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N26: A FINTECH - REVOLUTIONIZING THE BANKING SECTOR'S SUPPLY CHAIN

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ABSTRACT:

In relation to the operational strategies of N26 it is evident that they have implemented different innovative business techniques and transformed the financial service model from partly traditional to fully digital one. The present paper has presented a critical analysis of the electronically operated supply chain of the bank N26 and provides recommendations to fulfil the gaps in the fintechs in order to learn from the efficiency and quality dimensions followed in N26.

However, they transformed the need of collaboration with traditional banks into option through becoming self-sufficient in both the knowledge and expertise domain. Conversely to ensure efficiency gain in supply chain N26 has to deal with the challenges along with threats like fail to compete with other digital banks that cater to customers in countries where full digitalization of service is not supported. It is true that the organization is visioning good opportunities in new markets in developed countries like USA; if it does not modify its operations to fit with the needs of another chunk of customers living in developing world will miss the prospect to fully utilize its potential.It may be taken away by other firms allowing more flexibility of strategies suitable for those markets.

Based on the analysis and discussion, N26 has to explore the effectiveness of new technologies to enter the market in the developing world and accordingly has to modify the mode of operations in the supply chain. It also has to explore new strategies to reduce the operational cost and increase efficiency.

INTRODUCTION:

Supply Chain Management:

As defined in Slack, Brandon-Jones and Johnston (2013), Supply Chain Management (SCM) of a firm implies management of whole supply chain from the supplier of raw material or inputs to the customers of the firm and SCM includes purchasing of raw materials, its distribution, logistics, materials management and customer relationship management (CRM). Maintaining a good and effective relationship with its partners (B2B) as well as customers (B2C) is one significant factor to ensure the sustainability of the business. Use of innovation in operational strategy in terms of implementation of new ideas, new technology, employment of skilled personnel as well as capacity building of the existing ones and effective management of the same increases the operational efficiency of the firm and opens the path towards gaining of competitive advantage.

N26BACKGROUND:

The nature of transformation – evolution in supply chain from traditional banking to digitized banking

History of innovation in financial sector depicts its start from 1979 when 32 percent of their budget was allocated to the implementation of new technology to digitise the supply chain which gradually increased with the change in the market environment (Scott, Reenen and Zachariadis 2017). However bigger banks failed to perceive the benefit of such digitalization in increasing operational efficiency and consequently, Fintechs started to fill up such vacuums. Earlier research works also found that Fintechs improve their operational efficiency through strategic partnership with banks or other Fintechs to reduce transaction cost and gain competitive advantage (Schubert et al. 2011, Brandl & Hornuf 2017).

Literature reveals evidence that innovation in the firm's operation as well as in the supply chain in the financial market has several beneficial impacts on firm's performance. Scott, Reenen and Zachariadis (2017) have analysed longitudinal data from 6848 banks of 29 European countries, America and Canada to explore the impact of introducing SWIFT service on bank performance. Researchers found that positive impact is perceivedmore in the long periodhowever smaller firms benefit early from higher return and alsopositive network effect on the performance of firms is significant from the study. Transformation in operations and specifically in supply chain through adoption of new technology like big data, artificial intelligenceis responsible forthe potential increase in revenue in financial industry – with increase in sales volume and higher degree of customer satisfaction (Phadnis 2018). Such operational transformation of Fintechs to provide service in relation to Payments, Financing or Asset Management increased the transaction volume from € 2.2 billion to € 17 billion (Brandl & Hornuf 2017).

Haddad and Hornuf's (2016) and Ernst and Young (2017) work reflect that entrepreneurs' and consumers' access to technology as well asfirm's access to improved capital market are significant influencing factors towards the formation of Fintechs based on innovative B2C business model. From this line of research, it can be argued that N26 used all these factors under their material management strategy to grow as an innovative financial service provider. Following the work of Lerner and Tufano (2011) and Brandl and Hornuf (2017), it can beargued that N26's innovative approach is dynamic – as a Fintechit acquired banking license from European Central Bank and spread over different geographical regions with continuous research on gaps in banking service in those areas and simultaneously upgrading the system with customized featuresto focus on demand-oriented service (N26 GmbH 2019).

N26

The bank N26 has brought a transformation in the financial service market using innovation in operational strategies, digitising the supply chain to gain a competitive advantage in the market. B2C business model was preferred by N26 and some other digital retail banks in Germany due to greater customer demand for digitalization (pull factor) and involvement of lower investment for start-up (push factor) (Ernst & Young GmbH 2017). N26 differentiated its service portfolio by collaboration with different Fintech organizations and offers their services like investment, insurance, international money transfer along with banking service through a common platform.

N26 was founded in 2013 by Valentin Stalf and Maximilian Tayenthal to redesign the retail banking system in Europe and other parts of the world. From its initial operation in 2015, number of customers rose up to 2.5 million covering 24 European countries; with contribution of 700

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professionals from 50 nationalities and 3 offices in Berlin, New York and Barcelona (N26 GmbH 2019). Their vision is to takeover other existing banking services with a target of 5 million customers in 2020 (www.netguru.com, 18 March 2019). It is a thoroughlydigital banking system and targeted mainly individuals to ease their banking operations through mobile application only. They have no bank branch but the cashcan be withdrawn from any retail shop and a wide range of ATM. Till now N26 has raised $2.7 billion from different venture capitalists and big investors (N26 GmbH 2019).

