Customer service performance in bridging the gap between strategic management of technology and financial performance: evidence from the banking industry of Sri Lanka

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ABSTRACT

Purpose: *There is empirical evidence that both Strategic Management of Technology (SMT) and increased Customer Service Performance (CSP) level led to improved Financial Performance (FP) of organizations. However, there is still a vacuum of empirical studies that explain how both SMT and CSP together lead to Financial Performance in a banking context as these have relatively scant literature that explain the links between technology orientation and customer oriented corporate behavior in an emerging context. Hence, this study aims to identify empirical relationships between Strategic Management of Technology, Customer Service Performance, and Financial Performance of the banking industry.*

Design/methodology/approach: *A representative sample of one thousand two hundred (1200) professionals from commercial banks in the Western Province who are registered with the Colombo Stock Exchange in Sri Lanka were surveyed using a survey questionnaire. To test the priori-based conceptual model, the data was evaluated using structural equation modelling procedures with Smart PLS. 3.2 software.*

Findings: *The study revealed the positive impact between SMT practices and FP; positive impact between SMT practices and CSP; positive impact of CSP and FP; the mediation effect of CSP between SMT practices and FP of a service firm.*

Originality: *The findings revealed the existence of a partial mediation of CSP on the relationship between SMT and financial performance of the firm. The study empirically confirms the complementary role of customer service-related performance in implementing strategic technology management decisions in order to enhance the financial outcome of the sector.*

Implications: *The results have implications for decision makers in banks. Decision makers can take measures to strike a proper balance between the bank's SMT and CSP so that they can increase the financial results.*

Keywords: *Strategic Management of Technology, Financial Performance, Customer Service Performance, Commercial Banks*

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INTRODUCTION

The opening into the 21st century has been marked by concerns about the developing complexities of organisational life, which creates challenges for the future. The growth of the global economy and the ability to transfer information faster have significantly improved the rate of change and innovation. The desire for cutting edge technologies persists to accelerate. The business environment has grown turbulent and sophisticated, where technology has become a crucial factor in productivity, innovations, and business model development. Strategic Management of Technology (SMT) not only acts as a crucial competitive tool, but also performs an important role in developing the organization's financial performance (Chataway, Tait, & Wield, 2007, Hipp, Tether, & Miles, 2000). The technologies used within an organisation can vary from very basic to advanced technologies. Businesses are established to make a profit. The technical assets of an organisation are the inventions that reside inside the company (Piccoli, & Ives, 2005). Technical assets include the organisation's collective knowledge and technological skills, which include its personnel, facilities, and systems. Unlike in the past, when an organisation's worth was largely measured by its resources and physical assets, today's real value of an organisation exceeds the value of its physical assets. Technology adds value to a company's properties.

Unique technologies and inventions are influencing industries and businesses to find new ways to succeed and thrive as a result of the waves of change in the business world. To survive these waves of change, a company must figure out how to handle technology and innovation. These adjustments include innovative approaches to developing and implementing strategic objectives. Greenspan, former president of the Federal Reserve, claimed that technology is not only the future of the industry but also technology and its implementation are the core of the company (Lubit, 2001). Technology is a vital part of the strategic success of an organisation that should be prepared, actively chosen, and continuously assessed and modified as needed (Amato, & Amato, 2004). Technology and innovation processes are intended to add value to the business. Managers must understand that, in today's world, technology is required to provide a tangible and timely development of value for the organisation while concentrating on value creation (Edler, Meyer, Krahmer, & Reger, 2002).

Many scientists and practitioners have shown interest in SMT, which improves the financial success of the business (Chow et.al, 2007). It is important to recognize that SMT has a major impact on the efficacy of strategic decision-making processes. And SMT must be consistently followed and synchronized with business technology initiatives to achieve long-term competitive advantages and financial results. Organisations are continually fighting to respond to ambiguous technological developments and maximize investments for better market prospects, all while strengthening their ability to develop and implement business and technology plans for value creation and continued competitiveness.

CUSTOMER SERVICE PERFORMANCE IN BRIDGING THE GAP BETWEEN STRATEGIC MANAGEMENT OF TECHNOLOGY AND FINANCIAL PERFORMANCE

Technology is for the good of the consumer and can contribute to customer loyalty, as companies can connect with consumers on a real-time basis using up-to-date strategies that reduce confusion and generate confidence. Since trust is a potential component of financial services, it can contribute to consumers' long-term willingness to establish valuable relationships with the business (Ndubisi & Wah, 2005). Bonding customer- organisational relationships are founded on confidence to produce overall positive outcomes, and higher levels of trust and dedication are correlated with higher levels of customer satisfaction, contributing to higher organizational success (Botha & Van Rensburg, 2010; Read, 2009). However, SMT does not always guarantee FP, (Ndubisi & Wah, 2005) in relation to service / financial / banking research in the past and SMT needs to produce customer linking measures/ outcomes such as CSP.

A company's goal in customer contacts is to establish client loyalty. It's preferable to achieve this through providing high-quality goods and services while also paying attention to clients (Piccoli, & Ives, 2005). When new technologies make it easier for businesses to provide customer service, the number of channels via which customers interact with them, as well as the complexity of those interactions, may increase. There are a few major areas where technology can now help businesses earn significant gains in client loyalty by improving customer service. More businesses are turning to technology to manage customer service in a more efficient and cost-effective manner in order to improve their financial performance.

In recognition of the critical role of customer value, companies have begun to develop strategic initiatives aimed at improving consumers' perceptions of the value of the products and services (Al-Shbiel & Al-Olimat, 2016). The banking sector is one of the most critical sectors which effects to country's economy. One of the more promising developments made by banks is the integration of new and enhanced technologies into banking processes (Bajaber et al., 2016). The introduction of new technologies (such as internet banking, mobile banking etc.) allows customers to conduct banking transactions at any time and from any location, thereby attempting to improve the value proposition of banks' services by utilizing the most up-to-date technologies. Because the goal of incorporating new technologies into banking operations is to give convenience to consumers with the ultimate goal of improving their value perception, banks must investigate the influence of such technology on customer value perception. This type of investigation will inform banks on the aspects of customers' technology adoption behavior that influence their value assessment of new technologies. Although there are existing empirical studies on SMT and FP; SMT and CSP; and CSP and FP in other industries (Botha & Van Rensburg, 2010; Srivastava et al.,2001; Anderson & Sullivan, 1993; Sorescu & Sorescu, 2016; Lemon, & Verhoef, 2016), there has been little research on the relationship between technology management, customer service performance, and company performance in the Sri Lankan banking industry despite the efforts/initiatives taken by banks in implementing SMT focusing improved CSP and FP. As a result, the mediation impact of CSP between SMT and FP was explored, and a model was created and constructed as a result of this research.

