

The influence of information sharing, supplier trust and supplier synergy on supplier performance: The case of small and medium enterprises

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Background: The assessment of supplier performance is an important activity for small to medium enterprises (SMEs) as they adopt and implement plans and policies aimed at enhancing their performance in order to achieve sustainable competitive advantages.

Objectives: The purpose of this study was to examine the influence of information sharing, supplier trust and supplier synergy on supplier performance in SMEs.

Method: A quantitative research design was adopted in which a survey questionnaire was administered to a sample of 309 owners and managers of SMEs based in southern Gauteng, South Africa. A confirmatory factor analysis was undertaken to assess the properties of the measurement scale. Hypotheses were tested using the path modelling technique.

Results: Information sharing exerted a moderate positive and significant influence on supplier trust and a weak but significant influence on supplier synergy. Supplier synergy had a strong positive and significant influence on supplier performance. However, the influence of supplier trust on supplier performance was weak and insignificant.

Conclusion: The study provides a useful framework for analysing the interplay between information sharing, supplier trust, supplier synergy and supplier performance in SMEs.

Introduction

As businesses look for ways to excel in today's highly competitive world, they come to appreciate the need to look beyond their immediate environments and to consider their role in the supply chains within which they operate. The more buying firms improve their own efficiency, the more they recognise the need to pay attention to the efficiency or otherwise of their suppliers and their suppliers' suppliers. Not surprisingly, supplier performance and the factors contributing towards it have attracted the attention of managers, practitioners and researchers alike. To this end, the factors influencing supplier performance have been examined in a number of previous studies. For example, Prahinski and Benton (2004:39) considered the relationship between communication strategies and supplier performance, whilst Wu, Choi and Rungtusanatham (2010:115) investigated the implications of supplier performance in the supplier-supplier relationships in buyer-supplier-supplier triads. Aksoy and Ozturk (2011:6351) focused on the relationship between supplier selection and performance whilst Mols, Hansen and Villadsen (2012:874) investigated the effect of internal production on supplier performance. A common thread underlying the results of these studies is the enduring influence of supplier performance on business performance.

Enhancing supplier performance calls for the strengthening of buyer-supplier relationships (Talluri & Sarkis 2002:4257). Supplier performance may be perceived as how well a supplier is able to provide the required products to the buyer as evidenced through operational outcomes such as quality, delivery, responsiveness, cost and technical support (Wu *et al.* 2010:116). Ho *et al.* (2012:7108) add that other factors that may be associated with supplier performance include supplier trust, synergy and information sharing. As observed by some scholars (Kim 2000:388; Nielsen & Nielsen 2009:1031) supplier trust is crucial in establishing long-term buyer-supplier relationships. Therefore, the relevance and importance of supplier trust as a possible factor in enhancing supplier performance is worthy of investigation.

Supplier synergy is an important factor in that it enables supply chain partners to collaborate with each other with a view to achieving common goals, by for example sharing or acquiring resources and expertise that other parties may lack (Osarenkhoe 2010:201), resulting in improved efficiency and enhanced overall supplier performance (Krause, Handfield & Tyler 2007:528; Wong, Lai & Ngai 2009:47). Moreover, supplier trust and supplier synergy also depend to a large extent on

information sharing (Hartono *et al.* 2010:399; Nicolaou, Ibrahim & Van Heck 2013:986). Relevant information shared between supply chain members requires suppliers to trust and rely on their partner's capability to operate. Thus, there is seemingly an interplay between information sharing, supplier trust and supplier synergy and all these factors seem to be critical for improving supplier performance.

The aim of this study is to determine the influence of information sharing, supplier trust and supplier synergy on supplier performance amongst small to medium enterprises (SMEs). The study was conducted within the population of SMEs in southern Gauteng, South Africa. To achieve this aim, four objectives were set: (1) to determine the influence of information sharing on supplier trust, (2) to determine the influence of information sharing on supplier synergy, (3) to determine the influence of supplier trust on supplier performance and (4) to determine the influence of supplier synergy on supplier performance. For the purposes of this study, SMEs are defined as firms in which the owners are directly involved in management and which employ a maximum of 500 employees (Mahadea & Pillay 2008:435). There have been few studies conducted on supplier performance from the South African perspective, apart from some which focused on buyer-supplier collaboration (e.g. Parker 2007:207; Poee & Mathu 2011:316) and the impact on information sharing and trust in enabling supply chains (e.g. Piderit, Flowerday & Von Solms 2011:473). The majority of studies on supplier performance were conducted within the European and North American contexts, with few focusing on the SME sector – a sector that is characteristically different in South Africa (Adams, Khoja & Kauffman 2012:20; Perrini 2006:305). This is notable, considering the role and contribution of SMEs in economies (Cant & Wild 2013:710). In addition, the view that there is scant evidence of literature on supplier performance within the South African SME environment will enable this study to address these existent research gaps. The remainder of the article is organised as follows. The next section reviews literature in the areas of information sharing, supplier trust, supplier synergy and supplier performance. It is followed by sections on research methodology and one that reports on the results of the study. Finally, the article concludes with the implications of the study and future research directions.

