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Technological innovation promoters, service quality practices and performance of SACCOs in Kenya: An integrative model

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ABSTRACT

The programmed co-operative enterprises' innovation initiatives in Kenya have been below their expectations of customers. The majority (60%) of the customers are satisfied by banking and related financial services offered by co-operative enterprises in Kenya. This is below the expectations of what the customers perceive and what is realized at the point of service delivery. This study sought to provide insights into the relationship between technological innovation promoters and performance by empirically testing the direct effect of technological innovation promoters on performance and exploring the moderation effects of service quality practices. The study is anchored on the promoter theory and collective entrepreneurship concept. The study used a self-administered questionnaire to Chief Executive Officers of 158 Savings and Credit Co-operative Societies (SACCOs). Data were analyzed by employing Statistical Software for Social Sciences (SPSS) Version 22 and structural equation modeling using AMOS version 25. The hypotheses were tested using structural equation modeling and hierarchical moderated multiple regression (MMR). Overall, the study found out that, technological innovation promoters have a positive influence on the performance of SACCOs in Kenya, and service quality practices (R2 change) is 0.153. This implied that the moderating effect of service quality practices gained 15.3% variance in the SACCOs above and beyond the variance by technological innovation promoters and performance. This study concludes that an integrative model comprising of technological innovation promoters, service quality practices and performance is a sure way of enhancing collective entrepreneurship and recommends that SACCO management together with their partners should deliberately nurture a customer relationship management culture that will enable them to realize positive performance that has been influenced by service quality practices.

Introduction

The objective of the study was to examine the relationship between technological innovation promoter and performance of SACCOs as well as the moderating effect of service quality practices. Defeating competition in any business environment and winning of new customers is the ultimate goal of any business organization. Individuals who are holders of knowledge represent a tool for the generation of innovations. Through the individuals' personal creativity, knowledge, skills and abilities, it is possible to generate new innovative ideas that will help organizations to achieve a competitive advantage over others.

The high relevance of innovations for the firm's economic success is empirically evident, especially the role of active and motivated key person called promoters, is emphasized as a critical success factor to innovation management. Until now, it can be assumed that employees take the promoter role spontaneously in a self-organized way. So far, it has not been attempted to purposefully qualify an employee as promoter (Rudinger, 2012). An effective innovation process requires types of key persons known as promoters as has been demonstrated by the literature in innovation (Hauschildt & Kirchmann, 2001; Gemünden, Salomo & Hölzle, 2007).

The aim of a technological innovation promoter is to overcome organizational ignorance by educating people about the innovation and the underpinning technology. This is a role played by Information Technologists in organizations. The defining characteristics of the gatekeepers are their technological competence and their cross-organizational relationships with other scientists. Innovations often derive from the combination of external information with internal knowledge. Crucial to the efficiency of the innovation process is the increasing involvement of technical promoters who offer the requisite knowledge and technology transfer (Albors & Hidalgo, 2009).

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Specialized innovator roles are defined by specific barriers, specific power sources, and specific value-creating contributions or functions. The technological gatekeeper is mainly active in the research and development area establishing an information and communication exchange network, filtering the information needed, assembling information from internal and external sources, and providing it to relevant members and working groups of the organization itself. The technological gatekeepers mainly import technological knowledge and distribute it within their organization (Salomo & Gemünden, 2007).

Ganesh and Haslinda (2014) opines that Service quality practices and its evolution has developed to encompass the ideology of the customer as value co-creator in the core of service marketing as the key to success in business service management for sustainable competitive advantage with customer satisfaction and retention.

Due to increase in globalization and liberalization, the environment of the country become competitive and to survive in this competition, the need of the Kenyan banking industry and other financial institutions is to develop such competitiveness through service quality. Therefore, service quality is an important aspect for banking sector just as it is important to the SACCOs. Nowadays customer retention is very much important because introducing new customer costs banks and other financial institutions more as compared to the retaining of old customer. But the customer loyalty is a must for retaining them and customer satisfaction leads to customer loyalty (Arora & Saxena, 2013).

Cooperative Societies as business enterprises in Kenya need to keep up with changing member or customer demands and regulatory requirements and the fast-changing competitive business environment (RoK, 2013). Despite the efforts being made by the savings and credit cooperatives in Kenya, to ensure the successful implementation of innovation and offering quality service in these organizations through innovation promoters, the end product has not been up to the required customer expectations. Customer satisfaction statistics show that, the overall customer satisfaction in the banking industry and other related financial institutions in Kenya is over 60 % (Kombo, 2015). This is below the expectations of what the customers perceive and what is realized at the point of service delivery. This has affected the overall performance of deposit taking Saccos in Kenya, which has remained low for the last 5 years as some have been unable to meet the regulatory requirements for licensing, member expectations and demands (RoK, 2016). This therefore means that the clients' expectations have not been met. The purpose of the study was therefore to establish how the organizational operators can play their purposeful role by institutionalizing the service quality practices in an attempt to meet the customer demands, hence customer satisfaction and loyalty.

Given the role played by the SACCOs in the economy, there is need to establish how the integration of information technology promoters and service quality practices can impact on the performance of these collective enterprises, thereby leading to customer satisfaction and loyalty.

Literature Review

Theoretical Framework

Promoter Theory and Collective entrepreneurship

The study was based on the Promoter theory put forward by Witte (1973) which stipulates that the success of innovation processes depends on overpowering certain barriers; it requires promoters who commit enthusiastically to specific innovation projects and help overcome those barriers. This theory presents a consistent explanatory framework for working with the construct of innovation barriers and provides the concept of power bases which are essential to overcoming innovation barriers (Hauschildt, 1999). Promoter theory stresses that the different specialized promoter roles do not have to be played by different individuals, but can also be combined in one person, the 'universal promoter'. Promoter theory offers a consistent and elaborate base for describing and explaining the role of transformational leaders in innovation processes; its conceptual focus on a single organization is, however, too limited in scope (Fichter, 2005).

The study was also based on Collective entrepreneurship concept. Collective entrepreneurship is a network organization that allows a diverse group of people to share the risks and the rewards associated with the discovery and exploitation of new business opportunities. Collective entrepreneurship has emerged as a viable strategy for producer enterprises to accrue economic benefits and improved market access. Producers' participation and collective action is the core of the value chain development. (Chagwiza, et al., 2011).