After performing a wide-ranging literature review, the authors found that there is a gap in the extant literature on empirical studies investigating the role of CSP on the relationship between SMT and financial performance of the firm.

Thus, the present study develops the problem statement to analyse whether SMT and CSP have an impact on the FP of banks in Sri Lanka.

This problem statement leads to the following research objectives:

- To investigate the impact of SMT practices on FP of the bank
- To examine the impact of SMT practices on customer service performance of the bank.
- To elucidate the impact of customer service performance on financial performance of the bank.
- To explain the mediating effect of customer service performance on the link between SMT practices and financial performance of the bank.

LITERATURE REVIEW

Definition and Importance of Strategic Management of Technology (SMT)

Strategic Management of Technology, an important concept in management theory, describes how organisations might use technology to gain a competitive advantage. The mechanism by which companies use their technical tools to achieve corporate goals is known as technology strategy (Rieck & Dickson, 1993). One of the most important sources of competitive advantage has been established by technology (Chanaron, & Jolly, 1999). A significant technology strategy must address the key technologies necessary to the achievement of the company's strategic business goals (Lee, 2000). Strategic Management of Technology defines the approach a business will pursue in achieving its strategic objectives and mission (Nandakumar, Ghobadian, & O'Regan, 2010). The complexity, uncertainty, and dynamic nature of enterprises caused by technology are expected to be managed through strategic technology management. The complete objective of SMT is to assist an organisation in acquiring, developing and utilizing technology for competitive advantage (Meyer et al., 2009).

According to Burgelman, Mandique & Wheelwright, 2001, technology is embodied in individuals or systems as explicit artifacts or tacit knowledge. Managing technology strategically, with proper technology strategies, drives businesses to manage their fundamentals of technology and to generate competitive advantage (Chanaron & Jolly, 1999). Strategic Management of Technology refers to the management of the processes that allow for the development, acquisition, and use of technology (Chanaron, & Jolly, 1999). It entails taking responsibility for designing, obtaining, and spinning out technologies to help human endeavours and meet consumer needs (Edler, Meyer-Krahmer, & Reger,2002).

Strategic management of technology starts with identifying the organisation's businesses from the viewpoint of core technologies, which underlie the competitive strength of specific products and processed. Enhanced productivity has therefore become a concern of all organisations. At the same time, technology is developing with striking speed and is becoming the key instrument for meeting this concern (Chanaron, and Jolly, 1999).

Since technology is continually progressing and world markets are constantly shifting, the success or failure of organisations will depend on the organisation's ability to drive the wave of change and still emerge as winners. Therefore, successful technology strategy will lead to creating economic wealth as well as its importance in ensuring competitiveness in the global economy. In business establishments, strategic management of technology is generally embedded in research & development (R&D) management, which is increasingly incorporating strategic management aspects (Edler, Meyer-Krahmer & Reger, 2002).

Technological capacity refers to the ability that offers a technical strength to an enterprise and provides the opportunity to build competitive advantage (Acosta-Prado, et.al., 2014) Tsai (2004) strongly supported the fact that there is a significant positive correlation between technological capability (TC) and firm performance. The potential for high-tech firms is known to play an important determinant of productivity growth.

Technological knowledge management refers to the method of generating, exchanging, using and maintaining an organization's knowledge and information to achieve organizational objectives through the best use of knowledge. (Cha, et.al.,2015) technological knowledge management consists of knowledge breadth and depth, knowledge acquisition, knowledge absorptive capacity, knowledge sharing. Technology strategy, technological capability, technological knowledge management plays a major role in the growth of organizational performance). Technology Strategy (TS), Technological Capability (TC), Technological Knowledge Management (TKM) are the three indicators that firmly measures SMT (Bloom, et.al., 2016; Jiménez-Barrionuevo et al., 2011).

Link between SMT and Firm's Financial Performance

Performance is an assessment of the improvement in an organization's financial state or the financial consequences that result from management decisions and the implementation of those decisions. Performance management is a methodology for guiding people's actions in a sense that promotes and encourages individual goals aligning with organizational goals to achieve organizational success (Liargovas, & Skandalis, 2008). Accounting metrics used to assess financial results apply to factors that can be taken from all organizations' three main financial statements, namely balance sheets, sales statements, and cash flow statements. Generally, most accounting metrics are expressed as values, ratios, or percentages.

Organisational performance is a behaviour that is important to the achievement of an organisation's goals, and it is one of the most commonly and widely used dependent variables in organisational studies (Rogers, & Wright, 1998). The comparison of the value generated by an organisation with the value owners expected to receive from the organisation has been described as the principle of business performance. The development of personal efficiency, expertise, knowledge, and experience is linked to the growth of organisational financial performance in today's competitive and rapidly evolving workplace and globalised economy (Covey, 2004). Strategic Management of Technology at the core of wealth development in high-tech sectors, and they have been shown to have a major effect on company financial efficiency (Hall, Jaffe, & Trajtenberg 2005).

Most organisations view their performance in terms of effectiveness in achieving their objectives and are driven by the market to set their goals in their performance. A Cost reduction, reaching sales levels, increasing the number of consumers, increasing market share, enhancing efficiency and quality, and producing new goods are only a few of the targets to enhance financial performance (Covey, 2004; Silvia, 2007). Innovation factors such as global information availability, technology mix, and shorter innovation cycles have become increasingly beneficial to businesses. Companies need to dramatically enhance their innovative efficiency, aim for more innovation, and explore new opportunities for commercialization to enhance SMT and sustain their competitiveness and ensure economic growth. Open innovation in R&D management is one way to approach these goals (Inauen, & Schenker-Wicki, 2012). Chataway, Tait, & Wield (2007) argue that technological advancement is not only a key strategic weapon, but also a key factor in enhancing a company's financial efficiency. (Tidd, 2001; Hipp, Tether, & Miles, 2000). To create radical innovations, companies must meet two criteria: produce breakthrough strategies that allow business organisations to discover new modern technologies and significant opportunities hidden in a variety of expertise and implement breakthrough strategies through resource synthesis and use of industrial technologies. Based on above literature, following hypothesis is established.

> H1- There is a positive relationship between SMT practices and financial performance of the service firm.

