Performance measurement for fintech company

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ARTICLE INFO

DOI:10.46223/HCMCOUJS.econ.en.13.1.2100.2023

Received: November 23rd, 2021
Revised: January 05th, 2022
Accepted: January 26th, 2022

JEL classification code:
O30; G20

Keywords:

fintech; finance; performance; performance measurement; the balanced scorecard

ABSTRACT

This paper proposes a frame measure for evaluating the fintech company's performance. Based on the existing publications of multi-dimensional approaches to performance measurement and the fintech company, the study is conducted as a review article. The Balanced Scorecard is considered a suitable approach for the highest citations and application capacity in various kinds of firms. With the combination of the Balanced Scorecard and the highlighted characteristics of the fintech company, the frame measure is proposed for evaluating the fintech company's performance. In detail, the fintech strategy map and four perspectives of performance with twenty-three measurements are proposed. The study provides the framework for the next quantitative studies that regard the estimation of the relationship between fintech performance and conventional banks. The new evidence of the Balanced Scorecard application for the fintech company is a new kind of firm in the digital era.

1. Introduction

Firstly, financial technology, which is well-known by the short word, is fintech. The fintech sector has been evolving very fast in recent decades, and there are a variety of definitions of the concept in academic and business journals. Fintech is a service sector, which uses mobile-centered information technology to enhance the efficiency of the financial system (Kim, Park, & Choi, 2016). According to the Oxford dictionary, fintech is a computer program, and another technology used to provide banking and financial products. Although there are many definitions of fintech, almost all researchers and businesses believe that fintech is a way to apply financial innovation to make financial services and products more efficient. International Monetary Fund and World Bank (2019) stated that fintech creates new opportunities and challenges for the financial sector – from consumers to financial institutions and regulators. Overall, in this study, fintech is a financial product provided by a fintech company, which uses technological development to deliver the product. Most fintech companies are startup companies, and fintech is a new industry in the digital era (Arner, Arner, Barberis, & Buckley, 2015; Haddad & Hornuf, 2019). It is clear that the fintech company is a new kind of firm in the digital era that plays the most important role in providing financial products. Besides that, following the views of Beck (2012), Da Cruz Caria (2017), Demirguc-Kunt, Klapper, Singer, Ansar, and Hess (2018), and Dorfleitner, Hornuf, Schmitt, and Weber (2017), the fintech company has some special characteristics because it is a hybrid form of technology and finance. The fintech company is different from other normal firms; thus, we argue that a suitable frame measure is needed to evaluate the fintech company's performance. Therefore, the study's main purpose is to discuss the frame measure to evaluate the fintech company's performance.

Secondly, a company's performance was measured by completing the company's goals in both financial and non-financial goals (Amedofu, Asamoah, & Agyei-Owusu, 2019; Laitinen, 2002). Performance measurement was defined as the process of quantifying the efficiency and effectiveness of action (Thakkar, Deshukh, Gupta, & Shankar, 2007). It was the periodic measurement of progress toward explicit short-run and long-run objectives and reporting results to decision-makers to improve program performance (Neely, Gregory, & Platts, 1995). Before the 1990s, the main measure to evaluate the company's performance was financial indicators, which were calculated using financial statements. However, both academics and practitioners recognized the limitation of financial perspective, namely the lagged results because of using historical data; the consequences of management action rather than the effect; just focused on the financial aspect; not mention about the external factors; strongly weight in short-term targets rather than in long-term targets, and ignored the strategy. Therefore, since the 1990s, the studies by Brignall, Fitzgerald, Johnston, and Silvestro (1991), Cross and Lynch (1989), Kaplan and Norton (1992), Keegan, Eiler, and Jones (1989), and Neely, Adams, and Kennerley (2002) about the multi-dimensions perspectives to measure the company's performance have been introduced, which have been becoming a background for the large of following research papers in the performance measurement field. Based on the argument, in this study, we use the multi-dimension approach to propose frame measures for evaluating the fintech company's performance.

Thirdly, the search keywords "performance measurement", "performance management", "performance indicator", and "performance control" on Google Scholar, ResearchGate, Emerald Insight, and many journals belong to Web of Science/Scopus databases. A glance at the huge search results showed that most studies focused on the performance measurement of large companies, Small and Medium Enterprises (SMEs), startups, and international organizations in various industries, except the fintech industry. Combination of these keywords above and/or "fintech", "financial technology companies/firms/institutions", the following search results showed that most studies about the general issue of fintech such as the innovation, characteristics, the impact of fintech, the determinants of fintech, and few studies mentioned financial performance, but there was no study about a multi-dimensional approach in performance measurement for the fintech company. Therefore, we state that applying the multi-dimensional approach for proposing the fintech company's performance frame measure is necessary.