In 2015, N26 changed their strategy to target individuals of all ages with wide range of services to compete with existing banks who were already in the market with the smartphone applications. Their Unique Selling Proportions are first mobile banking, second holding banking license and then demand-oriented instant service delivery using innovative technology to simplify the process of diverse and complex financial transactions. It is evident that different Banks and Fintech collaborated and are providing financial service in innovative ways. Given this backdrop, the present work explored how innovation in approach to materials management – like adoption of new strategies, technology and improved relationship management techniques for managing the supply chain componentshelped N26 to gain competitive advantage.

Products and Services of N26

1	The only current account optimized for the smartphone	12	Debit Credit - Adjust the overdraft frame in two minutes
2.	Intuitive mobile app for iOS and Android	13.	MoneyBeam - send money to friends with one click, by e-mail or SMS
3.	All finances in just one app	14.	TransferWise - International transfers in 19 currencies
4.	Account opening in less than 8 minutes via smartphone, paperless through video identification	15.	N26 Invest - Simple, flexible investment, individually depending on risk appetite
5.	Clear security features on product, e.g. lock and unlock the cards with just one click	16.	Complete N26 Credit - Lending Accounts in minutes
6.	directly in the app	17.	N26 Business - For freelancers and the self-employed for private and business use
7.	Cash in and out of more than 7,000 retail partners with Cash26 throughout Germany.	18	N26 Savings - Save money on very attractive terms
8.	Real-time Banking - Push notification for all transactions in the same second.	19.	N26 Insurance - digital insurance service
9.	Mastercard - payments abroad or foreign currency fees		
10.	Accounts: Free Current Account N26 Business Account for Freelancers & Self Employed		
11.	Premium accounts N 26 Black and N26 Metal		

Source: N26GmbH, 2019; Productmint, 2020

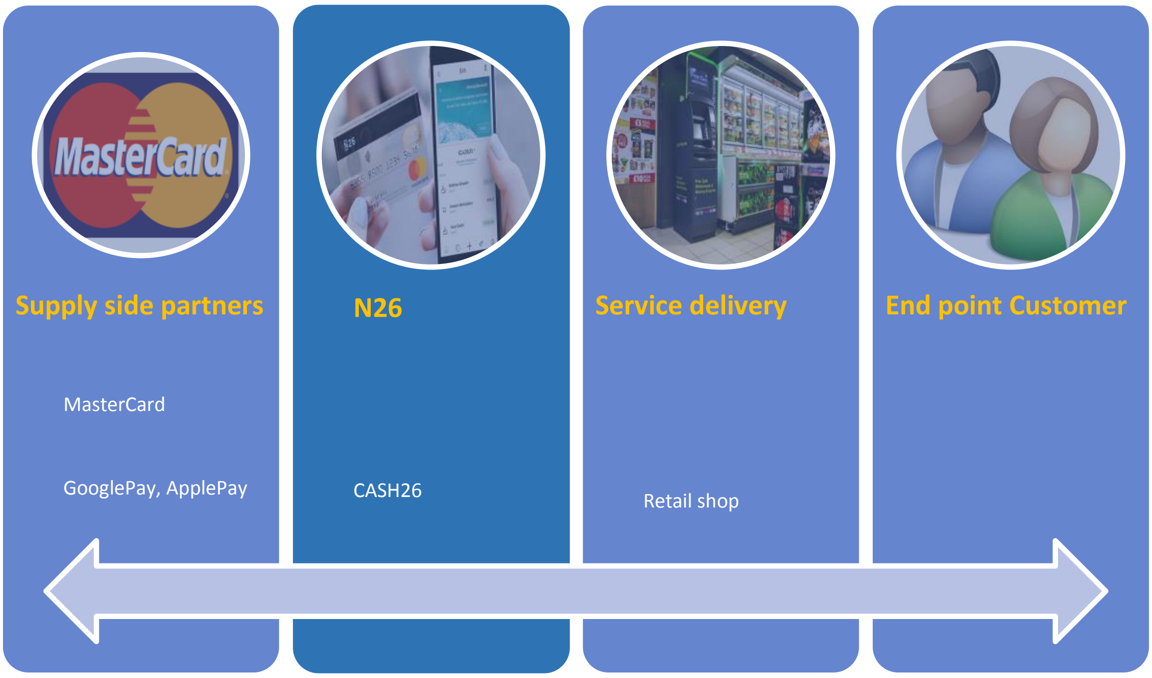
Partners: MasterCard, Allianz, TransferWise, Vaamo, Barzahlen, WeltSparen, Clark, Auxmoney

The structure of the Supply Chain and the Approach in Supply Chain Management including Materials Management

Major SCM practices as mentioned in Slack, Brandon-Jones and Johnston (2013) and Talib, Rahman and Qureshi (2011) are,

