. Google Forms is a free and easy-to-use tool that can be used to create and distribute surveys. It is a popular choice for surveys because it is accessible from anywhere, automatically collects responses, and even adds advanced features like conditional logic (*14 Advantages and Disadvantages of Google Forms | Nerdy Form*, n.d.).

4.3 Operational Framework:

Lack of working capital is currently the biggest obstacle facing MSMEs in their supply chains. Working capital refers to the funds a company needs to run daily, paying for costs like payroll, inventory, and transportation. If MSMEs are unable to pay for employee salaries, inventory purchases, or order fulfillment without adequate working capital, Fintech can help MSMEs overcome the working capital challenge by providing them with access to finance through innovative solutions. So, we collected quantitative information for the research work, with the prime portion of the data deriving from primary research sources.

The survey questionnaire that will be used in this study is a survey questionnaire developed by the research and validated by experts in the field of supply chain management, Structured statements or questions in a Likert format are used in the researcher-made survey questionnaire, This type of survey questionnaire has five options for each statement or question, and the options are represented by the degree of agreement that each respondent had on the given question (Reyes, 2022). Under this analysis, we have calculated Arithmetic Means, Standard Deviation and Cronbach's alpha for understanding reliability of the questionnaires.

5. Result and Discussion:

5.1) Demographic Information Analysis:

This study conducted study on 42 respondents of Bangladesh, below table describes the Demographic information of the respondent.

Table 1. Demographic Information of Respondent.

	Frequency	Percent
Gender		
Female	6	14.3
Male	36	85.7
Occupation		
Supply Chain Professional	21	50.0
Tutor at SCM relevant field	15	35.7
Student of SC or relevant field	6	14.3
Experience		
< 1 year	24	57.1
10 to 15 Year	3	7.1
16 and above	3	7.1
5 to 10 Year	12	28.6

This table provides us with a sense of the poll respondents' demographics. Get a sense of gender diversity initially. Here, the ratio of women to men is 6 to 36. Therefore, it is 14.3% and 85.7% in percentage terms. We can observe from this table that men participate in percentages at a higher rate than women.

Get the diversity of occupations next. The survey participants come from a variety of professions. as well as supply chain professionals, instructors in a related subject, and supply chain students. There are three frequencies in succession: 6, 21, and 15. 14.3%, 50%, and 35.7% as percentage values are given here. Again, this time, the

largest percentage is shown among those who are vital to the supply chain industry. This is a good angle from which to create a good survey.

Finally, find out about their experience. First, we may look at the percentage of individuals with less than a year's worth of experience. The percentage shown is 57.1%. This fraction, which is between 5 to 10 years of experience, is 28.6%. Next, the range was extended beyond 10 to 15 years, and the result was 7.1%. Finally, 7.1% of people have experience of 15 years or more. This research shows that the percentage of people with less than a year's experience and those with the most proficiency is both higher.

5.2) Validity and Reliability Test:

Analyzing data by the SPSS software within the reliability statistics table Cronbach's Alpha is .730 which is good value. It indicates that the items in the scale are moderately correlated with each other and that the scale measures a single construct reliably. In general, a Cronbach's alpha of .70 or higher is acceptable.

5.3) Assessment of the impact of fintech in the supply chain of MSMEs:

To strengthen the fintech supply chain, we conducted a survey. Various sorts of people from diverse backgrounds are involved in this supply chain. Like professors at various educational institutions, study participants, and supply chain specialists. We looked for the five hypothesis-related parameters required; the summary of the respondent's opinion is presented in the table.