Literature review

Theoretical framework

This study is premised on the collaboration theory, which postulates that collaboration is key to problem solving in every sector of the economy (Gray 1985:911). Collaboration relates to a joint decision-making strategy designed to collectively share resources and with the ultimate objective of solving problems and challenges that one cannot otherwise resolve (Selin & Chavez 1995:190). Effective collaboration is a source of competitive advantage that aims to improve customer service, profit generation, asset utilisation and cost reduction (Poee & Mathu 2011:320). Characterising

the collaboration theory are five elements, namely (1) the independence of stakeholders, (2) solutions to problems and other challenges are found through mutual understanding cooperation, (3) parties must contribute to decision-making, (4) parties must take responsibility on the development of the strategy and (5) parties must understand the salient point of the strategy plan as it is there to provide a foundation from which they can manage and deal with the uncertainty of the environment in which they are operating (Gray 1989:227). This theory was deemed appropriate for this study since it is about the effective and efficient interaction of parties through the mutual sharing of input resources. Furthermore, the article contends that collaboration underpins information sharing, supplier trust and supplier synergy.

Small and medium enterprises

There is now hardly any dispute about the role and contribution of SMEs in economies. The SME sector has been described as an essential factor in sustaining the economic growth and development of most economies due to their abilities to adjust to environmental changes and technological orientation (Adams *et al.* 2012:25). According to Abor and Quartey (2010:220), the SME sector has massively contributed to growth and development of the South African economy, especially in the area of employment creation, which is crucial in fostering and improving socio-economic development, alleviating poverty and reducing crime. Not surprisingly, the performance of SMEs has generated great attention from scholars and other decision-makers (Alpkan, Yilmaz & Kaya 2007:152; Sandada, Poee & Dhurup 2014:662). In his study on SME performance, Sidik (2012:376) conceptualised SME performance in terms of its ability to increase or improve its overall outcomes in terms of cash flow, profitability, customer satisfaction, sales growth and employee growth. Since there is usually little separation between ownership and control of operational activities in SMEs, Ahmad, Halim and Zainal (2010:67) posit that the success of SMEs is related to the abilities of their owners to make the best use of their managerial skills, experience and expertise. Due to their socio-economic role and importance, it was found critical that the influence of information sharing, supplier trust and supplier synergy on supplier performance be investigated from the perspective of SMEs.

Information sharing

Information is vital for the effective functioning of any business. It has been described as the lifeblood of organisations. Information sharing refers to the extent to which a firm openly communicates important and sensitive information to its partners (Shou *et al.* 2012:2). The notion of information sharing has attracted significant attention from a number of scholars who have stressed its role and influence in the supply chain environment (e.g. Jraisat, Gotsi & Bourlakis 2013:323; Kembro & Naslund 2014:179; Leung, Choy & Kwong 2010:64). Information sharing has also been regarded as an effective predictor factor of a supply chain's effectiveness (Zhang &

Chen 2013:181). In that regard, a study by Hsu *et al.* (2008:297) found that information sharing contributes largely to improved relationships between suppliers by facilitating efficient coordination and responsiveness as well as integration of partners' information systems. Furthermore, effective sharing of information between supply chain members has also been determined to be a crucial antecedent aspect in mitigating the negative impact of the bullwhip effect (Kelepouris, Miliotis & Pramataris 2008:3657). Chinomona and Poore (2013:8) found that timely and accurate sharing of strategic information can foster the reduction of unwarranted wastages and costs in a supply chain, thus leading to increased SME profitability. Since information sharing is considered so important for effective supply chains, it is a factor worthy of investigation in the case of supplier performance, especially in the context of SMEs.