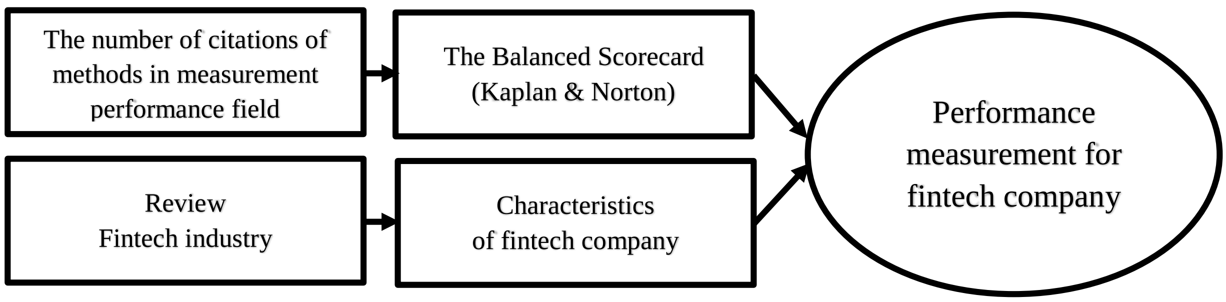

Figure 1. The framework of paper

Source: The authors

The study is conducted as the review article; thus, the existing publications will be reviewed to propose a suitable frame for evaluating the fintech company's performance. The study framework is illustrated in Figure 1. The rest of the study is structured as follows. Section 2 presents two parts. First, the suitable approach is selected based on the number of citations of famous multi-dimensional approaches about performance measurement on Google Scholar. Second, the main feature of the selected approach is presented. Section 3 reveals the main characteristics of the fintech company. Following the main contents of section 2 and section 3, the frame measure of the fintech company's performance frame measure is discussed and proposed in section 4. The main points are concluded in section 5. Besides that, limitations and contributions of the study are also given in section 5.

2. The Balanced Scorecard

There were five famous multi-dimension approaches in the performance measurement field, which consider the balance between internal & external measures and financial & non-financial measures (Keegan et al., 1989). For example, the pyramid model of Cross and Lynch (1989), the approach to determinant and result factors of Fitzgerald, Johnston, Brignall, Silvestro, and Voss (1991), the balanced scorecard (BSC) of Kaplan and Norton (1992), and the performance prism of Neely et al. (2002). Based on the citations (Table 1), the best framework in the performance measurement field is the BSC of Kaplan and Norton. It has been confirmed by numerous papers in both academy and practice throughout the number of citations compared with other approaches. Besides, the BSC is applied to various kinds of firms, including technology firms, financial institutions, SMEs, unique firms, etc. (Al-Najjar & Kalaf, 2012; Chow, Haddad, & Williamson, 1997; Davis & Albright, 2004; Gautreau & Kleiner, 2001; Hasan & Chyi, 2017; Malagueño, Lopez-Valeiras, & Gomez-Conde, 2018; Mio, Costantini, & Panfilo, 2021; Ratnaningrum, Aryani, & Setiawan, 2020). Therefore, we proposed that the BSC application is suitable for measuring the fintech company's performance.

Table 1

The critical multidimensional approach for performance measurement

No.	Authors	Article	Approach	Citations
1	Keegan et al. (1989)	Are your performance measures obsolete?	The balance between internal & external measures; financial & non - financial measures	1,121
2	Cross and Lynch (1989)	Accounting for competitive performance	The pyramid (hierarchy of firm)	87
3	Fitzgerald et al. (1991)	Performance measurement in service business	Determinant & results	1,594
4	***Kaplan and Norton (1992)***	***The balanced scorecard: Measures that drive performance***	***The Balanced Scorecard***	***28,108***
5	Neely et al. (2002)	The performance prism: The scorecard for measuring and managing business success	The performance prism	2,203

Source: Google Scholar (2022)

Kaplan and Norton (1992) first introduced the BSC to measure the company's performance in 1992, which helped the manager evaluate all critical ingredients of a company's strategy and allowed companies to move forward in the future. After the paper in 1992, Kaplan and Norton continued to publish other documents to complete the BSC approach; they were primary studies in 1996 and 2000, respectively (Table 2). Some main points of the BSC are briefly summarized below.