Empirical review

The Schumpeterian view of entrepreneurship emphasizes on the firm's ability to create new combinations like launching new products, opening up new markets, and to pioneer new methods of production (Sundqvist, et al., 2012). Schumpeter recognized and felt that entrepreneurs seek profit through innovation, transforms the static equilibrium into a dynamic process of economic development which in turn revolutionize the patterns of production by exploiting an innovation or new pattern of production.

The technological innovation promoters are techno intrapreneurs in the business organizations. They have an important role to play in enabling the organization to complying with the requisite legislations and the demands of the stakeholders in the fast-changing technological environment through supporting organizational knowledge transfer. The defining characteristics of the gatekeepers are their technological competence and their cross-organizational relationships with other scientists. Innovations often derive from the

combination of external information with internal knowledge. Crucial to the efficiency of the innovation process is the increasing involvement of technical promoters who offer the requisite knowledge and technology transfer (Albors & Hidalgo, 2009). Whelan, Teigland, Donnellan and Golden (2010) in their study of how internet technologies impact information flows in Research and Development (R&D) by reconsidering the technological gatekeeper, firmly established that technological gatekeepers to be a key node in the innovation process in acquiring, translating and disseminating external information throughout the R&D unit. However, the gatekeeper concept has received modest attention in recent times. They argued that the gatekeeper role is still vital, but no longer needs to be performed by a single individual. Instead, the modern R&D group can keep abreast of the latest technological advances through a combination of Internet-enabled internal and external communication specialists.

In Kenya, Inter-Organization Information system (IOIS) is mainly used in electronic commerce (Magutu, et al., 2011) and in supply chain management though at low levels. By electronically linking organizations together, IOIS enables them to exchange business information, which makes them gain competitive advantage by increasing their bargaining power, and by raising the switching costs of trading partners (Johnston &Vitale, 1988). It also enhances organizational quality and timeliness of information, improves efficiency (Kaefer & Bendoly, 2000) and enables entire supply chains to reduce wasteful inventories by reacting more effectively to customer demand and needs.

In a study by Chin, Lo and Ramayah (2013) investigating the moderation effect of service quality established that Service Quality (SQ) moderate the relationship between Market Orientation (MO) and performance of the hotels in Malaysia. Service Quality (SQ) exists to fill in the gap between customers' expectations and their perception of the service providers' performance that further creates differentiation and competitive advantage, which enhances MO practices and ultimately lead to improvements in the firm's performance. Alsharari, Al-Rwaily and Alsharari (2017) in their study that was aimed at examining the moderating effect of commitment to service quality on the relationship communication, customer relation management and organizational performance established that moderating role of commitment to service quality effects on the relationship between Customer Relationship Management (CRM) and organizational performance were found significant. Svinicki (2010) says that a conceptual framework is an interconnected set of ideas (theories) about how a particular phenomenon functions or is related to its parts. The framework serves as the basis for understanding the causal or correlational patterns of interconnections across events, ideas, observations, concepts, knowledge, interpretations and other components of experience. This study developed an integrative model that showed how the independent, moderating and dependent variables interrelate as shown in figure 1.

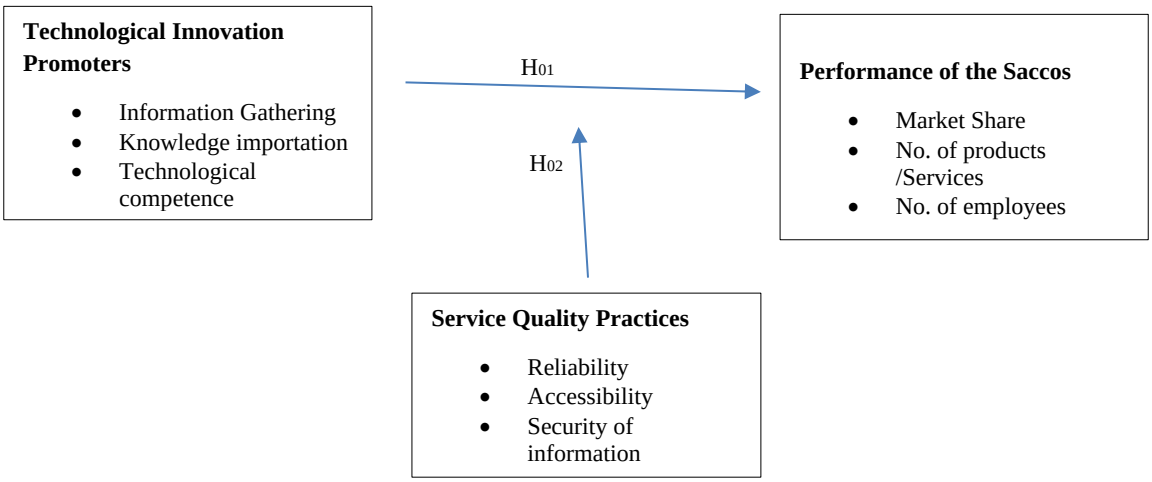

Figure 1: Hypothesized Conceptual Framework

Research Methodology

Research Design

The study employed the use of cross-sectional survey design.

Sampling

The sampling frame for the study was Sacco Societies Regulatory Authority (SASRA) where census of 158 co-operatives was conducted. Israel (2012) posits that although cost considerations make census technique impossible for large populations, a census is attractive for small populations of 200 or less.

Target Population

The target population was the Savings and Credit Co-operative Societies (SACCOs) in Kenya which draw their membership from the salaried persons in employment and rural arrangements distributed across the Country in almost all Counties. These were the Savings and Credit Co-operatives (SACCOs) that have been licensed to carry out deposit taking business by the licensing authority called Sacco Society Regulatory Authority (SASRA). An integrative model was developed and tested using data collected from the co-operative movement and specifically in the SACCO sector.

Data Collection

The data was collected using a semi-structured questionnaire which was self- administered. The closed ended questions were on a 5-point Likert-scale (1 - "strongly agree" to 5 – "strongly disagree") that were used to measure respondents' agreement with the concepts that were under investigation. Likert scales are well known in attitude measurement, where they are used to ask subjects to evaluate a set of attitude statements using scales with common categories such as strongly agree, agree, neutral, disagree, and strongly disagree. The respondents were the Chief Executive Officers of the respective SACCOs.