Link between SMT and CSP

Customers benefit from technology, and that can contribute to consumer loyalty because companies can connect with customers using cutting-edge methods in real time, eliminating confusion and building trust. The trust built will contribute to the customers' ongoing desire to maintain valuable relationships with organisations (Ndubisi & Wah, 2005; Brenda, 2002). Businesses need a significant and higher degree of technology participation in planning, organisation, control, and integration to improve customer experience. Since proper technology management practices can have an effect on customer satisfaction and contribute to increased customer retention (Botha & Van Rensburg, 2010). Customer service performance

standards outline how customers should be treated and best practices to follow. Having such standards in place and teaching employees about the company's policies will help you improve overall operations.

Many service firms are facing an immense challenge, addressing growing customer needs. Both practitioners and researchers have shown growing interest in the efficiency of customer service in recent years, inspired by original studies by Parasuraman et al., (1988). The main reason for the interest of the practitioners in performing customer service is the belief that improving CSP will have a beneficial effect on a business' financial and operational performance.

Customer Service Performance is becoming even more important to companies as they seek to increase their productivity through long-term customer relationships. In recent years, many have invested heavily in technology to monitor their consumer interactions before, during and after the service was offered (Bohling et al, 2006). But tangible returns from technical innovation programs rarely come from a limited focus on technology alone, with the most popular programs integrating technology with the efficient organization and skills of the people (Bharadwaj 2000; Piccoliand Ives 2005). Therefore, the study develops the following hypothesis.

> H2- There is a positive relationship between SMT practices and customer service performance of the service firm.

Customer Service Performance and Financial Performance

The relationship between CSP and financial results have attracted attention in academic literature. Srivastava et al. (2001) proposed that high customer satisfaction contributes to cash flow acceleration, an improvement in cash flow levels, and a decrease in the risk of cash flow. According to Gruca and Rego (2005), increased customer satisfaction leads to increased cash flow and a reduction in the risk associated with such cash flows. Others have discovered a correlation between customer service and net income (Anderson & Sullivan, 1993; Kerin et al., 1990; Loveman, 1998; Reichheld & Teal, 1996; Reichheld & Sasser, 1990). Less price sensitivity can lead to increased cash flow among happy customers who are willing to pay more (Homburg et al., 2005; Reichheld & Sasser, 1990). The acquisition of additional customers could also yield increased revenue. Higher customer retention and satisfaction contribute to higher potential sales (Rust et al., 1995) and lower operating costs, impacting profitability (Reichheld & Teal, 1996; Srivastava et al., 1998). Strong evidence exists at the aggregate level that customer satisfaction is positively related to loyalty, sales, and profitability. Logically, highly pleased consumers would be more loyal and remain longer and spend more. (Anderson & others, 2004; Bernhardt & others, 2000). Therefore, the study thus formulates the following hypothesis.

H3- There is a positive relationship between customer service performance and financial performance of the service firm.

Past research show that customer satisfaction can be act as a mediator between various variables. Customer satisfaction does play a mediating role in the impact of service quality on service loyalty, according to Caruana (2002). Furthermore, customer satisfaction can be a mediator between causes (trust and communication) and the outcome (customer loyalty) (Mbango, & Phiri, 2015). Furthermore, the mediation effect of customer satisfaction has been proved in the relationship between service orientation, service quality, and marketing mix strategy to customer loyalty (Solimun, & Fernandes, 2018). Past research findings support for the possibility that customer service performance can be considered as a potential intervening variable between SMT and financial performance of a service organisation. (Sorescu & Sorescu, 2016; Lemon, & Verhoef, 2016). Third variable, customer service performance is used to pinpoint the source of a poor, inconsistent, or mixed findings relationship between the SMT variable and the FP variable. It describes "when" or "under what" conditions an impact is predicted to occur.

CSP can act as a mediator of the relationship between SMT and FP. As a matter of these evidence, the study argues that as the last hypothesis.

H4- Customer service performance mediates the relationship between SMT practices and FP of the service firm.

METHODOLOGY

Conceptual Framework

The following conceptual model (Figure 1), developed on the basis of the literature survey, illustrates the conceptual model used to study the relationship between the independent, dependent, mediating and control variables. Strategic Management of Technology practices was identified as independent variable and Financial Performance was identified as dependent variable. Customer Service Performance was identified as the Mediator variable.
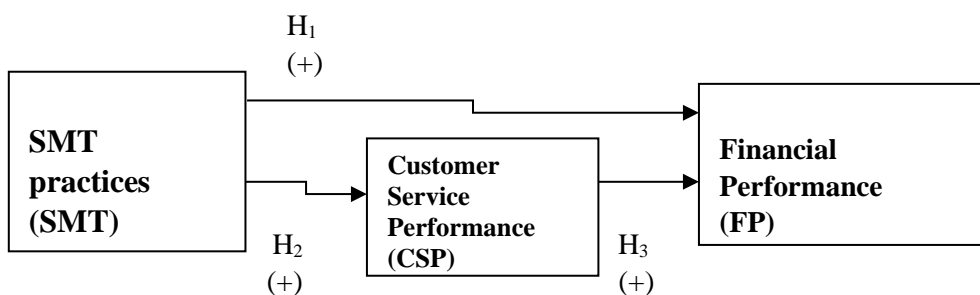
H_1
(+)

SMT practices (SMT)

Customer Service Performance (CSP)

Financial Performance (FP)

H_2
(+)

H_3
(+)

Figure 1- Conceptual Model

Measures

The study operationalized the constructs and variables using the measures in the extant literature. Strategic Management of Technology consists of mainly Technology Strategy, Technological Capability and Technological Knowledge Management. Technology Strategy consists of eighteen indicators i.e. rate of identification of major opportunities and developments; current and intended market positions; rate of investing in more efficient technological processes; rate of investing in more effective technological processes; gaps in existing technologies; strategic decisions on technology licensing, joint ventures, and so forth; rate of replacement of an old technology; identify major challenges for enhancing technology strategies ; rate of investment in new technological process; understanding stakeholder dynamics; collaborative or R&D with networking; rate of replacement of an old technology; managing technological motivation; level of identification of weaknesses in existing technology; rate of reassessing the needs of customers; rate of customer requirements and modifications (Nandakumar, Ghobadian, & O'Regan, 2010; Meyer, Estrin, Bhaumik, & Peng, 2008). Technological Capability consists of 15 indicators i.e. rate of supporting to creative people in order to motivate innovations; innovation adoption rate; rate of checking for consistency between core technologies, R&D, and marketing; R&D Investment per year; rate of relate R &D to technological capabilities ;rate of continuous improvement in manufacturing; rate of optimal utilization of its technologies; rate of assessment of the feasibility of new technologies; rate of implementation of practical R&D; troubleshooting and breakdown maintenance; number of training programs for employees; rate of supporting to develop breakthrough ideas; number of successful production operations; rate of effective technological transfer; rate of facilitating technological transfers (Khalil, 2000; Ramakrishnan,2010).