Table 2

The best-related papers of Kaplan and Norton about the Balanced Scorecard

Articles	Year	Publish	Citation
The balanced scorecard: Measures that drive performance	1992	Harvard business review	28,108
The balanced scorecard: Translating strategy into action	1996	Harvard business school press	46,108
Using the balanced scorecard as a strategic management system	1996	Harvard business review	11,304
The strategy-focused organization: How Balanced Scorecard companies thrive in the new business environment	2000	Harvard Business School Press	11,314

Source: Google Scholar (2022)

Firstly, there were a lot of factors affecting the company's performance, including quantitative factors and qualitative factors. However, the BSC only permitted using a handful of measures and most critical elements to evaluate the performance measurement. The BSC supplied a comprehensive view for managers from four critical perspectives: customer, internal business, learning and growth, and financial perspective (Figure 2).

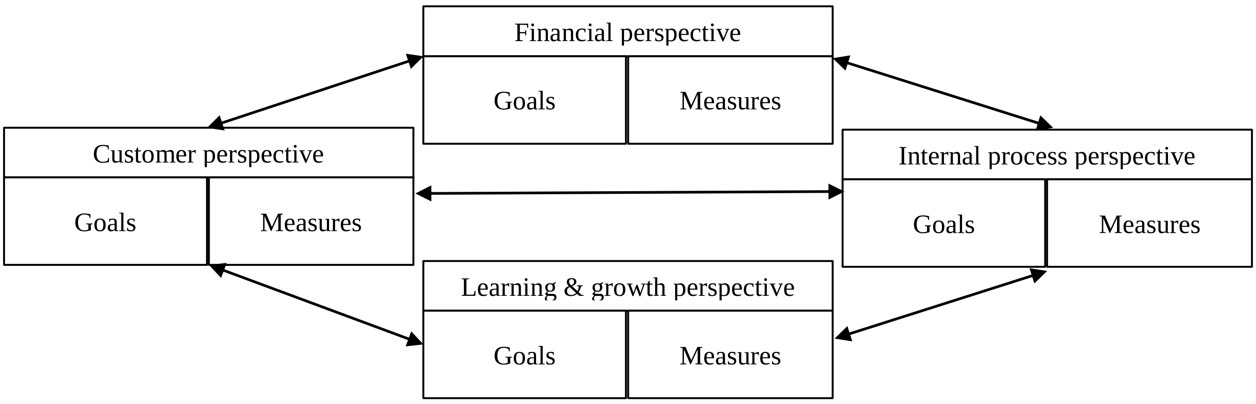

Figure 2. The Balanced Scorecard links performance measure

Source: Kaplan and Norton (1992)

The customer perspective was the core perspective in the BSC, which was concentrated to discuss by Kaplan and Norton in most of their papers. Customer perspective included four categories: time, quality, performance and service, and cost. The time variable was the speed of time from receiving orders to customers having products or services. Quality was on-time delivery; customers evaluated the product quality. Performance and service were the way to create value for customers, while the cost was the price of the product or service. The cost was the weight factor of customers to choose products or services. The best way to measure the customer perspective was through customer satisfaction.

Based on the customer perspective, the internal business perspective was set up to meet customer requirements. Internal view conducts the business processes, including cycle time, quality, employee skills, and productivity. These were chosen from the excel factors and were affected by the employee's activities in the company.

The learning and growth perspective is linked directly to the company's value and survival probability - the ability to learn and grow depended on internal business process factors and powerfully impacted the customer perspective. The requirement of intense global competition, the learning and growth abilities showed in improving current products, launching new products, increasing company efficiency, creating more value for the customer, and penetrating new markets.

Financial performance was typically measured by profitability, growth, and shareholder value. The financial performance had been criticized because it focused on the backward-looking and did not reflect recent value-creating actions. However, when the manager wanted to control the operations regularly, financial performance was an efficient tool because it was a brief performance of customer and internal perspective in the short-term such as quarterly or monthly.

The BSC emphasized the role of customer, internal business, and learning and growth factors were more critical than the financial perspective in keeping companies looking forward and moving forward. It focused on more the able measured factors than the unable measured factors. The most vital point of the BSC was the link of various elements in four perspectives, followed by the cause-effect relationship.