Supplier trust

Supplier trust is another key variable in this study. Supplier trust has been defined by Cavusgil, Deligonul and Zhang (2004:7) as the confidence that trading partners have about each other's reliability and integrity. Trust has been defined to be an important contributor and facilitator to any transaction that calls for a mutual involvement and collaboration of diverse parties (Cheung *et al.* 2011:184). Supplier trust has also received attention from a number of scholars who have extensively investigated its impact and relevance in buyer-supplier relationship (Bonte 2008:855; Gao, Sirgy & Bird 2005:397; Kwon & Suh 2005:26; Wasti & Wasti 2008:118). Trust between suppliers and the buying firm has been viewed to be an important predictor factor impacting on suppliers' ability to integrate their supply chain activities (Yeung *et al.* 2009:66). According to Panayides and Lun (2009:35), supplier trust plays a vital role in enabling and enhancing a firms' innovativeness and consequently its supply chain performance outcomes. In light of the fact that it is so vital for SMEs to be integrated in supply chains, it is imperative that supplier trust be well understood.

Supplier synergy

Supplier synergy is yet another important aspect deserving of a clearer understanding. Supplier synergy can be defined as the coordination and complementarity of similar activities performed by two or more firms, groups or individuals in a business relationship to produce superior mutual outcomes (Osarenkhoe 2010:201). According to Hoegl and Wagner (2005:530), supplier synergy has a positive effect on the organisation's ability to provide a quality product to their customers. This reflects the importance that coordinated work between suppliers' parties has on the competitiveness of a firm's supply chain. Wu *et al.* (2010:117) believe that supplier synergy allows firms to eliminate or lessen the recurrent technical and quality problems in production. Besides, effective synergistic collaboration also leads to the sharing of strategic and key explicit and tacit knowledge. In their study, Yeung *et al.* (2013:546) postulate that sound

synergy enables businesses to obtain great benefits, such as improved quality of products and flexibility of operations. Thus, supplier synergy reduces unnecessary duplications responsible for possible inefficiencies within the supply chain. Therefore, supplier synergy becomes ever so critical for SMEs characterised by flexibility of operations and whose quality of products is constantly under scrutiny.

Supplier performance

Perhaps the most important yardstick to determine the success of suppliers is their performance. Wu *et al.* (2010:115) define supplier performance as how well a supplier supplies the required products to the buyer as reflected through operational outcomes such as quality, delivery, responsiveness, cost and technical support. Huang, Yen and Liu (2014:64) posit that a firm's effort to adequately integrate its supply chain activities has a massive impact on their supplier performance. In addition, supplier performance has been described as a major predictor of reseller satisfaction (Yilmaz, Sezen & Kabadayi 2004:854). Thus, well-performing suppliers represent a key factor that businesses should strive to develop and maintain in their long-term sustainability and profit's aspiration (Sanchez-Rodriguez, Hemsworth & Martinez-Lorente 2005:289). Krause *et al.* (2007:528) further suggest that a supplier performing at optimal level is crucial in enabling the buying firm to reach its performance outcomes in terms of serving its customers more efficiently. A well-performing supplier is likely to remain in the supply chain and grow its relationship with the buying firms – something that all SMEs should aspire to.

Conceptual framework and hypothesis development

The following conceptual framework highlights the causal relationships under investigation. This framework is made of one predictor variable, namely information sharing, two mediating variables, namely supplier trust and synergies, as well as the outcome variable, which is supplier performance. This conceptualised framework is illustrated in Figure 1.

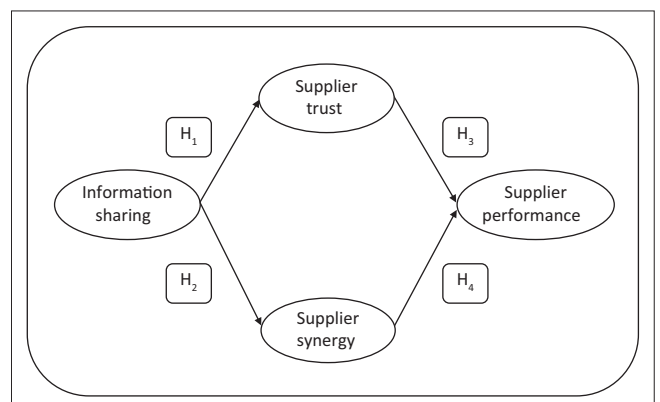


FIGURE 1: Conceptual framework.