Technological Knowledge management consists of 9 indicators i.e. rate of acquiring new knowledge to produce new process; rate of acquiring new knowledge to produce new products; rate of sharing the tacit knowledge of the employees; rate of technical knowledge and skills within the company's specialized domain; methods of encouraging employees to share their knowledge with their colleagues; quality of detailed feedback given by the employees after visiting external programs; plans for exploiting the knowledge acquired within the organization; satisfaction rate with the management of knowledge at your company; success rate of improving your effectiveness with the knowledge available (Khalil, 2000; Lubit, 2001; Cohen & Levintha , 1990).

Financial Performance consists of five indicators i.e., profitability; annual deposit growth; interest income; return on assets; annual growth rate of customer base. Customer Service Performance consists of two indicators i.e., Customer satisfaction rate and success rate of after sales services (Ferrell, Padron, Hult & Maignan, 2010).

Based on the constructs defined so far, Likert-type seven-point scales were used as the questionnaire's key scaling tool, ranging from 1 = Strongly Disagree, 2 =

Disagree, 3 = Slightly Disagree, 4 =Neutral,5 = Slightly Agree, 6 = Agree, 7 = Strongly Agree. Included is a neutral position, namely "4= Neutral," The study operationalized the constructs and variables using the measures in the extant literature. An online questionnaire was distributed to collect data as the main survey instrument.

Population, Sample and Data collection

The current research focuses on the impact of CSP characteristics on SMT decision-making and business financial performance. From a theoretical standpoint, the majority of the study's definitions were quite complex. To examine both measurement and structural models, the Structural Equation Model (SEM) was utilized as the primary data analysis tool.

The sample for this study came from 291 branches of seventeen (17) banks registered with the Colombo Stock Exchange and operating in three districts in Sri Lanka's Western province (Colombo, Kaluthara, and Gampaha). A total of 1200 managers were chosen from three levels: high, low, and middle (Rejcie & Morgan Table, 1970). Judgemental sampling is a non-probity sampling strategy in which the researchers carefully select and select each person to be included in the sample. When a community has a small number of individuals who possess attributes that a researcher expects from the target population, judgmental sampling is most successful. Therefore, the sampling method used in the current study is judgemental sampling.

The questionnaire was issued to 1400 respondents, and 1226 completed questionnaires were returned, of which 1094 were considered final and processed for data analysis. A total of 78.14 percent of valid responses were received. The following is a list of demographic data based on the entries considered. Respondents were roughly 2.7 percent when the company size (number of employees) was 0-10, 5% when it was 0-25, 49.9% when it was 25-50, and 43% when it was 25-50. Furthermore, the demographic data comprised 41.10 percent middle-level management representatives, 30.39 percent low-level management representatives, and 28.49 percent high-level management representatives.

The model (Figure I) was tested using Smart PLS 3.2 and SPSS 22 and the partial least square structural equation model (PLS-SEM) approach. The authors utilized SMART PLS to test complicated structural models with several constructs, as it supports non-parametric assumptions and is suited for evaluating latent variables (theoretical constructs), small sample sizes, non-normal data, and multicollinearity (Westland, 2015).

FINDINGS

The demographic characteristics are shown in Table 1. Approximately 2 per cent of the respondents in the company's employees where the company age range was 0-10 years, 5 per cent were from companies which were in the age range of 10 – 25 years, 47 per cent were in the range of 25-50 years and 46 per were 25-50 years. According to the management level, 41 per cent were in middle-level management and about 29 per cent were in low-level management whilst 30 per cent were in high-level management.

Table 1: Demographics (n= 1094) Details

	Demographic	Frequency	Percentage
Company Age	0- 10 years	24	2.00
	10 – 25 years	58	5.00
	25-50 years	514	47.00
	Above 50 years	498	46.00
Job Status	High-level Management	330	30.00
	Middle-level Management	444	41.00
	Low-Level Management	320	29.00

Source: Survey Data

Measurement Model Assessment

Item reliability, Cronbach's alpha, Composite Reliability (CR), and average variance derived are all used to assess convergent validity of composite metrics (AVE). Uni-dimensionality, or the close relationship between measurements of a single structure, is a prerequisite and underlying assumption for the development of composite scales. The AVE, which measures the degree of internal consistency of each build, was used to verify reliability. The values had to be greater than 0.50. Composite reliability (CR) and Cronbach's alpha have been tested with criteria over 0.70. (Hair et al, 2017).

The researcher can see from Table 2 that each measuring item is substantially correlated with the others.

Table 2: Summary of Cronbach's Alpha, Composite Reliability and AVE

		Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
CSP	Customer Service Performance	0.7147	0.8378	0.7765
FP	Financial Performance	0.8065	0.8167	0.72474
SMT	Strategic Management of Technology	0.7736	0.8027	0.7108

Source: Survey Data

Discriminant Validity

In order to ensure to assess Fornell–Larcker criterion, discriminant validity can be applied. Fornell-Larcker test is verified for cross-loading and discriminating validity. The square root of each construct's AVE should be higher than the correlation of the construct with any other construct in the model, according to the Fornell-Larcker (1981) criterion. Off-diagonal values are lower than those on diagonal values (the AVE's square root), proposing satisfactory discriminating validity for CSP, FP and SMT, according to the following results in Table 3.

Table 3: Fornell-Larcker criterion result

	CSP	FP	SMT
CSP	0.807		
FP	0.752	0.899	
SMT	0.714	0.743	0.892

Source: Survey Data

Assessment of Model Fit

The R^2 was used to assess model fit for dependent constructs, and the Stone-Geisser Q^2 was used to assess predictive relevance (Wold, 1982). The R^2 value (variance explained by independent variables) is interpreted similarly to regression analysis as the proportion of variation in the variables explained by its relationship with the variables believed to have an effect on it. Inside the circles are the R^2 values of the endogenous constructs. The strength of the hypothesized relationships is assessed using these path coefficient values (ranging from +1 to -1). A path coefficient near +1 indicates a strong positive relationship, while a value near 0 implies a negative relationship.