Secondly, Kaplan and Norton offered four processes that led to the BSC: translating the vision; communicating and linking; business planning; and feedback and learning. The first process was translating the vision; the manager discussed with the top management to build a consensus around the vision and strategy. The long-term drivers of success were described in the statement of all senior executives. The second process was communicating and linking; the strategy statement was delivered to all departments and individuals in the company and ensured that all the units' objectives were aligned to follow the long-term strategic objectives. The third process was business planning; based on the explicit goals of each team, the manager allocated resources and set priorities to move toward long-term strategic objectives. The fourth processes were feedback and learning, which is the center of the feedback and learning management system. The company controls all results of units from three additional perspectives (customer, internal business process, and learning and growth); it helped the company modify the strategy to reflect real-time learning (Figure 3).

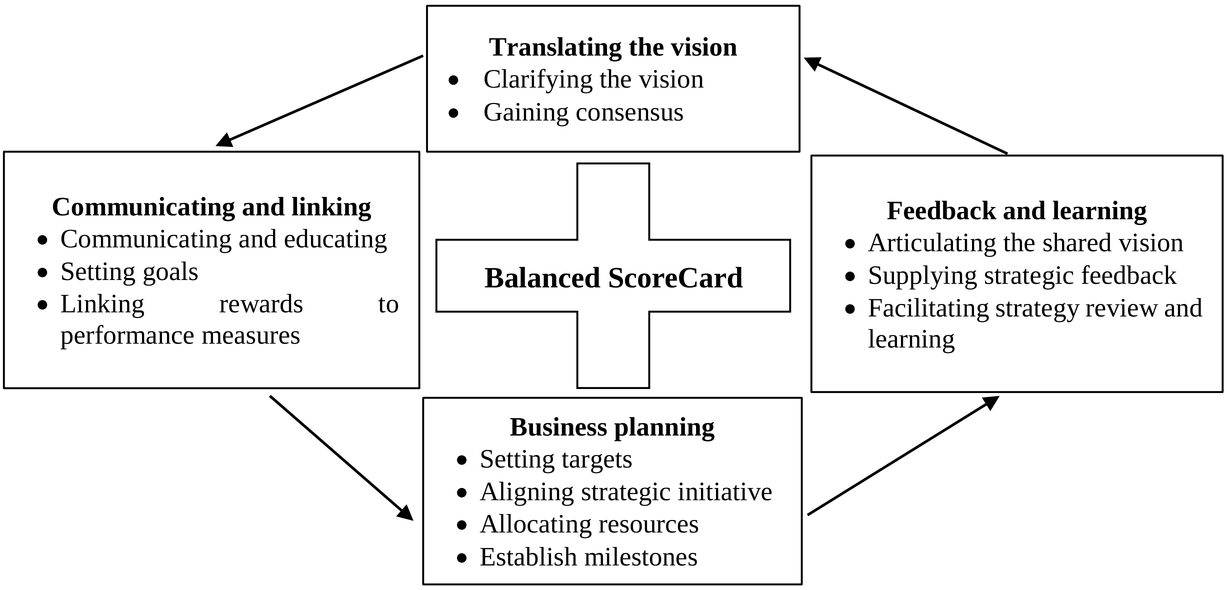

Figure 3. Managing strategy: Four processes

Source: Kaplan and Norton (1992)

3. Characteristics of the fintech industry

Like most startup companies, the fintech company is also a startup company that applies technological development to the finance industry (da Cruz Caria, 2017; Dorfleitner et al., 2017). Finance is a unique industry; the financial institutions are like "heart", and the operation's objectives are money like "blood". The finance industry plays the most crucial role in the economy (Beck, 2012; Demirguc-Kunt et al., 2018). Therefore, the fintech company combines the characteristic of a startup in technology and financial institutions. The context below will describe the specific features of the fintech industry.

3.1. A new industry in the digital era

According to Arner et al. (2015), historical fintech has three stages: fintech 1.0 (1966 - 1987) from analog to digital; fintech 2.0 (1987 - 2008) development of traditional digital financial services; and fintech 3.0 (2009 - present) democratizing digital financial services. Although fintech has a long history, it has been rapid growth since the global financial crisis 2008 - 2009, when fintech companies provided financial products/services. The figure in the paper by Zavolokina, Dolata, and Schwabe (2016) showed that publications of the popular press per year about "fintech" have changed dramatically since 2010, namely in 2015 there were 285 publications per year, whereas during the period 1987 - 2001 had 10 publications. Based on technological development, individuals or businesses access accounts, and transactions and obtain information on a financial product without being in physical contact (Lee & Shin, 2018). It is the revolution in using financial products. Because the fintech industry is very new in the digital era, it needs more support from a progressive policy for growth (Haddad & Hornuf, 2019). Moreover, fintech has driven the opportunities to create new services and business models and poses challenges to traditional financial service providers (Zavolokina et al., 2016).