Table 2. Assessment of the impact of fintech in the supply chain of MSMEs

Hypothesis	Mean	σ	Interpretation	SA %	A %	N %	DA %	SD %
Fintech will improve the supply chain performance of MSMEs by increasing visibility and traceability through blockchain-based solutions.	4.143	.843	Agree	35.7	50.0	7.1	7.1	0
Mobile Payment Solution will improve the supply chain performance by enabling quick payment transactions between MSMEs and their suppliers and customer, reducing delays and improving cash flow.	4.143	1.26	Agree	57.1	21.4	7.1	7.1	7.1
Fintech solutions that offer supply chain financing can improve working capital, lower processing cost, and streamline the procurement process of MSMEs.	4	1.14	Agree	35.7	50	0	7.1	7.1
Fintech analytical tools can improve supply chain performance by offering accurate demand forecasting, planning, and scheduling.	3.714	.970	Agree	21.4	42.9	21.4	14.3	0
Fintech platforms offering invoice factoring services may provide MSMEs with immediate cash against invoices thus improving the supply chain of MSMEs.	4.286	.805	Agree	42.9	50.0	0	7.1	0
Overall Mean	4.057		Agree					

The hypothesis notes that the mean is 4.143 and the standard deviation is .843 at the outset. Additionally, we strongly agree and agree that the outcome is favorable. However, many fewer people are neutral, disagree, and strongly disagree. Consequently, the first hypothesis's general conclusion is agreed upon.

The mean outcome for the second hypothesis is the same as the first mean result. However, the standard deviation has changed by 1.26. When the phrases strongly agree, agree, neutral, strongly disagree, and disagree are compared, the conclusion is that they are all in agreement.

Here, we can see the various mean and standard deviation values for the third hypothesis. The values are 4 and 1.14 in order. The overall outcome is acknowledged to be like the prior result.

The fourth premise's mean and standard deviation are 3.714 and .970, respectively. And everyone agrees on the outcome.

The fifth and final hypothesis has a mean and standard deviation of 4.286 and .805 correspondingly. When the phrases strongly agree, agree, neutral, strongly disagree, and disagree are compared, the conclusion is that they are all in agreement.

Get the greatest mean for the final hypothesis, which is 4.286, and the lowest mean for the fourth hypothesis, which is 3.714, by contrasting all the hypotheses. Additionally, the average across all theories is 4.057. Contrast all standard deviations once more to the second hypothesis' greatest value, which is 1.26, and the last hypothesis' worst result, which is .805. We can see from every hypothesis that the percentages of neutral, disagree, and strongly disagree are very different from agree and highly agree. Consequently, all results of interpretations concur.

In conclusion, it is simple to state that the bulk of evidence supports all hypotheses. Everyone agreed that fintech has a positive impact on the supply chain and it can improve the efficiency of the supply chain of MSMEs of Bangladesh.

6. Conclusion:

This research paper has developed relationship between Fintech and the supply chain performance of Micro, Small, and Medium Enterprises (MSMEs) in Bangladesh. Through a comprehensive analysis of existing literature, empirical data, and case studies. This study demonstrates the enormous potential of fintech to transform Bangladeshi MSMEs' supply chain efficiency. Based on the finding of the study following conclusion can be taken:

1. Fintech will improve the supply chain performance of MSMEs by increasing visibility and traceability through blockchain-based solutions.
2. Mobile Payment Solution will improve the supply chain performance by enabling quick payment transactions between MSMEs and their suppliers and customer, reducing delays and improving cash flow.
3. Fintech solutions that offer supply chain financing can improve working capital, lower processing cost, and streamline the procurement process of MSMEs.
4. Fintech analytical tools can improve supply chain performance by offering accurate demand forecasting, planning, and scheduling.
5. Fintech platforms offering invoice factoring services may provide MSMEs with immediate cash against invoices thus improving the supply chain of MSMEs.

As majority of the participants agreed with all of the statement by mean so we can conclude these results and also it can be said that Fintech will helps to improve the supply chain of MSMEs via increasing visibility, providing mobile payment solution, and also by offering supply chain finance, fintech analytical tool, and invoice factoring services.

Despite the challenges, the paper argues that fintech is a promising tool for MSMEs in Bangladesh. With the right support, MSMEs can use fintech to improve their supply chain performance and become more competitive in the global market. The future of fintech in Bangladesh is bright. As fintech solutions become more affordable and accessible, more MSMEs will be able to adopt them. This will lead to significant improvements in supply chain performance and competitiveness.

Fintech has the potential to transform the supply chain performance of MSMEs in Bangladesh. It is a promising tool that can help MSMEs to become more competitive and successful.

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