1. Re-engineering of material flows/lean practices covering management of the flow of material, inventory reduction, waste elimination, JIT delivery, JIT capability.
2. Customer relationship including fulfillment of customer requests, dealing compliance, generating long-term relationship and partnership, customer service management, increased sensitivity.
3. Planned partnership strategies with suppliers i.e., involving suppliers in quality management and ensuring reliability.
4. Using ICT (Information and Communication Technology)

However, the nature of the structure of the supply chain varies depending on the way the industry operates and provides service to its customers (Talib, Rahman & Qureshi 2011). Seldom, similar practices are adopted in the product development sector and service sector while integrating quality management in the supply chain (Behra & Gundersen 2001). Fintechs and concerned bank N26 serves on the foundation of ICT in building relationship with suppliers and customers, gathering data (upstream in the chain), procuring data, analysing and sharing of report (downstream in the chain) and concentrate on improving the core competencies to ensure smooth operation through supply chain integration.It influences the efficiency and effectiveness of SCM practice (Talib, Rahman & Qureshi 2011).



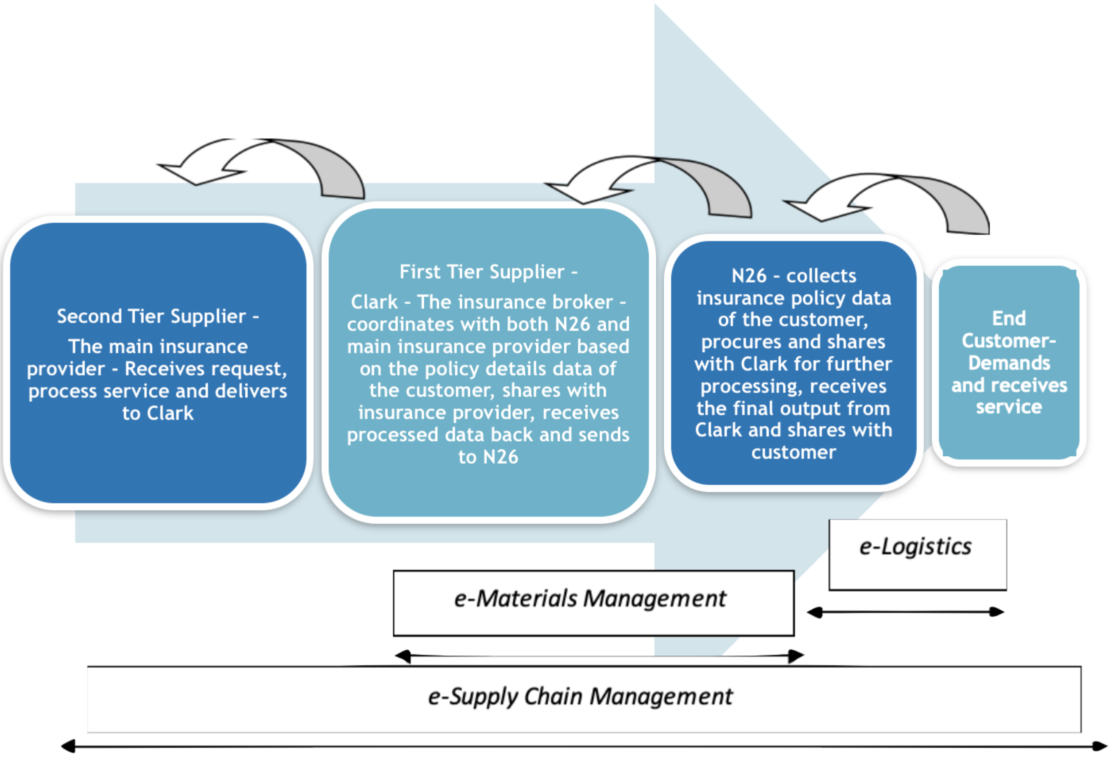
Supply Chain of N26

Operational strategies followed in the supply chain of N26:

The operational strategies followed by N26 helped them to gain a competitive advantage with time. They reduced operational time at the front end, provide service in a cost-effective manner, modify their service delivery as per the market demand and offer the service in simplified way. Belowthe operational strategies are explained which led to the success of the firm and attracting venture capitalists to expand the business.

JIT capability is reflected in acquiring European banking license within one year to gain control overthe larger part of the value chain with increased flexibility while serving a larger international community. **JIT delivery**, **Quality** and **Cost minimisation** are practiced through penetrating into the financial service markets to capture from complex, expensive existing providers to reduce opportunity cost bared by the customers. N26 developed products adding value ateach stage of the process which increased efficiency; increased effectiveness through hindering waste to build up or remain in the system. **Speed** is assured byreducing the processingtime of transaction related toonboarding, making deposit, withdrawal, transfer, setting loan processing, and insurance policy handling. **Flexibility** is ensured through **Process Modification** – continuous update and adjustments in services and service delivery process based on customer feedback to adapt to changing demand in the market and **Predictive Analytics led Process Re-engineering** –using customer database to analyse the preferences by different categories of customers, their income levels, expenditure habits and nature as well as frequency of transactions. Efficient analytics team links transaction information with consumer behavior to identify everyday financial needs. It assists in fraud management, risk scoring, service customization.