3.2. Most fintech companies are startup companies

The emergence research of the global fintech market by Haddad and Hornuf (2019) revealed that when the economy is well-developed and venture capital is readily available, more fintech startups are formulated. In fact, after the global financial crisis 2008 - 2009, the global economy has recovered, and a large number of fintech startups have been established (Arner et al., 2015; da Cruz Caria, 2017; Dorfleitner et al., 2017; Saksonova & Kuzmina-Merlino, 2017). Some common characteristics of a startup in the early stage are: minimal histories, especially about accountant and finance figures; small or no revenues, operating losses; dependent on private equity; the probability of survival very low; multiple claims on equity; and investments are illiquid (Damodaran, 2009). Furthermore, in this stage, the startup is fast and needs more finance to expand their business (Bonabello, 2018). The owners begin to receive more benefits from the business model, such as increasing the company's value, more investors wanting to invest money into the company, and the funding rounds for moving forward have begun (Salamzadeh & Kesim, 2015).

3.3. Mobile payment is a main segment of the fintech industry

Most fintech companies are mobile payment companies; the mobile payment segment is the largest in the fintech industry in the number of companies and the value of transactions. This state has been confirmed by most studies in various landscapes (KPMG, 2015; Lee & Shin, 2018; Research and Markets, 2019; Shim & Shin, 2016; Szmigiera, 2020). For example, in the Vietnam fintech market, mobile payment segment companies accounted for 58% of total fintech companies and 99.9% of the total transaction value (Le & Le, 2018). Mobile payment account for a large proportion of the total fintech market of the number of companies and the value of the market

(Haddad & Hornuf, 2019). The pie of the mobile payment market has attracted some of the giant techs to join, such as Samsung, Facebook, Google, and Apple, with application payments, respectively. The rapid growth of mobile payment was affected by three key factors: the role of the government to support innovation in the traditional financial system, the rise of private e-commerce companies, and the evolution of third-party payment systems (Shim & Shin, 2016).

Karsen, Chandra, and Juwitasary (2019) indicated 44 factors that affected mobile payment companies, which were perceived ease of use, perceived usefulness, perceived trust, perceived risk, social influence, perceived security, effort expectancy, attitude, performance expectancy, facilitating condition, perceived compatibility, subjective norms, personal innovativeness, perceived privacy, perceived value, perceived benefit, perceived convenience, hedonic motivation, habit, perceived cost, perceived enjoyment, perceived ability, self-efficacy, social image, payment culture, absorptive capacity, perceived financial, perceived information, perceived mobility, perceived regulatory, perceived service, structural assurance, accessibility, availability, perceived system quality, adoption readiness, attractiveness, awareness, consistency, perceived similarity, perceived utility, product involvement, satisfaction, and smartphone experience. These were classified into three categories: technological, personal, and environmental, which were very useful in building the BSC for the fintech industry.

3.4. The role of innovation and technological development

Financial innovation is the critical background link to the products, organizations, processes, systems, and business models of a fintech company. Puschmann (2017) offered a comprehensive view of financial innovation: (1) innovation objective consisted of financial innovations, business models, products, organizations, processes, and systems; (2) innovation degree related to disruptive innovation and incremental innovation; and (3) innovation scope regarded internal, microeconomic changes of innovation objectives (intra-organizational), and macroeconomic structures with changes of the value chain (inter-organizational).

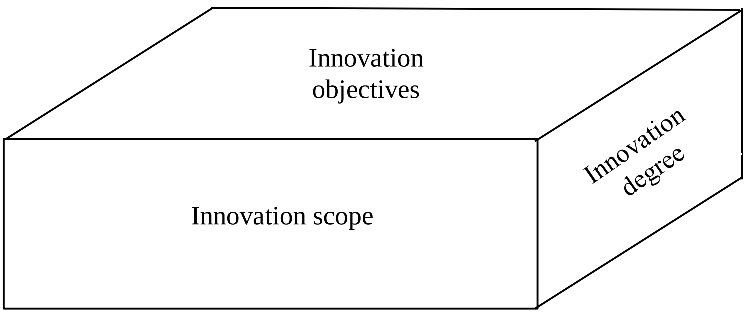

Figure 4. Innovation dimensions of fintech

Source: Puschmann (2017)