The R^2 of the path model for SMT in the suggested model (Fig. I) was 52.8 percent, indicating that the independent variable (SMT) in the model explains 52.8 percent of the total variability of the dependent variable. Cohen (2013) claims that a larger sample size or increasing sample size can always contribute to a higher R^2 score. As a result, the authors believe that the R^2 values in the respective study should be seen in the context of a similar investigation with a large sample size. As a result, the R^2 value of 52.8 percent can be considered a predictor of overall model predictive validity and reflects a reasonable level to support the current model's goodness of fit (Chin 1995).

The R^2 values indicate the model's predictive precision, whereas the Q^2 values indicate the model's predictive relevance. The path model's predictive validity for the construct is indicated by Q^2 values greater than zero for a certain reflective value' of endogenous latent variable (Hair et al., 2017). IBP explained 52.8 percent of the total variability of the dependent variable in Q^2 of the path model, indicating that the independent variables (IBP) in the model describe 50.5 percent of dependent variable's total variability. As per the above explanation on R^2 value it has been confirmed that the sample size could have a significant impact. Similarly, Q^2 value correspondent towards the same (Cohen, 2013). As a result, the Q^2 value of 50.5 percent can be considered a measure of the overall model's predictive validity and represents a reasonable level to support the current model's goodness of fit. The Standardized Root Mean Square Residual (SRMR) and the Normed Fit Index (NFI) can also be used to assess model fit (Hair et al., 2017). In social science research, an SRMR value of less than 0.08 and an NFI of greater than 0.90 is considered acceptable.

Table 4: SRMR and NFI of the Measurement Model

	Saturated Model	Estimated Model
SRMR	0.062	0.070
NFI	1.542	1.530

Source: Survey Data

According to the Table 4, the value of SRMR and NFI of the saturated model is 0.062 and 1.542 whilst estimated model SRMR and NFI is 0.070 and 1.530 respectively, which is below the cut off value of 0.08. Therefore, goodness of fit for the measurement model is established.

Assessment of Structural Model

Path coefficients are given as a standardized beta weight in a multiple regression model (Gopal, Bostrom, and Chin, 1992). Between 0.20 and 0.30, standardized path coefficients should be significant (Chin, 1998a). Nonetheless, Kline (2011) makes recommendations for new research with limited theoretical or experimental support

for evaluating path coefficient effects: path coefficients of 0.10 indicate a minor influence, 0.30 indicate a moderate effect, and 0.50 indicate a major effect (Cohen, 2013).
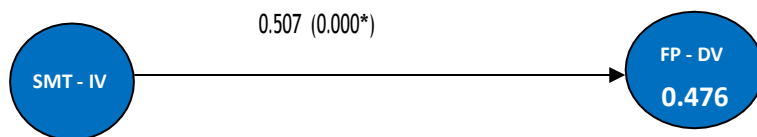

Figure 2. Path coefficient (beta) values and the significance between SMT and FP

FP = Firm performance
SMT = Strategic Management of Technology

The path values are shown in Figure 2 with their respective significance levels (probability values) in parenthesis. The outcome of bootstrapping indicate that the majority path coefficients are significant, i.e., the path coefficient and p value between Independent Variable (IV) - SMT and Dependent Variable (DV) – FP is 0.507 (0.000), also R^2 value between SMT and FP is 0.476 which means there is a significant relationship between SMT and FP.

Strategic Technology Management is in charge of producing innovative products (Pérez-Luoa et al., 2011). In order to create new products and innovations, science and technology from the external world are combined with the firm's in-house talents, expertise, and capabilities. Consequently, R&D includes a wide variety of tasks and responsibilities, from understanding applied technology to producing innovations to designing new products and technologies, all of which contribute to the company's financial results (Hansen, 2010). The impact of SMT (technology capability, technological strategy and technological knowledge management) stressing more on financial outcomes measures such as on cost reduction / savings, creating efficiencies as well as developing value creation to customers as well as customer / CRM processes' that have an impact on financial indicators (Liargovas, & Skandalis, 2008; Loveman,1998; Rust, Zahorik, & Keiningham,1995; Piccoli, & Ives,2005.)

Therefore H1- There is a positive relationship between SMT practices and financial performance of the service firm is accepted.
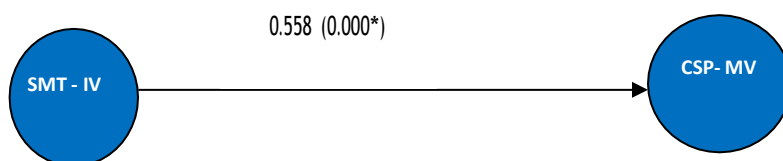

Figure 3. Path coefficient (beta) values and the significance between SMT and CSP

SMT = Strategic Management of Technology
CSP = Customer Service Performance

According to Figure 3, the path coefficient and p value between Independent Variable (IV) SMT and Mediator Variable (MV) – CSP is 0.558 (0.000), also R^2 value between SMT and CSP is 0.416 and which means there is a substantial connection between SMT and CSP.

You should have a planned pipeline where you can boost customer loyalty and help the organization collect feedback in a systematic way, which is how SMT can help to gather data at particular points in the customer journey. This enables businesses to monitor customer satisfaction after the launch of a new product or the introduction of new technology to support customer service (Danaher et al. 2008; Bloom, et.al., 2016; König, et.al., 2016; Jiménez-Barrionuevo et al., 2011). Hence, H2-There is a positive relationship between SMT practices and customer service performance of the service firm is accepted**.**
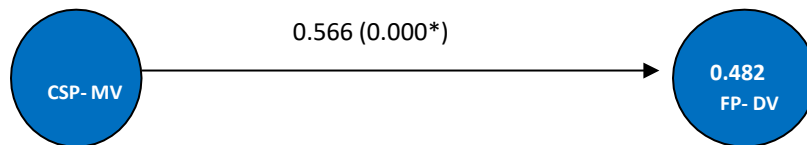