Pilot study was carried in 18 SACCOs to test the effectiveness of the questionnaires such that in areas where weaknesses were realised, they were rectified. This was almost 10 per cent of the SACCOs which have been licenced by Sacco Societies Regulatory Authority (SASRA) to undertake deposit-taking business. The Cronbach Alpha averaged 0.8 indicating the achievement of high reliability of the data as shown in table 1. Mertens (2010) avers that the closer the coefficient is to 1.0, the more reliable the measurements. This study adopted construct validity. Mertens advises that factor analysis can be used to validate hypothetical constructs as it attempts to cluster items or characteristics that seem to correlate highly with each other in defining a particular construct.

Table 1: Reliability of the data

Variable	Cronbach Alpha
Information gathering	0.819
Knowledge Importation	0.796
Technological competence	0.798

Eigen values criterion was used to determine the selection of factor loadings for each component. Graham and Midgley (2000) says that the larger the eigen value loading, the more important the associated principal component. In this case, the varimax with Kaiser Normalization sampling adequacy with eigen value greater than 1 were used as the rotation method because the items were uncorrelated. Montgomery, Peck and Vining (2001) recommend that a minimum factor loading of 0.40 should be used when factor analysis is used to refine construct validity. All items had factor loadings ranging from 0.647 to 0.817 as shown in table 2 below.

Table 2: Factor loadings

Variable	Factor loadings
Information gathering	0.817
Knowledge Importation	0.779
Technological competence	0.647

In order to test the study hypothesis, structural equation modeling (SEM) was used with the aid of Amos version 25 software. A structural model was to test the simple relationship between Technological Innovation promoters and performance and the testing of hypotheses. The hypotheses in this study were tested using structural equation modeling and hierarchical moderated multiple regression (MMR).

Hypotheses tested

H_{01}: Technological innovation promoters have no significant effect on performance of savings and credit cooperative societies.

H_{02} : Service quality practices do not have moderating effect on the relationship between technological innovation promoters and performance of SACCOs

Data Analysis and Discussions

Technological innovation promoters are operationalized as investment in information infrastructure and clear Information, Communication Technology (ICT) policies. The results in Table 3 show that majority (98.7%) of the respondents agrees that the SACCOs have invested in information technology infrastructure while (96%) agree that the societies have clear policies on ICT as confirmed by Figure 2.

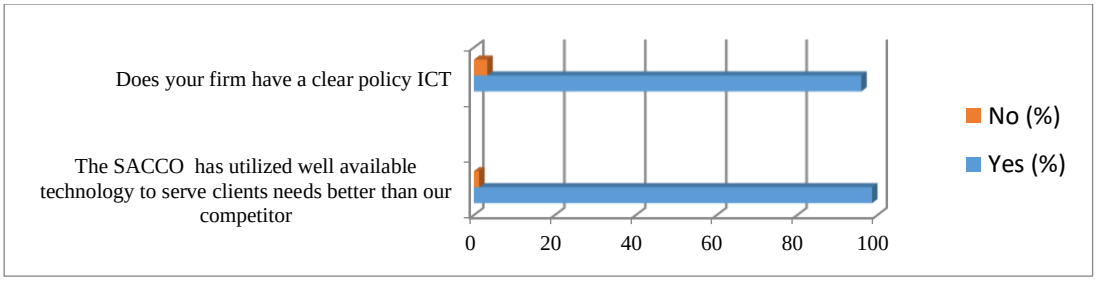

Figure 2: Information, Communication Technology (ICT) policies

In his study, Omondi (2013) found that there is a strong positive correlation between technological innovation and the performance of MFIs in Kenya financially. Hence variability of the dependent (financial performance) was explained to a large extent by the technological innovation. Being the market leader in terms of profitability, Safaricom Limited for instance attributes its success to innovation and information technology and has continued to reap huge profits over the last couple of years. Safaricom, looks for ways to delight their customers. They aim to be the best through innovative technology, products and services, launching exciting new promotions, and offering exceptional customer experiences (Safaricom Strategic Review, 2014). Sarri, Bakouros and Petridou (2010), oppose that the ability of any organization to grow is dependent on the capability to generate new ideas and utilize them effectively for the long-term benefit of the organization. They argue that innovation is regarded as the means of gaining and sustaining a competitive advantage and to have an impact on employment rate and wealth creation. The technological innovation promoters in business organizations excel because of their ability to Information gathering from the external environment. In terms of Descriptive statistics**,** Table 3 indicates the index on whether the societies gather information in regards to technology as far as information gathering is concerned. This index had the lowest mean score (Mean=1.530, SD=.630). The results show that the average mean for information gathering had an average mean score of 1.702 and standard deviation of 0.629 meaning that the respondents were in agreement that SACCOs gather information about emerging technological issues they wish to implement in the Cooperative Society.

Table 3: Information Gathering Descriptive statistics

Information Gathering	1	2	3	4	5	Mean	Std. Deviation
Technology Innovation promoter searches, filters, evaluates and retains relevant information and passes them on specifically	51.7%	45.7%	1.3 %	0.7 %	0.7 %	**1.530**	**0.630**
Technology innovation promoter translates and interprets information in the innovation-related communication process.	25.8%	69.5%	4%	0.7 %		**1.795**	**0.533**
Technology innovation promoter ensures that control and use of resources and information are goal-oriented.	43%	49.7%	6%	1.3 %		**1.656**	**0.654**
Technology innovation promoter takes up good ideas and checks them regarding their strategic fit.	31.1%	57.6%	9.3 %	1.3 %	0.7 %	**1.828**	**0.700**
Average mean score						**1.702**	**0.629**

Key: *1=SA (Strongly Agree), 2= A (Agree), 3=N (Neutral), 4= D (Disagree), 5=SD*

While rightly determining needed technology and management stands out as an important element of innovation management, the human and structural adjustment of the organization is also gaining importance in innovation performance. In the global competitive environment, organizational and managerial innovations are the keys to success for companies. While technology and research and development activities significantly influenced the organizational structure and culture, right innovation management provides a competitive advantage through information gathering (Dereli,2015). Knowledge importation is a key aspect of technological advancements in business enterprises. New ideas imported from the other is key to developing new products which will eventually lead to improvement in the services delivered to the clients (members. Table 4 illustrated factors that co-operative societies have sought in relation to knowledge importation, a lowest mean of 1.649 and standard deviation of .602 was recorded. The results show that the average mean for knowledge importation had an average mean score of 1.859 and standard deviation of 0.779.