The near-field communication mobile payment is the core technology in the fintech industry; it helps the transaction process become smoothly, exactly, and safely. The study result by Shin and Lee (2014) indicated that the perceived ease of use and usefulness are driven by the technology readiness of the near-field communication mobile payment. The study by Das (2019) revealed that the great strides made in computing technology, mathematics, statistics, psychology, econometrics, linguistics, cryptography, big data, and computer interfaces have combined to create an explosion in the fintech industry. Zetzsche, Buckley, Arner, and Barberis (2018) argued that the commoditization of technology, big data analytics, machine learning, and artificial intelligence are the core disruptive innovation in the fintech industry.

The role of financial innovation and digital innovation in the growth of fintech companies is emphasized in many research studies such as (Das, 2019; Spender, Corvello, Grimaldi, & Rippa, 2017; Zavolokina et al., 2016).

3.5. The customer of fintech

In the mortgage market, although fintech lenders offer higher interest rates than non-fintech lenders, consumers are willing to use more expensive fintech lenders because of the convenience of fintech products. For example, fintech lenders process faster and more elastically than non-fintech lenders (Buchak, Matvos, Piskorski, & Seru, 2018). The customer reviewed that fintech products are more convenient and less risky than banks' products (Meyliana, Fernando, & Surjandy, 2019). The intention of using fintech services is affected by the trust (the idea of belief, self-confidence, hope, integrity, dependence, reliability, the ability for an entity character of a thing), but not affected by the risk (the expectation that becomes a loss occurring when people decide to take any action). The study about mobile payment companies by Karsen et al. (2019) validated the key role of customers in the life cycle of products and companies.

3.6. The barrier

The most significant barrier is the regulations and laws. No one piece of regulation/law can cover all aspects of fintech; it depends on the category of a fintech company; specific regulations/laws for itself drive it. For example, in the European Union, payment services are driven by Directive (EU) 2015/2366. In a competitive financial market, fintech companies have faced two main entry barriers: traditional firms' ability to block market access through the control of data and the difficulty in obtaining a license (van Loo, 2018). In Taiwan, a mobile payment company must corporate with a bank with local branches in law; in South Korea, any businesses that provide financial products like the commercial bank must have certificates approved by governors (Miao & Jayakar, 2016). However, it has seemed that the regulatory regime always follows behind the fintech company. In China, from 2010 - 2015, peer-to-peer lending grew dramatically; the Chinese government just proposed a guide for it. After this period, the new regulation was approved, which made it more difficult for peer-to-peer lending companies (You, 2018).

Moreover, fintech has other inexplicit characteristics such as the positive relationship between e-commerce and fintech (Bezhovski, 2016; Mantel, 2001); and cybersecurity in the fintech industry is an issue, it relates to personal information, security, and transaction detail of customers (Das, 2019; Zetzsche et al., 2018).

4. Using the Balanced Scorecard to Fintech companies

The BSC seems to be the best background for performance measurement (Marr & Schiuma, 2003; Ratnaningrum et al., 2020). It has been widely developed and adapted to apply to various fields, namely, in the organic food sector in India (Thakkar et al., 2007), the hospital in Indonesia (Martunis et al., 2020), in SMEs by theoretical and practical perspectives (Chow et al., 1997; Giannopoulos, Holt, Khansalar, & Cleanthous, 2013; Rompho, 2018; Singh, Olugu, Musa, & Mahat, 2018), and the banking industry (Al-Alawi, 2018). They are the background to formulate the frame for a fintech company.

From a glance on the official website of some fintech companies, the common vision is "Brings the best product to maximize customer utility." This vision is combined with the study by Gomber, Koch, and Siering (2017) and Karsen et al. (2019); we propose that the elements of the strategy for fintech company will be: surpass customer's expectations and needs; continuous improvement of safety, trust, and saving; apply innovations to operation; high-quality employees; and realization of shareholder expectation. Following Kaplan and Norton (1996), these strategy elements must be translated into all departments and employees, which are clearly understood by all of the related units. Then, each team will align the unit's goals, followed by the company's long-term strategies.