Example of one service flow of N26 in its digitized supply chain – Partnership with Clark to provide Insurance service



Competitive Advantage Gain through improved materials management and overall supply chain management

N26 gained competitive advantage in different aspects through several factors which is explained below.

Quality management in supply chain

Anggraini, Hamiza, Doktoralina and Anah (2018) presented that efficient management of each component of the supply chain in the banking and financial sector significantly positively associated with performance effectiveness. Deloitte (2017) reflects that the following customer-centric approach as a part of dynamic enterprise system is evident in quality management of supply chain management in N26 after adding several value propositions. For instance, this approach is followed during the design phase and delivery in collaboration with suppliers and customers. Following Anggraini, Hamiza, Doktoralina and Anah (2018) study that quality is one significant aspect of supply chain, it can be argued that, N26 is gaining a competitive advantage through ensuring quality starting from selection of suppliers and availing their service, processing it to customize as per customer's demand followed by deliveryto the end customer or corporate.

Collaboration

The gain in competitive advantage is significant through collaborations with multiple Fintechs like MasterCard to ease credit card transaction, Clark for insurance, TransferWise for international money transfer, Auxmoney for credit lines.

Innovation

Likewisein individual service design, account features for freelancers and regular employees are separated.

Waste minimization

To gain efficiency in supply chain process different wastes are minimized by employing skilled personnel (data scientists, experienced managers from booming Fintechs), ensuring cross-segment activities with other Fintechs as mentioned, having no over processing, negligible waiting time (less than 1 second), digital transfer implying zero transport and logistics cost.

Cost reduction

Knauseder (2019) explained that novelty centered banking service delivery model of N26 hastechnology at the core.The value proposition entails mobile banking with digitised supply chain which helps to achieve the competitive advantage over existing providers through minimum operational expenses. N26 is gaining efficiency through reduction or elimination of infrastructural cost as mentioned in Knauseder's (2019) comparative analysis of different innovative banking models;howeveremployment of highly skilled personnel and procurement of large amount of data may increase variable cost of operations.

Pull Principle under Lean Enterprise

N26 service delivery system can be compared with integrated lean enterprise production system followed by Toyota i.e. it provides different services in a single flow matching the consumer's demand. Provision of services with quality is ensured involving less process – leading to saving time and other resources with problem solving capabilities following five principles of lean – Value, Value Stream, Flow, Pull and Perfection (Slack, Brandon-Jones and Johnston 2013).

Efficient use of Regulatory framework

In the work of Wurgler (2000), the author mentioned that the German Banking Act (KWG) and Payment Service Supervision Act (ZAG) regulates financial market and provide the license to banks. To cope with the regulatory structure, new financial service providers collaborate with established banks (Thwaits 2016). Here N26 utilised the regulatory framework as an opportunity and not as a threat. The company acquired a banking license from European Central Bank within a year to access the whole European banking market. Thereby they gained the competitive advantage over other Banks and Fintechs through cost minimization and efficient use of time as being a new Fintech and did not require collaborating with established banks to deal with the regulatory structure.

Operational transformation through Innovation

As found in operational strategy of N26, the digitalization and collaboration in supply chain helped them to build a large customer base in a comparatively shorter period of timecompared to other Fintechs or banks – similar to the progress in history of market transformation as visible in Puschmann (2017).

Knowledge and Expertise

As evident from works of Kortum and Lerner (2000), Zingales (2000), Park and Steensma (2012), established banks possess better knowledge about the regulatory structure, can get patents in a timely fashion which new Fintechs lack. As Bömer and Maxin (2018) have mentioned, these Fintechs have expertise in new technology and its innovative use converts the traditional service into more efficient and lucrative service. N26 have shown the application of both such knowledge and expertise which helped to gain competitive advantage.

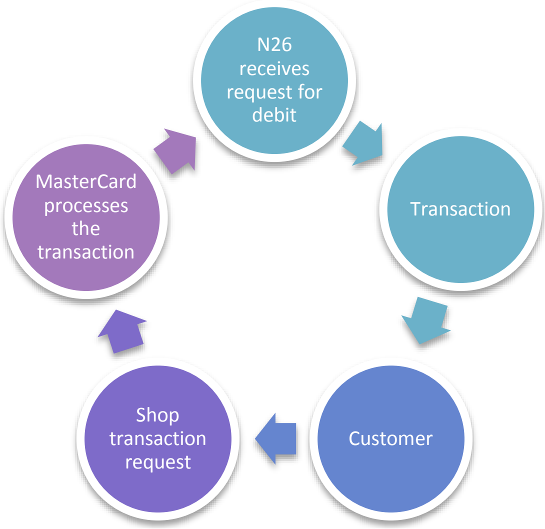
Services

Bömer and Maxin (2018),Ghazawneh ad Henfridsson (2015) found that financial services provided through digital marketing and other internet-based techniques collaborate with banks to offer a place to sell the banks products. N26 offers its partners an opportunity to serve their customers from its platform and therefore these products became a part of N26 service delivery model. Therefore changing the flow of information from one direction to another with no requirement of inventory increased efficiency, release service flow rate and saves capital. Thus through lean synchronization N26 has re-engineered the flow and B2B and B2C relations in the process and outcome respectively as well as created a place in the relevant value chain.