Table 4: Knowledge Importation Descriptive statistics

Knowledge Importation	1	2	3	4	5	Mean	Std. Deviation
Technology innovation promoter prepares compromises between the participants.	25.8%	45%	22.5%	5.3%	1.3%	**2.113**	**0.898**
Technology innovation promoter promotes to a high degree information exchange between the participants.	41.7%	51.7%	6.6%			**1.649**	**0.602**
Technology innovation promoter guarantees that all partners can bring in their ideas and opinions	40.4%	42.4	13.2%	3.3%	0.7%	**1.815**	**0.836**
Average mean score						**1.859**	**0.779**

Key: *1=SA (Strongly Agree), 2= A (Agree), 3=N (Neutral), 4= D (Disagree), 5=SD*

With the passage of time organizations are facing growing trends, it has become the essential need of the organization to take on the operations efficiently, world is moving with a rapid pace and it has become a global village and to compete with organizations and in order to move forward it is utmost necessary that organizations should implement such kind of healthy practices that should help produce maximum outputs (Arshad, Asif, & Baloch, 2012). This can only be achieved through knowledge importation where ideas are borrowed, shared and implemented for the betterment of business organizations. Technological Competence is a key construct of technological innovation promoter is analysed descriptively statistics as shown in the table 5 and indicates that the index on whether the societies technology competence contribution in regards to technology as far as information technology competence is concerned this index had the lowest mean score (Mean=1.656, SD=.601). The results show that the average mean for information gathering had an average mean score of 1.720 and standard deviation of 0.605. Agha, Alrubaiee and Jamhour (2012) say that in highly competitiveness market core competence has emerged as a central concept for competitive strategy. Core competence is the knowledge set that distinguishes a firm and provides a competitive advantage over others.

Table 5: Technological Competence Descriptive statistics

Technological Competence	**1**	**2**	**3**	**4**	**5**	**Mean**	**Std. Dev**
Technological innovation promoter has a specialized knowledge needed for the improvement of performance	40.4%	54.3%	4.6%	0.7%		**1.656**	**0.601**
Technological gatekeepers have technological competence to make use of information gathered	29.8%	57.6%	12.6%			**1.828**	**0.630**
Technological innovation promoters have technical competence to perform the translation of ideas into practicability	29.8%	57.6%	12.6%			**1.676**	**0.584**
Average mean score						**1.720**	**0.605**

Key: *1=SA (Strongly Agree), 2= A (Agree), 3=N (Neutral), 4= D (Disagree), 5=SD*

A study by Nkuru (2015) geared towards investigating factors affecting the growth of SACCOs within the Agricultural sector in Kenya, failed to established the effect of technology on performance of SACCOs yet it is a variable under consideration by this study. Mang'ana and Muturi (2015) conducted a study to examine the extent to which SACCOs operating in Kisii County have invested in IT to achieve sustainable competitive advantage over rivalry with other competitors. SACCOs can only have competitive advantage when they use their core technological competencies to excel in areas where their competitors have not excelled in, hence the need to use the individual SACCO's unique competency to triumph over their colleagues.

Relationship between Technological Innovation Promoters and Performance of Cooperative Societies in Kenya

The objective of the study was to examine the extent to which the technological innovation promoters contribute to the performance of savings and credit cooperative societies. In order to assess whether the model provided adequate fit for the data, the study considered both absolute fit indices and incremental fit indices (Hair *et al.,* 2010). For absolute fit indices the study used root mean square error of approximation (RMSEA), goodness of fit index (GFI) and adjusted goodness of fit index (AGFI) (Hair *et al.,* 2010). For incremental fit indices, Comparative Fit Index was used (Hair *et al*., 2010). These fit indexes were used to verify that the model was adequate (Browne & Cudeck, 2003). This was generated using AMOS 25 software. RMSEA values range from 0 to 1 with a smaller RMSEA value indicating better model fit (Marsh, *et al.,* 2011). Good model fit is typically indicated by an RMSEA value of 0.05 or less (Hu & Bentler, 1999), but a value of 0.08 or less is often considered acceptable (Browne & Cudeck, 2003). RMSEA value of less than 0.05 is considered excellent, 0.05 to 0.08 is good while 0.08 to 0.10 is acceptable (Hu & Bentler, 1999). Table 4 shows RMSEA of 0.07. This shows an acceptable model fit (Hu & Bentler, 1999).

The selected absolute and incremental fit indices of the structural model are shown in table 6. In this table the fit indices of the Structural model are provided alongside their respective cut-off point for easy comparison. The goodness of fit index (GFI) is a measure of fit between the hypothesized model and the observed covariance matrix (McDonald & Ho, 2002). The adjusted goodness of fit index (AGFI) corrects the GFI, which is affected by the number of indicators of each latent variable (McDonald & Ho, 2002). The GFI, AGFI and CFI fit indexes should be greater or equal to 0.8 (McDonald & Ho, 2002). Table 4 shows GFI of .957, AGFI of .887 and CFI index of .976 generally indicating acceptable model fit (Baumgartner & Hombur, 2006).

Table 6: Fit indices of the structural model connecting TI and performance constructs

Fit indices	**NFI**	**GFI**	**AGFI**	**CFI**	**RMSEA**
Statistic	.836	.957	.887	.976	.07
Threshold	≥ 0.8	≥ 0.9	≥ 0.8	≥ 0.9	≤ 0.08

The structural Equation Model (SEM) for the objective is depicted in figure 3. The path diagram displays the regression weights as path coefficients from the observed indicators to the sub-constructs to the study variables to explain the contribution of each the indicators on each sub dimension of technological promoters and performance and further explain the contribution of the sub-dimensions to the study constructs. The path diagram also explains the effect (contribution) of Technological Innovation Promoters

on performance. The figure shows the path coefficient from Technological Innovation Promoters on performance to be 0.306 (β=0.306). Table 7 is a further statistical analysis of the estimated regression weights with critical ratios to assess the significance of the estimates. The results show that Technological Innovation Promoters have a significant positive effect on performance of cooperative societies (β=.306, /CR/=3.470, p-value =.000). On the table, the *** reflect estimates with p-values less than 0.05. The regression weight 0.306 has a CR of 3.470 that is greater than the 1.96 standard normal distribution Z-score at 5% level of significance which implies that the coefficient estimate is significant at 5% level of significance.