Information sharing and supplier trust

Information sharing has always been highly regarded as an effective facilitator and a key enabler of collaboration between supply chain members (Cheng & Wu 2005:1159), which suggests the vital role that information sharing has in contributing to the development and improvement of activities performed by firms' supplier partners. This view has been further stretched by Gosh and Fedorowicz (2008:453) who posit that sound and accurate exchange of sensitive and strategic information amongst supplier is important for the establishment of strong and long-lasting trusting relationship between the supply chain partners. Furthermore, concise sharing of information has been described as a prerequisite of strengthening buyer-supplier trust in that it enables them to collectively share the same objectives and develop mutual problem resolutions (Kwon & Suh 2005; Nyaga, Whipple & Lynch 2010:101). Moreover, Doney and Cannon (1997:41) assert that the ability and willingness to openly share confidential information portrays their trustworthiness to engage in a sound and collaborative type of relationship. Based on the aforementioned, the following hypothesis is postulated:

- **Hypothesis 1:** Information sharing between SMEs and their suppliers exerts a positive influence on supplier trust.

Information sharing and supplier synergy

The importance and impact of information sharing has been significantly investigated in a number of studies (e.g. Cheng 2011:374; Sheu, Yen & Chae 2006:24; Zhang & Chen 2013:178), stressing its vital role in buyer-supplier relationships. According to Barratt (2004:30), information sharing plays a pivotal role in assisting supply chain partners to collaboratively engage in mutual strategic activities and decision-making. This therefore may allow them to effectively and efficiently work together and foster the value creation of each supply chain unit in a more synergistic manner. In this regard, Prajogo and Olhager (2012:514) posit that where there is an adequate and interrupted flow of information between each unit of activity, supply chain networks can increase the suppliers' capabilities to perform synergistically. In light of the foregoing, it is hypothesised that:

- **Hypothesis 2:** Information sharing between SMEs and their suppliers exerts a positive influence on supplier synergy.

Supplier trust and supplier performance

Trust has been described by Zhang, Cavusgil and Roath (2003:550) as a key determinant in strong buyer-supplier relationships, as it enables supply chain partners to conduct their transactions and operations without fear of vulnerability. According to Jain *et al.* (2014:315), a trusting relationship between a buyer and its suppliers allows both parties to mutually share critical resources as well as strategic information freely. This therefore may enable them to obtain significant output resources that may improve the operational

performance of their suppliers in terms of responsiveness, reliability and effectiveness in strategic problem resolution (Handfield & Bechtel 2002:367; Panayides & Lun 2009:38), which may consequently lead to the enhanced performance of the buying firm (Corsten & Kumar 2005:80; Nielsen 2007:337). This shows the likely influence of supplier trust on supplier performance, leading to the following hypothesis:

- **Hypothesis 3:** Supplier trust amongst SMEs exerts a positive influence on supplier performance.

Supplier synergy and supplier performance

Suppliers engaging in synergistic collaboration have viewed it as a major strategic approach designed to enhance their core performance (Duffy & Fearn 2004:57; Sheu *et al.* 2006:24). This shows the benefit that suppliers working synergistically may have in maximising their performance in achieving their goals and objectives. In this regard, Cao and Zhang (2011:168) argue that the higher the level of synergy within the supply chain, the more likely suppliers' performance will be improved. Scannell, Vickery and Droge (2000:23) and Cannon and Homburg (2001:29) posit that adequate synergy within a firm's supply chain results in better coordination and collaboration as well as a decrease in procurement costs. In view of the foregoing, it would appear that suppliers' willingness to work in a synergistic manner is crucial in enabling them to improve their performance, which subsequently may allow firms to attain and sustain their competitive advantage. Therefore, the following hypothesis is formulated:

- **Hypothesis 4:** Supplier synergy amongst SMEs exerts a positive influence on supplier performance.