Based on the original version of BSC, the characteristics of the fintech industry, the application of the BSC in various fields, and the strategy of fintech companies, we formulate the strategy map, goals, and measure for the fintech company as presented in Figure 5 and Table 3. Four perspectives in the BSC of a fintech company is described below:

Financial perspective: Generally, increasing shareholder value is a key strategic objective of all companies. There are two categories of financial strategy: revenue growth and productivity. In the case of the fintech industry, the value of an investment is increased by customer acquisition, penetration of the new market, improving the operational cost, a customer with multiple services, and the efficiency of information systems.

Customer perspective: The customer of a value proposition is the core of the company's strategy; it positively influences financial performance. It could be considered by two aspects: customer satisfaction and enhance the value of customers. The customer often considers the reliability, trust of brand name, convenience, friendly environment, and the benefit when using the product.

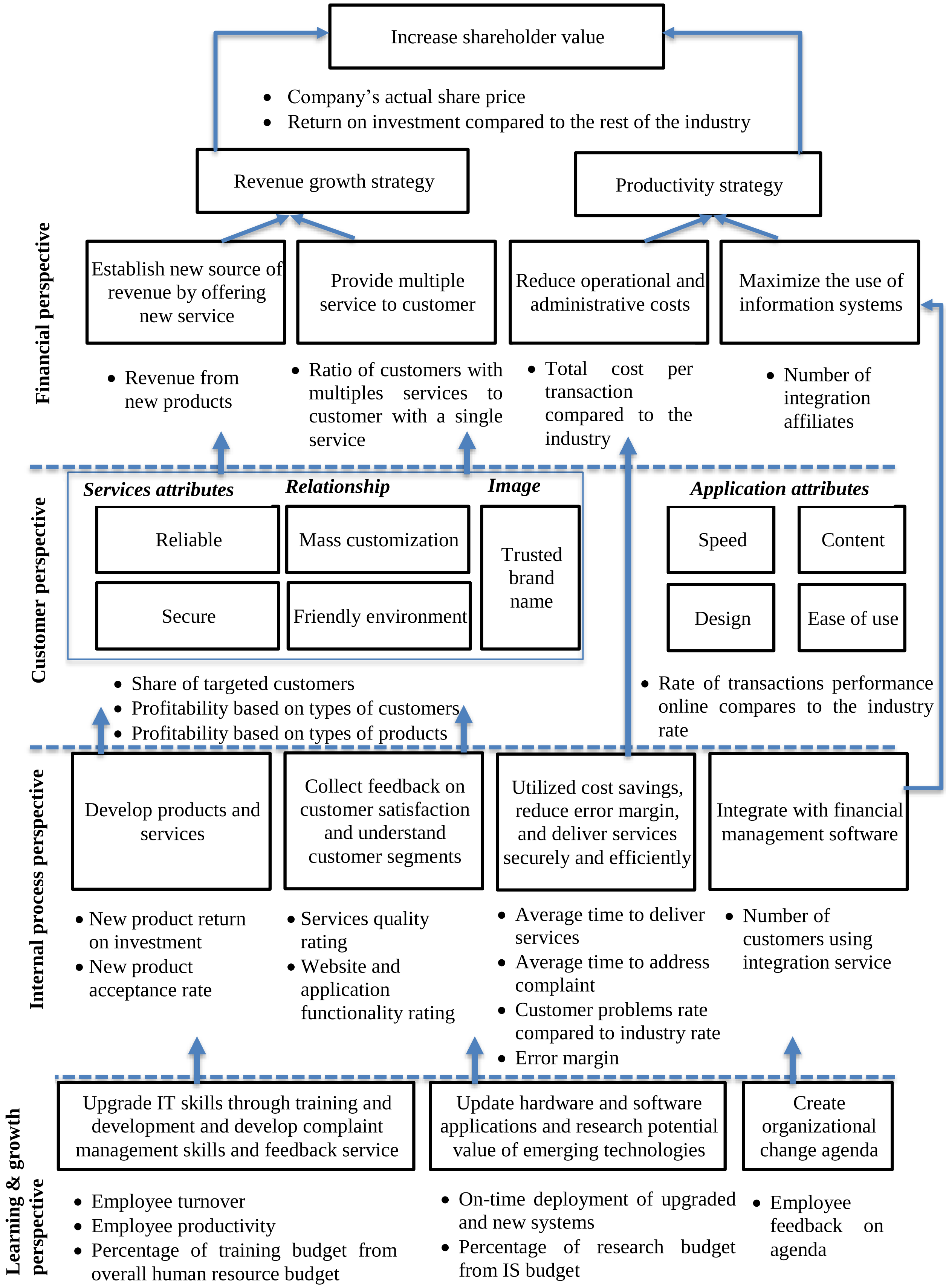

Figure 5. Fintech company strategy map

Source: The authors

Table 3

Four perspectives of the Balanced Scorecard to the fintech company

Goals	Measures
Financial perspective	
Revenue growth	Traditional indicators; customer acquisition, penetration of new market
Productivity	Reduce operational and administrative costs; maximize the use of the information systems and IT infrastructures
Value of the company	Survey, intangible assets (users, patents)
Customer perspective	
Customer satisfaction	
Attribute services	On the website, the application on the smartphone Speed, content, design, ease of use
Trusted brand name	Surveys
Customer satisfaction	Surveys
Security	Surveys
Simplicity	Surveys
Personalized quality service	Number of complaints; the amount spent on training; the number of rewards and recognitions; customer satisfaction
Competitive product	Sales volume; the number of customers; the number of products offered a year; extent products are “user friendly” compared to the competition; the degree of use of technology (where appropriate)
Pricing	Cost of doing business; own price relative to competition; extent service is better than the competition
Enhance customer’s value	
Convenience	Saving time, cost, risk
Mobility	Survey
Privacy	Survey
Internal business perspective	
International standards	Member of the international organization
Security/Trust	The level of security technology Comparison of various technologies alternative Willingness/Complaint of customer
Convenience	
Protocols	Mobile payment transaction protocols, including roaming between mobile networks
Systems architectures	Comparisons of the benefits and limitations of main mobile payment service architectures
Learning & growth perspective	
The hardware & software	Updated software/application regularly Launch new products, the new application
Human resource	Degree, salary, satisfaction Employee turnover rate Working at home
Organization culture	Financial support, training
Research and development	Number of new products; the number of patents; expenses for R&D

Source: The authors