Figure 4 .Path coefficient (beta) values and the significance between CSP and FP

CSP = Customer Service Performance
FP = Firm performance

According to Figure 4, the path coefficient and p value between Mediator Variable (MV) – CSP and Dependent Variable (DV) – FP is 0.566 (0.000), also R^2 value between CSP and FP is 0.482 and which means there is a significant relationship between CSP, and FP. Customer satisfaction related measures of a service offering has an impact on a firm's FP (Solimun, & Fernandes, 2018). Hence, H3- There is a positive relationship between customer service performance and financial performance of the service firm is accepted.
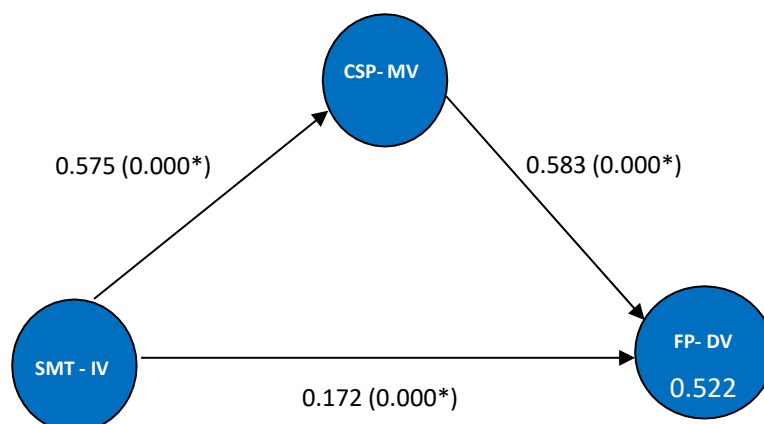
Figure 5: Path coefficient (beta) values and the significance between SMT , CSP and FP

CSP = Customer Service Performance
FP = Firm performance
SMT = Strategic Management of Technology

Indirect Effect and Total Effect

According to Figure 5 and Table 5, direct effect between SMT and firm's financial performance is significant (beta = 0.172; p = 0.000). Specific indirect effect between SMT and FP (Beta = 0.575 *0.583=0.335; p=0.000) is also significant. Comparing beta values, beta value of total effect of SMT on FP (0.507) is greater than beta value of direct effect of SMT on FP (0.172). Therefore, mediating test of indirect effect revealed that the effect of SMT on firm's financial performance is partially mediated by customer service performance. As both total direct effect between SMT and FP and specific indirect effect between SMT and FP is significant, it is a partial mediation.

Table 5- Mediation Bootstrapping

Effects	Path	Path Coefficient	P Value
Specific Indirect Effect	SMT > CSP> FP	0.335	0.000
Direct Effect	SMT > FP	0.172	0.000
Total Effect	SMT>FP	0.507	0.000

Source: Survey Data

Further, in figure 5, also, increase of R^2 value can be seen, i.e., R^2 between SMT and FP without the mediator variable CSP is 0.476; R^2 between CSP and FP is 0.482 and R^2 between SMT and FP with the mediator variable of CSP is 0.522. This means CSP significantly and positively mediates the relationship between SMT and FP.

It can see that Customer Service Performance has mediated the relationship between different variables related to firm performance and Firm performance related dimensions. As per the guidelines of Baron & Kenny (1986) on assessing the mediation, the figure 2 and 3, 4 and 5 clearly depict conditions for the existence of a partial meditation. From the findings in the past, the authors anticipated that Customer Service Performance can act as a third variable which can strengthen the relationship between SMT and FP. Therefore, H4- Customer service performance mediates the relationship between SMT practices and financial performance of the service firm is also accepted.

DISCUSSIONS

According to the research model, SMT combined with CSP accurately predicts a firm's performance. The strength of these relationships is indicated by the path coefficient, and P values confirm that the relationships are statistically significant.

The main aim of the current study was to explain the possibility of using CSP as a mediator to bridge the gap between SMT and FP of a service firm. The conceptual model was developed on the basis of the critical analysis of previous literature and considering the key research goals and research issues. Furthermore, four hypotheses were developed to explain the connection between the main constructs of the proposed research models. The research model proposed consisted of variables that were independent (SMT), dependent (FP), mediator (CSP). In relation to the mediating effects of CSP on the relationship between SMT and FP, the effect of SMT dimensions on FP was demonstrated.

Burgelman et al. 2009, Chiaromonte 2003, Dodgson et al. 2008, found that SMT can influence the FP which is consistent with current study findings. With his analysis of technology-based companies, Petroni (1985) stressed the increasing need for planning SMT activities to increase the FP which is consistent with the current study findings. Kim & Mauborgne, (1999) conclude that value of SMT involves new product concepts and SMT using the technologies and knowledge leads to FP which consistent with current study findings.

Customer Service Performance with comprehensive technology enabled organizational strategy which focuses on the organization in providing outstanding customer service (Feeny, 2001). Therefore, efficient SMT practices increase, the customer service performance of the service firm, is consistent with the current study. The links between customer service performance and financial performance have drawn some recent attention in the academic literature. Srivastava et al. (1998) suggested that high customer satisfaction leads to financial performance of the organization which is consistent with the current study. There are many past research available with the mediating role of emotional intelligence in relation to the other dimensions of technology and organizational performance (Caruana, 2002;

Mbango, & Phiri, 2015; Solimun, & Fernandes, 2018). The current study identified that CSP can act as a partial mediator between SMT and FP.

THEORETICAL CONTRIBUTIONS

The main conclusion of the study is that there is partial mediation of customer performance between SMT and FP of the company. The relationship between independent variable, namely, SMT and the dependent variable (FP) of commercial banks were found to be statistically significant. Significant relationship between SMT and CSP and also between CSP and financial performance has been proven. Decision makers can take measures to strike a proper balance between the bank's SMT and CSP so that they can increase the financial results. The findings could be used by the industry/policy makers in their decision-making processes in order to increase the financial performance. Customer oriented technology strategy is a key factor in enhancing financial outcomes as per the balanced score card (Kaplan & Norton, 1996). Customer service and service quality are still keys to the success of technology strategy and drive technology to financial performance in the banking sector. It emphasizes on essential nature of customer-oriented business strategy that coproduce financial performance together with SMT. Developing measures can be done to link technology initiatives with customer support perspectives and financial indicators using dashboard concepts.

PRACTICAL IMPLICATIONS

Taking customer and customer contact employees' inputs can be important in technology strategy development by linking both marketing and technology staff coordination at the senior and other management levels. As a result, managers may better understand the causes of customer happiness and loyalty, allowing them to provide better service to customers while also improving the firm's financial success. Organizations should follow a customer-oriented strategy to deal with today's business challenges because it can enhance customer retention and thus help the firm reduce marketing costs, improve and stabilize revenues, and adapt to changes in customer profiles or preferences in a timely and appropriate manner. Furthermore, continuous customer satisfaction monitoring and evaluation can assist managers in providing the services that customers value the most, thereby attracting new customers. Customers are happier when managers can lead and align all of their bank's business processes to create a customer perception of improved service quality.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

This study used Profitability, Annual deposit growth, Loan interest income, Return on Assets, Annual Growth Rate as variables to measure financial performance. Additional research incorporating other success metrics, such as return on equity and asset riskiness, is recommended to provide a clearer image. The current study was conducted on commercial banks operating in Sri Lanka.