Research methodology

Sample and data collection

The sample consisted of SME companies in the Vaal Triangle (Vanderbijlpark, Vereeniging and Sasolburg). These were selected using the simple random technique, which allows for statistical inferences to be made about the target population from which the sample is drawn (Malhotra & Birks 2007:1). Questionnaires were distributed in person by one of the researchers during the month of August 2014 with the assistance of a trained fieldworker in the distribution process to ensure a speedy and effective process. Respondents were given two weeks to complete the questionnaires. Out of the 500 questionnaires that were initially distributed, 350 were retrieved. Of these, only 309 were properly completed by respondents and therefor deemed usable for analysis, resulting in total of 41 questionnaires discarded because they were either incomplete or inaccurately completed. This yielded a response rate of approximately 61.8%. The sampling frame was made up of various lists that included a register from the Gauteng Enterprise Propeller (GEP), the Vaal Triangle Business Directory as well as SME databases from relevant Sedibeng district municipality. The ethical clearance issued by the Vaal University of Technology enabled the field workers to approach prospective respondents who were

informed that their participation in the study was voluntary and that the confidentiality of the information provided by the respondents was guaranteed. The questionnaire was completed by owners and managers of the participating SMEs.

Measurement instrument and design

Research scales were designed on the basis of previous work. Proper modifications were made in order to fit the current research context and purpose. Information sharing was measured using a six-item scale adapted from Li *et al.* (2006:107). Supplier trust was measured using six items adapted from Ketkar *et al.* (2012:791). Supplier synergy was measured using four items adapted from Ranganathan, Teo and Dhaliwal (2011:539). Last of all, supplier performance was assessed using items adapted from Prajogo *et al.* (2012:127). Response options were configured on five-point Likert-type scales ranging from 1 (strongly disagree) to 5 (strongly agree) to express the degree of agreement or disagreement. Likert-type scales were chosen mainly because they are considered to be appropriate in assessing the perception of respondents regarding specific statements or questions (Cohen, Manion & Morrison 2000:1). Appendix 1 provides a list of all the measurement scales used in this study.

Data analysis

The analysis of the collected data was done using three statistical tools, namely Excel, SPSS version 22.0, and AMOS version 22.0. Data were coded on an Excel spreadsheet. Thereafter, the data were checked in order to identify and correct missing entries. This was followed by importing the data into the Statistical Package for Social Sciences (SPSS) format. After formatting the data into SPSS, descriptive statistics were used to analyse data pertaining to the demographic profiles of the SMEs. Subsequently, the final stages of the data analysis were conducted, which included confirmatory factor analysis (CFA) and path modelling using AMOS statistical software.

Research results

The results section is divided into three subsections, namely the profile of respondents, confirmatory factor analysis and path modelling results.

Profile of participating small to medium enterprises

The profile of SMEs that participated in the study is reported in Table 1.

Table 1 shows that the majority of participating SMEs were registered as private companies (34.3%; $n = 106$), followed by sole proprietors (24.6%; $n = 76$). The next most common type of ownership was partnerships at 19.7% ($n = 61$). Nearly 39% ($n = 120$) of respondents operated in the retail environment

TABLE 1: Profile of small to medium enterprises.

Variable	Category	N	%
Type of business	Cooperative	19	6.1
	Sole proprietor	76	24.6
	Close corporation	47	15.2
	Private company	106	34.3
	Partnership	61	19.7
	Total	309	100
Nature of business	Mining/Quarrying	14	4.5
	Manufacturing	44	14.2
	Retail	120	38.8
	Construction	25	8.1
	Transport	34	11.0
	Community/Personal	27	8.7
	Tourism	17	5.5
	Finance/Tourism	28	9.1
	Total	309	100
Number of employees	21–50	102	33.0
	51–100	73	23.6
	101–200	65	21.0
	201–500	69	22.3
	Total	309	100
Number of years in business	Less than 2 years	62	20.1
	2–5 years	99	32.0
	5–10 years	73	23.6
	More than 10 years	75	24.3
	Total	309	100

whilst 14.2% ($n = 44$) were in manufacturing and 11% ($n = 34$) operated in the transport industry. A total of 57% ($n = 175$) of the participating SMEs employed fewer than 100 people, whilst 21% ($n = 65$) employed between 101 and 200 people and 22% ($n = 69$) employed between 201 and 500 people. This distribution shows that most jobs are created by SMEs rather than large businesses. It is also notable that a combined 52% ($n = 161$) of participating SMEs were fairly new businesses, having been in existence for five years or less. This also shows the kind of resilience some businesses still have despite the difficult economic times experienced in recent years.

Confirmatory factor analysis

In this study, a two-step process was followed, which entails conducting CFA prior to testing the hypotheses, as recommended by Anderson and Gerbing (1988:415).