Internal process: Based on the financial and customer-related objectives, the internal process perspective is established. There are four main processes: build the franchise by innovating with new products and services by penetrating new markets and customer segments; increase customer value by deepening relationships with existing customers; achieve operational excellence by improving supply chain management, the cost, quality, and cycle time of internal processes, asset utilization, and capacity management; and become a good corporate citizen by establishing effective relationships with external stakeholders. In the mobile payment sense, the internal business focuses on developing new products, improving and upgrading current products, collecting customer feedback, utilizing the cost, and integrating management software.

Learning and growth perspective: It depends on the core competencies and skills, technologies, and the company's corporate culture. It tends to drive improvement in financial, customer, and internal process performance. The fintech industry links to innovation, new products, penetrating a new market, high-quality labor, research, and development expense.

5. Conclusion

This paper shows three findings and two limitations. The first finding is that the BSC is the best tool to measure the company's performance; it is used by many Fortune 1000 companies (Gautreau & Kleiner, 2001). The papers by Kaplan and Norton (1992, 1996, 2000) about the BSC have the most significant citations in the performance measurement field. The BSC is used in various studies, but it does not occur in the fintech industry; thus, this paper is necessary. The second finding, throughout the literature review, there are six specific characteristics of the fintech industry shown: new industry in the digital era; most fintech companies are startups; mobile payment is a main segment of the fintech industry; innovation and technological development play the most critical role; the customer is the essential factor of success; and regulations and laws are the main barriers. The third finding is that the BSC for the fintech industry is formulated by combining four parameters: the original BSC of Kaplan and Norton; the characteristics of the fintech industry; the application of the BSC in other various fields; and the strategy of fintech companies.

The primary purpose of this paper is to formulate the BSC for all companies in the fintech industry; it will be the background for evaluating the performance of fintech. However, each company has unique characteristics; thus, each needs a unique BSC appropriated by its features. It is also the first limitation of this paper. The second limitation is that this paper is theoretical research; the approved BSC needs to be tested in practice.

The research on the relationship between fintech and conventional banks has attracted many scholars (Navaretti, Calzolari, Mansilla-Fernandez, & Pozzolo, 2018; Paulet & Mavoori, 2019; Thakor, 2020), and measuring the fintech variables are various. As we mentioned above, measuring the fintech company's performance is the gap in the fintech research field. Therefore, we believe that this study provides a new perspective on measuring the fintech performance variable, which is meaningful for the next quantitative studies, especially for estimating the relationship between the fintech company's performance and conventional banks. Moreover, the study also provides the theoretical contribution to applying the BSC to measure the performance of the novel kind of firm in the digital era, the fintech company.

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