$Y = 0.306X + \varepsilon$

Where;

Y is the performance of Saccos, X is the levels technological innovation promoters
ε is the error term

The significant positive coefficient estimate means that a unit increase in technological innovation promoters is associated with 0.306 increase in performance of SACCOs. The fitted structural model was used to test the hypothesis on the relationship between Technological Innovation promoters and performance.

Table 7: Regression Weights/ Technological Innovation Promoters on performance

Regression path			Estimate	S.E.	C.R.	P
Performance	<--	Technological Innovation	.306	.088	3.470	***
Market share	<--	Performance	.719			
No. of Products & S	<--	Performance	1.193	.340	3.512	***
No. of Employees	<--	Performance	1.590	.469	3.388	***
Knowledge importation	<--	Technological Innovation	.988	.206	4.806	***
Technological competence	<--	Technological Innovation	.525	.132	3.979	***
Information gathering	<--	Technological Innovation	.817			
MS-asset base	<--	Market share	.451	.064	7.071	***
MS-loans	<--	Market share	.916			
PS-registration	<--	No. of Products & S	.806			
PS-quality service	<--	No. of Products & S	.637	.106	5.989	***
PS-products	<--	No. of Products & S	.697	.124	5.642	***
E-training	<--	No. of Employees	.818			
E-employee turnover	<--	No. of Employees	-1.894	.356	-5.320	***
E-number	<--	No. of Employees	2.678	1.204	2.224	.026
TIP-searches	<--	Information gathering	.691	.120	5.739	***
TIP-translate	<--	Information gathering	.539	.099	5.436	***
TIP-control	<--	Information gathering	.475	.112	4.232	***
TIP-good ideas	<--	Information gathering	.692			
TIP-prepares	<--	Knowledge importation	.702			
TIP-exchange	<--	Knowledge importation	.329	.089	3.692	***
TIP-guarantees	<--	Knowledge importation	.810	.148	5.486	***
TIP-Knowledge	<--	Technological competence	.685			
TIP-competence	<--	Technological competence	.196	.135	1.459	.145
TIP-Translation	<--	Technological competence	.564	.163	3.453	***
MS-membership	<--	Market share	.683	.076	8.956	***

H_{01}: Technological innovation promoters have no significant effect on performance of savings and credit cooperative societies.

The Critical ratio of the coefficient estimate of technological innovation in the model was found to be greater than the standard normal distribution Z-score at 5% level of significance (/CR/=3.470>1.96). The null hypothesis was thus rejected and a conclusion drawn that Technological innovation promoters have a significant effect on performance of savings and credit cooperative societies (SACCOs). Ye and Wang (2013) established that IT alignment and information sharing have direct and positive effects on operational performance. The results are in line with the results of the studies conducted by Saunila (2014) which investigated innovation capability aspects on both financial and operational performance. The study established that the aspects of innovation capability have an influence on financial performance. The study demonstrated the important aspects of innovation capability that directly influence firm performance.

Moderating Role of Service Quality practices on the relationship between Technological Innovation and Pperformance of cooperative Societies

H_{02} Service quality practices do not have moderating effect on the relationship between technological innovation promoters and performance of SACCOs

A moderated multiple regression (MMR) analysis was fitted with technological innovation promoter as the only independent variable to test for the moderation effect of Service Quality practices on the relationship between Technological Innovation promoters and

the performance of SACCOs. The results in table 8 show that model 1 has an R-square of 0.512 which implies that 51.2% of the variance in performance of the SACCOs is explained by the variations in technological innovation promoters as the only predictor in model 1. The R-square change in model 2 had a p-value less than 0.05 and subsequently, the R-square change in model 3 due to the simultaneous introduction of all the interactions term was 0.153. The R-square change was attributed to a significant F-change ($F_{(1,147)}$ =70.020. p=.000). This implied that, the moderating effect of service quality practices gained 15.3% variance in the SACCOs, above and beyond the variance by technological innovation promoters and performance. This means that, service quality practices are key performance enhancers of SACCOs in Kenya.

Table 8: Model Summary/ Technological Innovation, Service Quality and performance

Model	R	R Square	Adjusted R Square	Std. Error of Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.716a	.512	.509	.701	.512	156.365	1	149	.000
2	.726b	.527	.521	.692	.015	4.642	1	148	.033
3	.824c	.680	.673	.571	.153	70.020	1	147	.000

a. Predictors: (Constant), Technological innovation promoter (X1)
b. Predictors: (Constant), Technological innovation promoter (X1), Service quality practices (Z)
c. Predictors: (Constant), Technological innovation promoter (X1), Service quality practices (Z), X1_Z

Table 9 table shows the fit indices of the Structural model. The goodness of fit index (GFI) is a measure of fit between the hypothesized model and the observed covariance matrix (McDonald & Ho, 2002). The adjusted goodness of fit index (AGFI) corrects the GFI, which is affected by the number of indicators of each latent variable (McDonald & Ho, 2002). The GFI, AGFI and CFI fit indexes should be greater or equal to 0.8 (McDonald & Ho, 2002). The table 9 below shows GFI of .966, AGFI of .878 and CFI index of .966 generally indicating acceptable model fit (Baumgartner & Hombur, 2006).

Table 9: Model fit indices- Technological Innovation, Service Quality and performance

Fit indices	**NFI**	**GFI**	**AGFI**	**CFI**	**RMSEA**
Statistic	**.826**	**.956**	**.878**	**.966**	**.07**
Threshold	**≥ 0.8**	**≥ 0.9**	**≥ 0.8**	**≥ 0.9**	**≤ 0.08**

The structural Equation Model (SEM) for this moderated model is depicted by the path diagram in figure 4. The path diagram also explains the effect (contribution) of Technological Innovation Promoters and Service Quality on performance. The figure also explains the effect of the interaction term between the two on performance. It shows that the path coefficient from interaction term on performance to be 0.143.