The purpose of the CFA procedure was to examine scale accuracy in terms of internal consistency (reliability), various types of validity (construct, convergent and discriminant) and the model fit of the multiple-item construct measures used in the study (Bollen 1990:258). The results of the CFA are reported in Table 2.

As shown in Table 2, reliability was assessed through the Cronbach's alpha coefficient. The Cronbach's alpha column demonstrates that all the constructs are between 0.950 and 0.966. This suggests that all the constructs were reliable as their values were above the recommended threshold of 0.7 (Bagozzi & Yi 1988:74; Nunnally & Bernstein 1994:34). Furthermore, the internal reliability of each construct was also evaluated using the composite reliability (CR) index test.

TABLE 2: Accuracy analysis statistics.

Research constructs	Factor loading	Cronbach's test		Descriptive statistics		Composite reliability	Average variance extracted
		Item total	α value	Mean	s.d.		
Information sharing (IS)							
I _{S-1}	0.81	0.828	0.950	4.261	0.897	0.95	0.78
I _{S-2}	0.86	0.865					
I _{S-3}	0.87	0.842					
I _{S-4}	0.89	0.851					
I _{S-5}	0.89	0.865					
I _{S-6}	0.88	0.834					
Supplier trust (ST)							
St ₋₁	0.90	0.878	0.966	4.207	1.014	0.96	0.83
St ₋₂	0.90	0.902					
St ₋₃	0.91	0.892					
St ₋₄	0.91	0.886					
St ₋₅	0.90	0.880					
St ₋₆	0.93	0.912					
Supplier synergy (SSY)							
Ssy-1	0.94	0.888	0.960	4.231	1.042	0.96	0.86
Ssy-2	0.91	0.907					
Ssy-3	0.92	0.901					
Ssy-4	0.93	0.912					
Supplier performance (SP)							
S _{p-1}	0.91	0.884	0.960	4.233	1.029	0.96	0.82
S _{p-2}	0.91	0.893					
S _{p-3}	0.90	0.895					
S _{p-4}	0.93	0.916					
S _{p-5}	0.88	0.852					

A CR index value equal to or higher than 0.7 illustrates the adequacy of internal consistency of the construct (Hair *et al.* 2006:25; Nunnally 1978:4). The analysis shown in Table 2 indicates that the CR indexes for all the constructs were well above the requisite 0.7, thus confirming satisfactory internal consistency of all the constructs.

Convergent validity was measured by assessing whether the individual item loading for each construct was above the recommended threshold of 0.5 (Anderson & Gerbing 1988:417). As revealed in Table 2, the measurement instruments assessing each construct were well above the recommended 0.5: the information sharing construct (IS) had loadings ranging from 0.81 to 0.88, supplier trust (ST) ranged from 0.9 to 0.93, supplier synergy (SSY) ranged from 0.94 to 0.93 and supplier performance (SP) ranged from 0.91 to 0.88. All of the loadings were beyond the required threshold of 0.5, which indicates that the respective constructs converge well and were therefore valid. Discriminant validity was ascertained using Pearson correlation coefficient and the results indicate positive correlations with values of r ranging between 0.102 ($p < 0.01$) and 0.860 ($p < 0.01$). Since these inter-factor correlation values for all paired latent variables were below the recommended maximum threshold of 1.0, there was satisfactory discriminant validity in the measurement scales.

The acceptability of the model fit was established by chi-square value over degree of freedom (χ^2/df), whose value should be between 1 and 3 (Schreiber *et al.* 2006:330), whilst

the values of goodness-of-fit index (GFI), comparative fit index (CFI), incremental fit index (IFI) and Tucker-Lewis index (TLI) should be equal to or higher than 0.90 (Chinomona 2012; Hu & Bentler 1995:76) and the root mean square error of approximation (RMSEA) value should be equal to or less than 0.08 (Browne & Cudeck 1993:137). The results of the model fit assessment showed that χ^2/df was 2.864 ($\chi^2/df = 670.126/234$) and GFI, CFI, IFI, NFI and RMSEA were 0.932, 0.967, 0.967, 0.951 and 0.078 respectively. In view of the aforementioned results, it can be observed that all the indicators values meet the above stated thresholds. Therefore, the collected data were able to fit the model.