The role of relationships in the organisation's approach to materials management and logistics

The role of relationship in SCM is found effective to increase competitive advantage and is maintained in two ways – 1) Horizontal integration (customer relationship management and service management and 2) Vertical integration (supplier relationship management within different tiers (Anggraini et al. 2018). Studies show that vertical integration positively influences productivity (Javorcik 2004, Javorcik & Spatareanu 2009, Kimura 2002, Sutton 2012, Tam et al. 2010, Wynarczyk & Watson 2005). According to Rama et al. (2003), direct collaboration increases effective knowledge transfer and coordination though they were not clear about the linkage with second-tier supplier or customer in the chain. However, N26 successfully reduced cost and minimised waste through efficient relationship management at all tiers in both upstream and downstream network. With a digitized supply chain, the approach to materials management and logistics gets converted into management of input data or signal, gathering of data and transfer at each tier with proper coordination, data processing, generating information and finally performing the task based on the same.

N26 has collaborations with different financial service providers upstream who havea contract with N26. On the other hand, for some of the services, N26 maintains network with second tier like for cash withdrawal with the retail shop.The credit card transaction where the first tier supplier is MasterCard is presented in the figure below.



As reflected in a report of Ernst & Young (2017), launching of insurance and investment product by N26 is an example of expansion of its market beyond core market by means of cooperation and focusing improvement in the services through full integration (vertical with broker and second tier supplier and horizontal with supplier and customer). Schmidt et al. (2018) show the evidence that collaboration enables the offering of the white label to add-on service.

Competitive Advantage:

Efficiency enhanced through CRM:

Banks develop a CRM structure that helps to identify the needs to serve them with customised products (Anggraini et al. 2018).Information about new or existing products can be shared and feedbacks can be collected after service delivery. The proper response to complaints and modification of operational strategy followed by enhanced service increases the efficiency of customer service management. For example, N26 offers Standard, Black and Metal account with different offerings – e.g., the Standard is free and Black charges €5.90 per month. However if someone does foreign transaction the 1.7% fee that the regular account holders incur is waved for Black account holders (www.forbes.com, 20 March 2017).

Flow Management:

Effective relationship with suppliers and customers helps to interlink demand, placement of input requirements to suppliers, processing order and delivery to ensure dependability with flexibility (Talib, Rahman and Qureshi 2011,Anggraini et al. 2018). Sometimes efficiency in SCM is enhanced through better networking and making contracts such that first or second tier suppliers can directly deliver to reduce the lead time. For example, while availing insurance with N26 account, the policy data is visible and accessible to Clark and N26 and they jointly process the data to complete all the paper works on behalf of the account holder that saves time and simplifies the access to service by the customer.

Sharing of Risk and Uncertainty:

Stuart et al. (1999) have mentioned that new Fintechs collaborate with established banks so that banks would share the uncertainties and risks prevailing in the operations of Fintechs. N26 has successfully created the comfort zone with other partners through collaboration where other Fintechs are either to a great extent (MasterCard) or to some extent (TransferWise) well established and are sharing the risk of N26. Service offerings of established Fintechs through innovative mobile platform of new bank N26 – helped to gain trust of their customer base on N26.

Client Base Creation:

Dusnitsky (2008),Bömer and Maxin(2018) have shown that new financial service providers collaborate with existing successful banks to increase their number of clients. N26 access the clients of other providers whom they serve through their platform. As well, to strengthen the client base with more communication and coordination N26 is initiating consumer research led process re-engineering and building contracts with new service providers in USA and Spain.

Access to existing Network with information transparency:

Bömer and Maxin (2018)and Baum et al. (2000) studies revealed that another major factor is to get access to different B2B networks that influencesjoining in incumbent's value chain. In relation to N26 it is mutually beneficial and both the N26 and its partner organization are accessing the supply chain of the other.