Consequently, a similar study can be done in other sectors of the economy such as healthcare as the proven relationships can be significant and useful to the healthcare sector as well. This research was limited to the Western province, but it might be expanded to other provinces as well. This study focused on how customer service performance can act as a mediator between the relationship of SMT and the financial performance of the firm. Emotional Intelligence that supports customer contact employees to better understand and predict customers can be considered as the possible mediators to be introduced in the model.   Finally, a very large number of variables influence financial results. This can include standards of management, corporate governance, incentive schemes, years of service, market structure, barriers to entry, and firm strategies, among others. Future studies should be carried out to determine how these other factors affect financial performance.

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COMPETING INTERESTS

The authors declared no competing interests.

REFERENCES

Anderson, E.W. and Sullivan, M.W. (1993), The Antecedents and Consequences of Customer Satisfaction for Firms. Marketing Science, 12, 125-143.

Anderson, E. W., Fornell, C., &Mazvancheryl, S. K. (2004). Customer Satisfaction and Shareholder Value. *Journal of Marketing,68*(4), 172-185. doi:10.1509/jmkg.6.4.172.42723

Amato, L. H., & Amato, C. H. (2004). Firm size, strategic advantage, and profit rates in US retailing. *Journal of Retailing and Consumer Services,11*(3), 181-193. doi:10.1016/s0969-6989(03)00036-5

Acosta-Prado, J. C., Bueno Campos, E., & Longo-Somoza, M. (2014). Technological capability and development of intellectual capital on the new technology-based firms. Cuadernos de Administración, 27(48), 11-39.

Al-Shbiel, S. O., & Al-Olimat, N. H. (2016). Impact of information technology on competitive advantage in Jordanian commercial banks. Accounting information system effectiveness as a mediating variable. *International Journal of Academic Research in Accounting, Finance and Management Sciences, 6(3),* 202–211.

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, *51*(6), 1173.

Bohling, T., Bowman, D., LaValle, S., Mittal, V., Narayandas, D., Ramani, G. &Varadarajan, R. (2006). CRM implementation: effectiveness issues and insights. Journal of Service Research, 9(2), 184- 194

Botha, G., &Rensburg, A. V. (2011). Proposed Business Process Improvement Model with Integrated Customer Experience Management. *The South African Journal of Industrial Engineering,21*(1). doi:10.7166/21-1-65

Bajaber, W., AlQulaity, M., Zafar, A. (2016). An overview of strategic information systems planning in banking sectors: A case study of Riyadh Bank of KSA International Journal of Computer Applications, 144 (7), 1-6

Burgelman, RA., Maidique, A.& Wheelwright, SC. 2001 Strategic Management of Technology and Innovation.New York, USA, McGraw-Hill.

Bharadwaj, A. S. (2000). A resource-based perspective on information technology capability and firm performance: An empirical investigation. *MIS Quarterly*, *24*(1), 169. https://doi.org/10.2307/3250983

Bloom, N., Sadun, R., & Van Reenen, J. (2016). Management as a technology? https://doi.org/10.3386/w22327

Chanaron, J., & Jolly, D. (1999). Technological management: Expanding the perspective of management of technology. *Management Decision,37*(8), 613-621. doi:10.1108/0025174991091578

Chataway, J., Tait, J., & Wield, D. (2007). Frameworks for Pharmaceutical Innovation in Developing Countries—The Case of Indian Pharma. *Technology Analysis & Strategic Management,19*(5), 697-708. doi:10.1080/09537320701521465

Cha, M.-K., Yi, Y., & Bagozzi, R. P. (2015). Effects of customer participation in Corporate Social Responsibility (CSR) programs on the CSR-brand fit and Brand Loyalty. *Cornell Hospitality Quarterly*, *57*(3), 235–249. https://doi.org/10.1177/1938965515620679

Chiaromonte, F. (2003) 'From R&D management to strategic technology management: evolution and perspectives', International Journal of Technology Management, *25(6–7)*, 538–552.

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive Capacity: New Perspective on Learning and Innovation. *Administrative Science Quarterly*, *35*(1), 128–152. https://doi.org/10.2307/2393553

Covey, S. R. (2004). *The 7 Habits of Highly Effective People: Powerful Lessons in Personal Change*. Simon & Schuster.

Chow, I. H., Lau, V. P., Lo, T. W., Sha, Z., & Yun, H. (2007). Service quality in restaurant operations in China: Decision- and experiential-oriented perspectives. *International Journal of Hospitality Management,26*(3), 698-710. doi:10.1016/j.ijhm.2006.07.001

Cohen, J. (2013). Statistical Power Analysis for the Behavioral Sciences. doi: 10.4324/9780203771587

Chin, W. W. (1995). PLS is to LISREL as Principal Components Analysis is to Common Factor Analysis." Technology Studies, 2, 315-319.

Dodgson, M., Gann, D. and Salter, A. (2008) The Management of Technological Innovation: Strategy and Practice. Oxford University Press, Oxford, 373.

Edler, J., Meyer-Krahmer, F., &Reger, G. (2002). Changes in the strategic management of technology: Results of a global benchmarking study. *R&D Management,32*(2), 149-164. doi:10.1111/1467-9310.00247

Ferrell, O., Gonzalez-Padron, T. L., Hult, G. T., &Maignan, I. (2010). From Market Orientation to Stakeholder Orientation. *Journal of Public Policy & Marketing,29*(1), 93-96. doi:10.1509/jppm.29.1.93

Gopal, A., Bostrom, R. P., & Chin, W. W. (1992). Applying Adaptive Structuration Theory to Investigate the Process of Group Support Systems Use. *Journal of Management Information Systems*, *9*(3), 45–69. doi: 10.1080/0741222.1992.11517967

Gruca, T. S., &Rego, L. L. (2005). Customer Satisfaction, Cash Flow, and Shareholder Value. *Journal of Marketing,69*(3), 115-130. doi:10.1509/jmkg.69.3.115.66364

Hair, J. F. (2017). *A primer on partial least squares structural equations modeling (PLS-SEM)*. Los Angeles: SAGE.