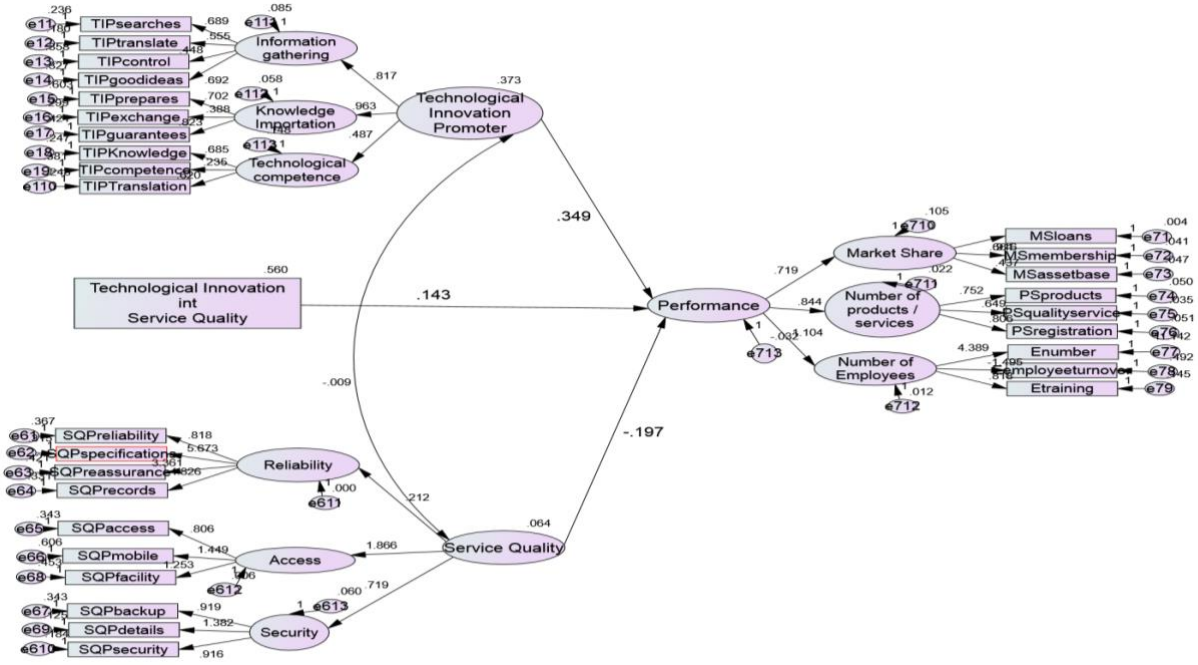

Figure 4: Moderated SEM path diagram for Technological Innovation, Service Quality and performance

Table 10 is a further statistical analysis of the estimated regression weights with critical ratios to assess the significance of the estimates. The Critical ratios were used to test the significance of the coefficient estimates. The results of this SEM model support the results from the MMR model as it also revealed a significant moderating effect due to the introduction of the interaction term. Both technological innovation (β=0.349, /C.R./= 4.511, p=0.019) and service quality (β=-0.197, /C.R./= 2.427, p=0.015) have significant regression weights as shown by the critical ratios above 1.96. The regression weights of the interaction between service quality and technological innovation promoters (β=0.143, C.R.= 5.525, p=***) also had a Critical ratio greater than the 1.96 standard normal Z-score this implied that service quality practices significantly moderate the relationship between performance and technological innovation promoters.

Table 10: Moderated Regression Weights for the SEM on Technological innovation, Service Quality and performance

			Estimate	**S.E.**	**C.R.**	**P**
Performance	<---	Technological Innovation	.349	.077	4.511	***
Performance	<---	X1_Z	.143	.026	5.525	***
Performance	<---	SQ	-.197	.081	-2.427	.015
MS	<---	Performance	.719			
PS	<---	Performance	.844	.182	4.635	***
NoE	<---	Performance	1.104	.251	4.393	***
IG	<---	Technological Innovation	.817			
KI	<---	Technological Innovation	.963	.205	4.695	***
TC	<---	Technological Innovation	.487	.130	3.740	***
Reliability	<---	SQ	.212	.278	.761	.446
Access	<---	SQ	1.866	.596	3.132	.002
Security	<---	SQ	.719			
MSassetbase	<---	MS	.437	.062	7.106	***
MSloans	<---	MS	.916			
PSregistration	<---	PS	.806			
PSqualityservice	<---	PS	.649	.111	5.840	***
PSproducts	<---	PS	.752	.131	5.738	***
Etraining	<---	NoE	.818			
Eemployeeturnover	<---	NoE	-1.495	.319	-4.690	***
Enumber	<---	NoE	4.389	1.251	3.507	***
TIPsearches	<---	IG	.689	.120	5.728	***
TIPtranslate	<---	IG	.555	.100	5.546	***
TIPcontrol	<---	IG	.448	.111	4.029	***
TIPgoodideas	<---	IG	.692			
TIPprepares	<---	KI	.702			
TIPexchange	<---	KI	.388	.097	4.005	***
TIPguarantees	<---	KI	.823	.157	5.251	***
TIPKnowledge	<---	TC	.685			
TIPcompetence	<---	TC	.235	.145	1.621	.105
TIPTranslation	<---	TC	.620	.183	3.385	***
MSmembership	<---	MS	.661	.071	9.350	***
SQPbackup	<---	Security	.919	.243	3.783	***
SQPsecurity	<---	Security	.916			
SQPaccess	<---	Access	.806			
SQPmobile	<---	Access	1.449	.279	5.199	***
SQPfacility	<---	Access	1.253	.241	5.198	***
SQPreliability	<---	Reliability	.818			
SQPspecifications	<---	Reliability	5.673	7.381	.769	.442
SQPreassurance	<---	Reliability	3.361	4.477	.751	.453
SQPdetails	<---	Security	1.382	.319	4.330	***
SQPrecords	<---	Reliability	4.826	6.302	.766	.444

Conclusions

The study established that, there is a significant relationship between Technological Innovation Promoters and performance of SACCOs in Kenya. The regression weights of the interaction between service quality and technological innovation promoters (β=0.143, C.R.= 5.525, p=***) also had a Critical ratio of 5.525 which is greater than the 1.96 standard normal Z-score this implied that service quality practices significantly moderate the relationship between technological innovation promoters and performance. This means that with the adherence to service quality practices, the performance of SACCOs in Kenya is likely to improve. The integration of service quality practices as part of the entrepreneurial culture in the SACCOs is a sure way of ensuring positive performance.

Reliability, a service quality component, is usually seen as a core aspect for service firms and if utilized well, customer retention is a guarantee. Reliability helps in building a healthy customer relationship that contributes to customer base growing because of

referrals. Kersten and Koch (2010) emphasized how reliability component contributes to firm performance through time delivery, solving customer problems, doing right the first time and delivering damage-free goods. This component, therefore, cannot be ignored by entrepreneurial SACCOs who are keen on enhancing their performance through customer experience.