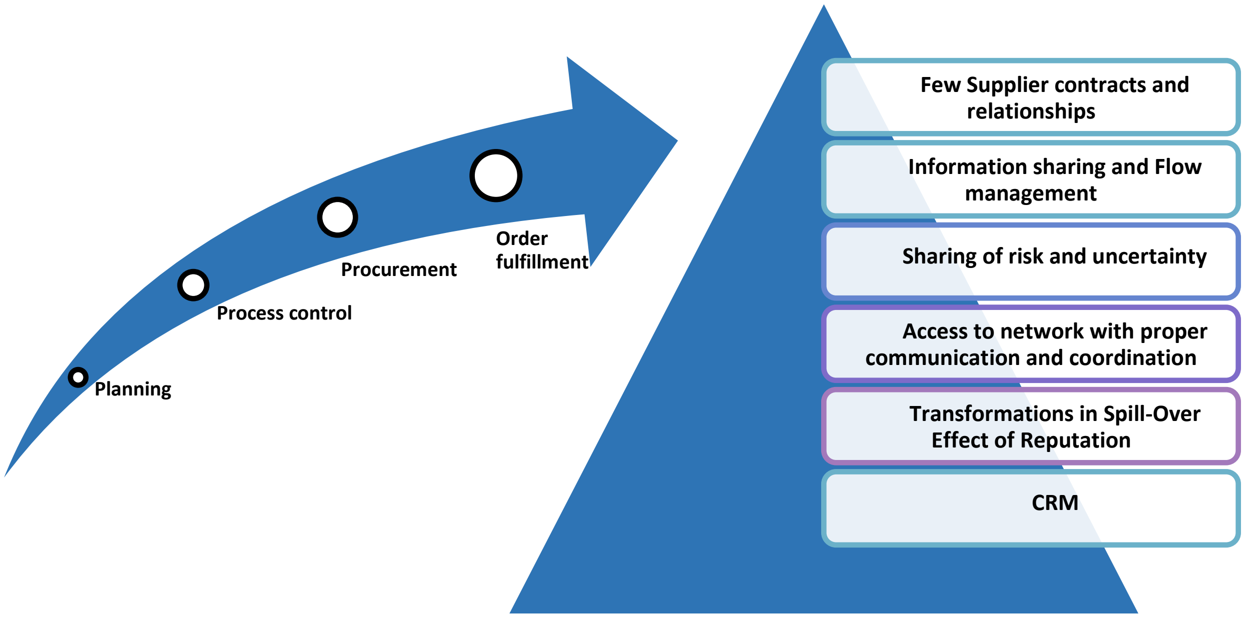
Transformations in Spill-Over Effect of Reputation:

To ensure quality of service new Fintechs collaborate with existing banks (Bömer & Maxin 2018, Stuart et al. 1999, Reuber & Fischer 2005, Maxin 2018). Due to N26, banking service is transformed from traditional complicated time taking customer support to technology basedprompt online services. Thus collaboration led reputation gain hasbroughtFintech led innovative banking service and in this manner N26 automatically gathered reputation.

Moreover, in place of Fintechs collaborating with banks, the bank here is collaborating with Fintechs and at first gained through their reputation. N26 and its partners are mutually gaining competitive advantage through each other's reputation - with access to their value chains.

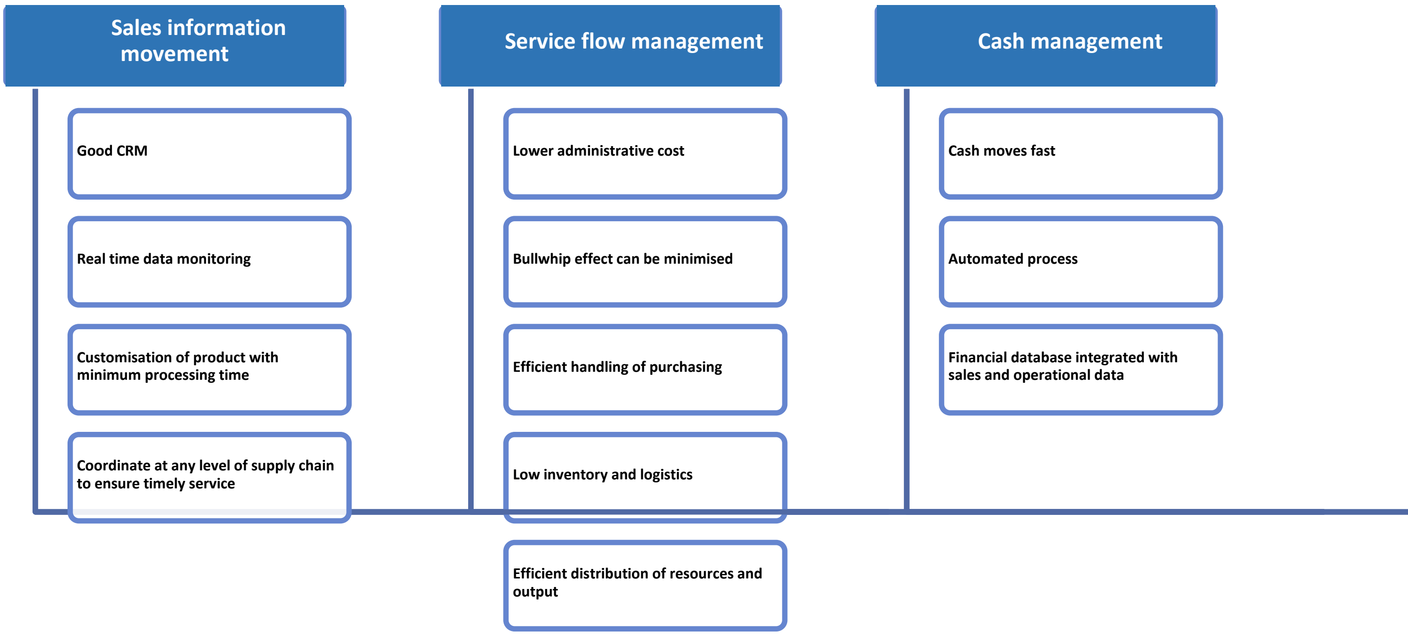
Fund:

The fourteen case studies on the collaboration of German Fintechs and banks has mentioned that Fintech firms build relation with banks as they receive inadequate fund from venture capital firms and depend on different financial possibilities through banks (Bömer & Maxin 2018). While N26 was efficient enough to convince the world's most billionaire investors Peter Thiel and Li Ka –shing and has raised $2.7 billion funds from them. In addition, they accumulated $300 million from Insight Venture Partners and different other venture capital firms (Nicola S., Bloomberg, 10 January 2019). Accordingly, N26 modified its operational strategy like instead of focusing on more product development it is concentrating on building a customer base in new markets – according to the strategy preference of the investors (Kahl S., Bloomberg, 1 April 2019).



The role of emerging technologies in the N26's approach to supply chain

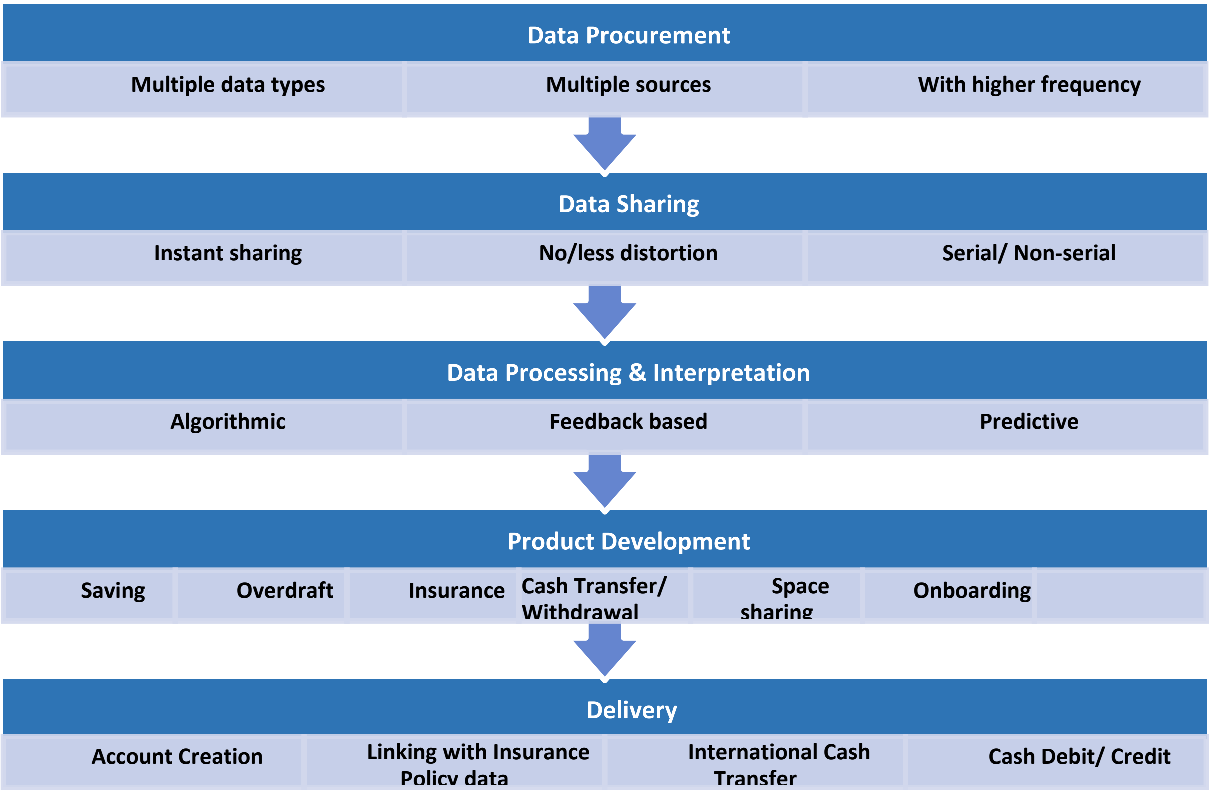
In the prevailing era of the digital economy, retail banks, specifically in Europe, offer banking and financial services to individuals (B2C) and corporate (B2B) through the complete digital pathway. They expand the product line and enter into new financial markets through cooperation with other Fintechs whose enterprise resource planning and implementation utilize state-of-the-art technology and avoid informationdistortion (Phadnis 2018). Digitalisation of supply chain uses technologies like Internet of Things and applies Big Data concepts to reduce human bias in the decision-making process to reduce potential revenue loss (Ho, Lim & Cui 2010; Soon, Kwong & Suan 2018). As retail banking services face difficulty in tailor-made service provisions, N26 has planned to allow more customization through the use of Big Data analytics which can be further strengthened using IoT (Phadnis 2018,N26 GmbH 2019).



The benefits of using big data analytics in managing the supply chain, N26 is having benefits like;

1. Lower occurrence of variability in ordered and delivered service;
2. Higher revenue with efficient data procurement and processing;
3. Automated data procurement linked to planning for product customization, processing, development and delivery;
4. Ensuring secured transactions with less error and human bias.