Homburg, C. (2005). Customers' Reactions to Price Increases: Do Customer Satisfaction and Perceived Motive Fairness Matter? *Joural of the Academy of Marketing Science,33*(1), 36-49. doi:10.1177/0092070304269953

Hipp, C., Tether, B. S., & Miles, I. (2000). The Incidence And Effects Of Innovation In Services: Evidence From Germany. *International Journal of Innovation Management,04*(04), 417-453. doi:10.1142/s1363919600000226

Hansen K. Centre for Longitudinal Studies; London: 2010. Millennium Cohort Study First, Second, Third and Fourth Surveys: a Guide to the Datasets

Hall B. H., & Jaffe, A., &Trajtenberg, M., (2005). Market Value and Patent Citations, RAND Journal of Economics, The RAND Corporation, vol. 36(1), 16-38, Spring.

Inauen, M., &Schenker-Wicki, A. (2012). Fostering radical innovations with open innovation. *European Journal of Innovation Management,15*(2), 212-231. doi:10.1108/14601061211220986

Jiménez-Barrionuevo, M. M., García-Morales, V. J., & Molina, L. M. (2011). Validation of an instrument to measure absorptive capacity. *Technovation*, *31*(5-6), 190–202. https://doi.org/10.1016/j.technovation.2010.12.002

Kerin, R.A., Mahajan, V. and Varadarajan, P.R. (1990), Contemporary Perspectives on Strategic Market Planning, Prentice-Hall, Englewood Cliffs, NJ

Krishnan, MS.; Ramaswamy, V; Meyers, M.C.; and Damien, P Customer satisfaction for financial services: the role of products, services, and information technology. Management Science, 45, 9 (September 1999), 1194-1209.

Khalil, T. M. 2000. Management of Technology: The Key to Competitiveness and Wealth Creation. New York: Irwin Mcgraw-Hill.

Lubit, R. (2001). Tacit knowledge and knowledge management: The keys to sustainable competitive advantage. *Organizational Dynamics, 29(3)*, 164–178. https://doi.org/10.1016/S0090-2616(01)00026-2

Loveman, G. W. (1998). Employee Satisfaction, Customer Loyalty, and Financial Performance. *Journal of Service Research,1*(1), 18-31. doi:10.1177/109467059800100103

Lemon, K. N., &Verhoef, P. C. (2016). Understanding Customer Experience throughout the Customer Journey. *Journal of Marketing,80*(6), 69-96. doi:10.1509/jm.15.0420

Liargovas, p, & Skandalis, k, (2008) Factor affecting firms' financial performance: The Case of Greece. University of Peloponnese, Greece

Meyer, Klaus E. & Estrin, Saul & Bhaumik, Sumon Kumar & Peng, Mike W. (2009) Institutions, resources and entry strategies in emerging economies. Strategic management journal, 30 (1). pp. 61-80.

Mbango, P., & Phiri, M. A. (2015). Customer satisfaction as a mediator between causes (trust and communication) and the outcome (customer loyalty) in business-to-business relationship marketing in the South African cement manufacturing industry. *Journal of Governance and Regulation, 4(3-1),* 79-88. http://doi.org/10.22495/jgr_v4_i3_p8

Ndubisi, N. O., &Wah, C. K. (2005). Factorial and discriminant analyses of the underpinnings of relationship marketing and customer satisfaction. *International Journal of Bank Marketing, 23*(7), 542-557. doi:10.1108/02652320510629908

Nandakumar, M. K., Ghobadian, A., & O'Regan, N. (2010). Business-level strategy and Performance. *Management Decision*, *48*(6), 907–939. https://doi.org/10.1108/00251741011053460

Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1985). A Conceptual Model of Service Quality and Its Implications for Future Research. *Journal of Marketing,49*(4), 41-50. doi:10.1177/002224298504900403

Piccoli, G., & Ives, B. (2005). Review: IT-Dependent Strategic Initiatives and Sustained Competitive Advantage: A Review and Synthesis of the Literature. *MIS Quarterly,29*(4), 747. doi:10.2307/25148708

Piccoli, & Ives. (2005). Review: It-dependent strategic initiatives and sustained competitive advantage: A review and synthesis of the literature. *MIS Quarterly*, *29*(4), 747. https://doi.org/10.2307/25148708

Pérez-Luñoa, A., Wiklundb, J. & Cabrera, R.A. (2011). The dual nature of innovative activity: how entrepreneurial orientation influences innovation generation and adoption. Journal of Business Venturing, 26(5), 555-571.

Rust, R., Zahorik, A. and Keiningham, T. (1995), "Return on quality (ROQ): Making service quality financially accountable", *Journal of Marketing*, Vol. 59 (2), pp. 58-70.

Rogers, W. and Wright, M. (1998) Measuring Organizational Performance in Strategic Human Resource Management: Problems, Prospects, and Performance Information Markets. *Human Resource Management Review*, 8,311-331.http://dx.doi.org/10.1016/S1053-4822(98)90007-9

Reichheld, F.F. and Sasser, E. (1990) Zero Defections: Quality Comes to Services. Harvard Business Review, 68, 105-111.

Ramakrishnan, K. (2010) The Competitive Response of Small, Independent Retailers to Organized Retail: Study in an Emerging Economy. Journal of Retailing and Consumer Services, 17, 251-258.

Srivastava, R.K., Fahey, L. and Christensen, H.K. (2001), The Resource-Based View and Marketing: The Role of Market-Based Assets in Gaining Competitive Advantage, Journal of Management 27(6).

Silvia, P. J. (2007). Appraisal components and emotion traits: Examining the appraisal basis of trait curiosity. *Cognition and Emotion, 22*(1), 94-113. doi:10.1080/02699930701298481

Sorescu, A., &Sorescu, S. M. (2016). Customer Satisfaction and Long-Term Stock Returns. *Journal of Marketing, 80*(5), 110-115. doi:10.1509/jm.16.0214

Solimun, S. and Fernandes, A.A.R. (2018), "The mediation effect of customer satisfaction in the relationship between service quality, service orientation, and marketing mix strategy to customer loyalty", *Journal of Management Development*, Vol. 37 No. 1, pp. 76- 87. https://doi.org/10.1108/JMD-12-2016-0315

Tidd, J. (2001). Innovation management in context: Environment, organization and performance. *International Journal of Management Reviews,3*(3), 169-183. doi:10.1111/1468-2370.00062

Westland, J. C. (2015). Partial Least Squares Path Analysis. *Structural Equation Models Studies in Systems, Decision and Control*, 23–46. doi: 10.1007/978-3-319-16507-3_3

Wold, H.O.A. (1982) Soft Modeling: The Basic Design and Some Extensions. In: Joreskog, K.G. and Wold, H.O.A., Eds., Systems under Indirect Observations: Part II, North-Holland, Amsterdam, 1-54.