Olorunniwo and Hsu (2006) in their study of "A typology analysis of service quality, customer satisfaction and behavioural intentions in mass services" established that, accessibility" a service quality dimension, significantly contributes to firm performance since the customers are able to access the services they require with ease and at their convenience. Accessibility of SACCO services by customers at their own pace without any hindrances makes them customer centric in the way they are managing their processes.

Security of information, another service quality dimension, is key for customer-oriented SACCOs that are keen on growing their customer base. Customers would develop confidence with how their transactions are being managed by SACCOs if they get to know that, the SACCO employees are observing a code of conduct when handling customers' information. These service quality practices, (especially accessibility and security of information) are important in accelerating the adoption rate of online services such as internet banking which is a key enhancer of firm performance (Raviadaran, et al.,2019).

Technology-based self- service has greatly changed the way that service firms and consumers interact in providing consumers with a superior experience with respect to the interactive flow of information and security of the service. Entrepreneurial firms that have entrepreneurial culture cannot ignore service quality practices in their day to day operations. SACCOs being financial institutions must offer reliable, accessible and secure services to their clientele and this can only be achieved by integrating the technological innovations in the operations of these collective enterprises (SACCOs).

This study concludes that, an integrative model comprising of technological innovation promoters, service quality practices and performance is a sure way of enhancing collective entrepreneurship. Having entrepreneurial SACCOs in Kenya, will reduce poverty levels amongst Kenyans who rely on them in growing their asset base. This integrative model enhances the innovation capability of SACCOs in Kenya, hence making them competitive locally and internationally. A technologically competent SACCO will deliver on reliability, accessibility and security of information all the time. An innovative SACCO will be competitive in-service provision. This is in line with the Abernathy and Utterback (1978) model where competitive environment and organizational structure were all interacting and closely linked and they found out that, the institution innovation will pass through phases, each of them impacting differently on performance. Co-operative societies in Kenya that purposely qualify an employee as a promoter are assured of process and service innovations that will enhance customer experience. This is in line with the Incremental and Radical Innovation theory. The integrative model argues that, incumbents will be in a better position if the innovation is incremental since they can use existing knowledge and resources to leverage the whole innovation process.

The study therefore recommends that, the cooperative societies in Kenya need to invest more on an effective innovation process that will enable technological promoters to embrace service quality practices that will ensure positive performance. Co-operative societies customers would like to deal with employees who make them have memorable experiences. Co-operative societies in Kenya should think of integrating technological promoters and service quality practices components in their management model. Entrepreneurial SACCOs that have invested in training employees to be technological promoters should also think of introducing omnichannel banking services. Omnichannel technology builds on Big data allowing clients to transact or shop with the Saccos through multiple channels including desktop or mobile device, telephone or in a brick -and- mortar store. This enhances adoption of dynamic service quality practices.

References

Agha, S., Alrubaiee, L. & Jamhour, M. (2012). Effect of Core Competence on Competitive Advantage and Organizational Performance. *International Journal of Business and Management,* 7(1) 204. https://doi.org/10.5539/ijbm.v7n1p192

Abernathy, W. & Utterback, J, M., (1978). Patterns of Industrial Innovation. *Technology Review. 80*(7), 40-47.

Albors, J. & Hidalgo, A. (2009). KISA in low tech traditional sectors as technological innovation Sectors. *3rd International Conference on Industrial Engineering and Industrial Management XIII Congreso de Ingeniería de Organización. Barcelona- Terrassa,September2nd-4th2009.* https://www.researchgate.net/publication/49911289

Alsharari, A, Y. S., Al-Rwaily, F. M. & Alsharari, A. (2017). The Moderating Effect of Commitment to Service Quality on the relationship between Communications, Customer Relationship Management and Organizational Performance: Evidence from the Kingdom Saudi Arabian Hospitals. *International Journal of Academic Research in Business and Social Sciences 2017, 7(10).* DOI: 10.6007/IJARBSS/v7-i10/3385

Arora, D. & Saxena, A. (2013). Interrelationship of Service Quality Aspects, Customer Satisfaction and Customer Loyalty in Banking Sector of India: A Study of Retail Banking Sector. IMPACT: *International Journal of Research in Business Management* 1(4), 1-8

Arshad, S., Asif, R. & Baloch, M. A. (2012). The impact of "Fairness" In working conditions on organizational performance in Pakistan telecommunication company, limited, Pakistan. *International Journal of Economics and Management Sciences*, 2 (4), 10- 19.

Baumgartner, H. & Hombur, C. (2006). Applications of Structural Equation Modeling in Marketing and Consumer Research: A review. *International Journal of Research in Marketing, 13,* 139-161. DOI: 10.1016/0167-8116(95)00038-0

Browne, M. W.& Cudeck, R. (1989). Single Sample Cross-Validation Indices for Covariance Structures. *Multivariate Behavioural Research.* 24, 445-455.

Chagwiza, C., Muradian, R., Ruben, R., & Tessema, W. (2011). *Collective Entrepreneurship: A Comparison between two Producer Organisations in the Ethiopian Honey Sector; paper prepared for the EMNet 2011 in Cyprus.* Nijmegen, Netherlands: Centre for International Development Issues.

Chin, C.H., Lo, M.C. & Ramayah, T. (2013). Market Orientation and Organizational Performance: The Moderating Role of Service Quality. SAGE Open; October-December 2013: 1–14.DOI: 10.1177/2158244013512664

Dereli, D.D. (2015). Innovation Management in Global Competition and Competitive Advantage. *Procedia - Social and Behavioural Sciences* 195 (2015) 1365 – 1370

Dodgson, M., Gann, D. & Salter, A. (2008). *The management of technological innovation: Strategy, Entrepreneurship and practice.* Oxford: Oxford University Press. *(5), PP 61- 72.*DOI: 10.1007/s11365-009-0131-6

Fichter, K. (2005) Innovation Communities. Die Rolle von Promotorennetzwerken bei Nachhaltigkeitsinnovationen.In: Pfriem, R., Antes, R., Fichter, K., Mu¨ ller,M., Paech, N., Seuring, S. and Siebenhu¨ ner, B. (eds):*Innovationen fur Nachhaltige Entwicklung*. Wiesbaden:Deutscher Universita¨ ts Verlag, pp. 287–300.