The structure of N26 SCM in digitized format



Competitive advantage

Use of innovative ICT (Information, Communication Technology) in SCM is helping to share information with partner firms even if they are not directly linked in the supply chain. As they upload data in a common cloud-based platform operational time and cost are saved – as found in earlier research too (Phadnis 2018). Furthermore, Phadnis (2018) explained how adoption of IoT will increase efficiency in SCM as the decision-making ecosystem is positively associated with well-designed algorithms with minimum human bias (BCG, 2016; O'Neil, 2016).

Data gathering

Effectiveness of IT enables a firm to gather any transaction data, cost, number of supply points, location, service specific data (e.g., number of savings accounts, amount of deposits, transaction location, frequency and period, preference of supermarket for cash withdrawal, choice of insurance policy, average income and expenditure etc.). Big data has significant implication in Supply Chain Operations Reference Model (SCOR) from planning, sourcing, producing anddelivery (Soon, Kwong & Suan 2018). As the study mentioned, traditional supply chain models are enhanced with exact sensing of demand followed by effective and timely response through data mining, text mining and rule-based ontologies. Data is gathered from a large data warehouse or database from cloud-based common platform or from social media.

Data processing

Traditional service providers use data structures like (Arrays, Linked List, Stacks and Queues, Hash Tables, Binary Search Trees (BST)) to manage the supply chain where the response is mainly based on average values and programs contain simple 'if-then-else' logic. However, the main drawback of this system is less or no flexibility to control multi-dimensional complexities considered while doing efficient materials requirement planning (Phadnis 2018). Advanced analytic technique – as adopted by N26 – has more flexibility in the process of analysing predictions to map multiple 'ifs' with multiple 'thens' and the Bullwhip effect can be reduced in this manner.

Interpretation and decision making

The process of data interpretation followed by decision making becomes easier with clear visibility of the whole supply chain – operational stages through access to a high volume of data in different pattern through the sensor-led recognition process. Effectiveness and efficiency of operations inthe supply chain of N26 increases with a high volume of real-time data transaction. Decision making after data interpretation leads to effective sharing of transaction data which helps predicting customer demand at $t_n{}^{th}$ period based on transaction data of $t_{(n-1)}{}^{th}$ period. This leads to customisation of new service package, modification of quality and/or quantity within a short span of time.

Discussion

Transformation process in the financial service delivery system

In terms of the operational strategies and process of N26 it is evident that they have implementeddifferent innovative business techniques and transformed the financial service model from partly traditional to fully digital one. To expand in the market, reduce uncertainty and gain advantage they collaborated with established or popular financial service providers, adopted latest state-of-the-art technology and explore to build dynamic strategies contextual to the market need – market reach and coverage.

The history of financial market transformation in Germany shows an interaction between Fintechs and banks which saw a new concept after the emergence of N26 where this mobile bank also contains features of Fintechs. Factors leading to the transformation of financial service from partly traditional to fully digital are efficient use of regulatory framework, use of innovative technology, collaboration, quality management in supply chain, acquiring fund, relationship management and many more.

Brandl and Hornuf (2017) have shown that the financial industry in Germany experienced transformation from traditional operating mode through digitalization. The evidence shows that transformation has been taken place at different layers of operation. Fully digitised services have transformed the supply chain management where service delivery is much faster and error free (Slack, Brandon-Jones and Johnston 2013). Though it possesses **strengths** like speed, flexibility, quality, dependability whereas **weakness** lie in minimising cost given the requirement of the high-security system and fraud management, need for skilled personnel, timely upgrade of technology, optimization of quality and quantity of data storage.N26 has data scientists and a team of software professionals to manage the service for large number of customers in various locations. However they transformed the need of collaboration with traditional banks into option through becoming self-sufficient in both the knowledge and expertise domain.

Conversely to ensure efficiency gain in supply chain N26 has to deal with the challenges along with **threats** like fail to compete with other digital banks that cater to customers in countries where full digitalization of service is not supported. It is true that the organization is visioning good **opportunities** in new markets in developed countries like USA; if it does not modify its operations to fit with the needs of another chunk of customers living in developing world will miss the prospect to fully utilize its potential.It may be taken away by other firms allowing more flexibility of strategies suitable for those markets.

Recommendation:

Based on the above analysis and discussion, N26 has to explore the effectiveness of new technologies to enter the market in the developing world and accordingly has to modify the mode of operations in the supply chain. It has to explore new strategies to reduce the operational cost and increase efficiency.

N26 needs to build a new stakeholder pool to active the scheme for individual investment partnership. It has also to build an academia- industry interfaceto assess the gaps in the performance followed by mitigating the risk through reducing the gaps to enhance the business process reengineering.

Regular workshops for capacity building of student community will help to feed N26 with new ideas to improve the enterprise system.

However, N26 has shown some progress even during the crisis period of the pandemic where they have raised $3.6 billion and is targeting to reach a higher breakeven (Reuters, 2020, 17 December).

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