Ganesh, R, & Haslinda, A. (2014). Evolution and Conceptual Development of Service Quality in Service Marketing and Customer Satisfaction. *International Review of Management and Business Research*. 3(2).

Gemünden, H. G, Salomo, S & Hölzle, K. (2007). Role Models for Radical Innovations in Times of Open Innovation. *Creativity and Innovation Management*,16(4),408-420. doi:10.1111/j.1467-8691.2007. 00451.x

Graham, D. J. & Midgley, N. G. (2000). Graphical representation of particle shape using triangular diagrams: an Excel spreadsheet method. *Earth Surface Processes and Landforms*, 25(13),1473-1477. https://doi.org/10.1002/1096-837(200012)25:13<1473::AID-ESP158>3.0.CO;2-C

Hair,J. F., Black, W. C., Babin. B. J., & Anderson, R. E. (2010). *Multivariate Data Analysis* (5th Ed.). New Jersey: Pearson Prentice Hall.

Hauschildt, J. & Kirchmann, E. (2001). Teamwork for innovation - the 'troika' of promotors. *R.&D Management, 31*(1), 41-49. https://doi.org/10.1111/1467-9310.00195

Hu, L. T., & Bentler, P. M. (1999). Evaluating Model Fit. *Structural Equation Modeling: Concepts, Issues, and Applications.* Thousand Oaks, CA: Sage.

Israel, G. D. (2012, 06 12). *Sampling: Determining sample size*. Retrieved 05 13, 2013, from University of Florida IFAS Extension: http://edis.ifas.ufl.edu/pd006

Johnston, H.R., & Vitale, M.R. (1988). Creating Competitive Advantage with Inter- organization Information Systems. MIS Quarterly (12: n), June 1988, 153-165. *Journal of Information Technology*, 22, 5-13. DOI:10.2307/248839

Kaefer, F., & Bendoly, E. (2000). The adoption of electronic data interchange: a model and practical tool for managers. *Decision Support Systems*, 30(1), 23–32. doi:10.1016/s0167-9236(00)00087-7

Kersten, W.& Koch, J. (2010). The effect of quality management on the service quality and business success of logistics service providers. *International Journal of Quality &Reliability Management*, 27(2), 185 – 200. http://dx.doi.org/10.1108/02656711011014302

Kombo, F. (2015). Customer satisfaction in the Kenyan banking industry. *Journal of International Studies*, Vol. 8, No 2, 2015, pp. 174-186. DOI: 10.14254/2071-8330.2015/8-2/15. *DOI*: *10.14254/2071-. 8330.2015/8-2/15*

Magutu P.O., Mwangi M., Nyaoga B.R., Ondimu, G.M., Kagu M., Mutai K., Kilonzo H. &Nthenya P. (2011). E-Commerce Products and Services in the Banking Industry: The Adoption and Usage in Commercial Banks in Kenya. *Journal of Electronic Banking Systems*.xx,pp1-8. http://www.ibimapublishing.com/journals/JEBS/2011/678961/678961.pdf

Marsh, H.W., Balla, J.R. & McDonald, R.P. (2011). Goodness-of-fit Indexes in Confirmatory Factor Analysis: The Effect of Sample Size. *Psychological Bulletin* 103 (3), 391–410.

McDonald, R. P., & Ho, M. R. (2002). Principles and practice in reporting structural equation analyses. *Psychological Methods*, 7, 64-82. doi:10.1037/1082-989X.7.1.64

Mertens, D. M. (2010). *Research & Evaluation in Education and Psychology: Integrating Diversity with Quantitative, Qualitative & Mixed Methods*. London: Sage Publications.

Montgomery, D. C., Peck, E. A., & Vining, G. G. (2001). *Introduction to Linear Regression Analysis* (3rd ed.). New York: John Wiley.

Nkuru, F.G. (2015). Factors Affecting Growth of Saccos Within the Agricultural Sector in Kenya, a case of Meru Farmers SACCOs. *Global Journal of Commerce & Management Perspective*, 4(1):34-45, ISSN :2319-7285, Jan - Feb 2015

Olorunniwo, F. & Hsu, M.K. (2006). A typology analysis of service quality, customer satisfaction and behavioural intentions in mass services. *Managing Service Quality*, 16(2) 106-123. DOI: 10.1108/09604520610650600

Omondi, B. (2013). Effects of Technological Innovations on the financial performance of the Micro Finance Institutions in Kenya. Unpublished MBA project, UoN

Raviadaran, H., Dastane, O., Ma'arif, M. Y.& Mohd Satar, N. S. (2019). Impact of Service Quality Dimensions on Internet Banking Adoption, Satisfaction and Patronage. *International Journal of Management, Accounting and Economics*, 6(10), 709-730.

Republic of Kenya. (2013). *Sasra database Annual Report*. Nairobi: Sacco Societies Regulatory Authority

Republic of Kenya. (2016). *Economic Survey*. Nairobi: Kenya National Bureau of Statistics

Rudinger, G. (2012). Can one purposefully foster innovation? An empirical evaluation of a pilot training as innovation promotor. *Lehrstuhl für Ingenieurpsychologie und kognitive Ergonomie*

Safaricom (2014). *Safaricom Strategic Review*. Nairobi: Annual Report

Saunila, M. (2014). The Role of Innovation Capability in Achieving Higher Performance. Innovation: Management, Policy & Practice, 6, 654-765.

Sundqvist, S., Kylaheiko, K., & Kuivalainen, O. (2012). Kirznerian and Schumpeterian entrepreneurial-oriented behaviour in turbulent export markets. *International Marketing Review, 29 (2), 203-219.* DOI: 10.1108/02651331211216989

Svinicki, M.D. (2010). Guide on Conceptual Frameworks for Research in Engineering Education. University of Texas. NSF DUE-0341127, DUE-0817461, 2010

Whelan, E., Teigland, R., Donnellan, B.& Golden, W. (2010). How Internet technologies impact information flows in R&D*: reconsidering the technological gatekeeper. R&D Management,40(4), 400–413.* doi:10.1111/j.1467-9310.2010. 00610

Witte, E. (1973). Power and innovation: a two-centre theory, *International Studies of Management & Organization*, 7(1): 47–70. https://doi.org/10.1080/00208825.1977.11656219

Ye, F., & Wang, Z. (2013). Effects of information technology alignment and information sharing on supply chain operational performance. *Computers & Industrial Engineering, 65(3), 370–377.* DOI: 10.1016/j.cie.2013.03.012