Path modelling results

The measurement of model fit of this study was done using the following indices: χ^2/df , GFI, CFI, IFI, NFI and RMSEA. With regard to the χ^2/df , the value was below the required threshold of 3 ($\chi^2/df = 600.210/234 = 2.565$). Furthermore, GFI, CFI, IFI, NFI and RMSEA provided respective ratios of 0.91, 0.95, 0.94, 0.911 and 0.07. These statistics depict that all the indicators were above the acceptable threshold of 0.9 for GFI, CFI, IFI, NFI and below that of 0.08 for RMSEA. This implies that there was acceptable model fit in the study. The results of hypotheses tests are reported in Table 3.

As shown in Table 3, the coefficient values for all hypotheses were significant at a level of p less than 0.01, with the exception of H_5 which was insignificant. Thus three of the hypotheses (H_1 , H_2 , H_4) were accepted whilst one hypothesis (H_3) was rejected.

TABLE 3: Results of structural equation model analysis.

Path coefficients	Hypothesis	Factor loading	Decision
Information sharing → Supplier trust	H ₁	0.345***	Accepted
Information sharing → Supplier synergy	H ₂	0.262***	Accepted
Supplier trust → Supplier performance	H ₃	0.124	Not accepted
Supplier synergy → Supplier performance	H ₄	0.896***	Accepted

Structural model fits: $\chi^2/df = 2.56$; GFI = 0.91; IFI = 0.94; CFI = 0.95; NFI = 0.91; RMSEA = 0.07.
 ***, Significance level < 0.001.

Discussion

Hypothesis 1 postulated that there is a positive and significant relationship between information sharing and supplier trust. The results supported the stated hypothesis (H₁) which was thus accepted. This is due to the fact that a moderate and positive significant relationship was observed between information sharing and supplier trust ($r = 0.345$; $p < 0.01$). This is consistent with the observation by Kui-ran, Ji-ning and Ping (2012:43) who posited that effective and sound information shared between the buyers and their suppliers contributes significantly to improving their buyer-supplier relationships. These authors further postulate that a mutual exchange of sensitive and proprietary information amongst supply chain partners correlates with the parties' willingness to engage in mutual trusting relationships. In their investigation on the impact of resource dependence, trust and relationship commitment amongst supply chain partners, Lv, Ye and Qiang (2010:7) endorse that a supply chain characterised by trust between supply chain members has a positive and significant influence on their abilities and capabilities to share key and strategic information and data. Therefore, the sharing of information between SMEs and their suppliers has an influence on supplier trust and is thus a significant antecedent factor of supplier trust.

Hypothesis 2 stated that there is a positive and significant relationship between information sharing and supplier synergy. The results of the study also supported the hypothesis ($r = 0.262$; $p < 0.01$). This result is supported by a study conducted by Wu, Chuang and Hsu (2014:122) with respect to the significance of the stated relationships. As suggested by Prajogo and Olhager (2012:514), information shared between the buying firm and suppliers is a significant enabler of collaborative synergistic behaviour in a buyer-supplier supply chain relationship. Moreover, Horvath (2001:205) concedes that the key to adequate and sound synergy depends on the willingness to share relevant and reliable information by supply chain partners. In view of these results, it could be stated that information sharing is an effective driver of the suppliers' abilities to perform and operate in a synergistic manner.

As shown in Table 3, hypothesis 3, which postulated a positive relationship between supplier trust and supplier performance, was not supported by the results of the study and the relationship was found not to be significant. This result presents a different view from Dirks and Ferrin (2001:450), who described trust as a key component to organisation's performance achievement. Zhang *et al.* (2003:550) view trust as an essential facilitator that enables

the formation of tight and long-lasting buyer-supplier relationships. Furthermore, Corsten and Kumar (2005:80) posit that high levels of trust usually result in significant performance enhancement in terms of their abilities and drive to integrate their core business operations. In their study on performance implications of power-trust relationships, Jain *et al.* (2014:318) established that trust is a prerequisite factor contributing to organisations' performance improvement in the retail industry. The results of the present study do not conform to the general results of previous established studies pertaining to the positive influence of the identified relation. As such, this study is amongst the few that have found supplier trust not to be a significant driver of supplier performance in the context of SMEs.

As reported in Table 3, there is a positive and significant correlation between supplier synergy and supplier performance ($r = 0.896$; $p < 0.01$). These results further validate that supplier synergy has a significant influence on supplier performance in the SME sector. This result resonates with Cao and Zhang (2011:175), who determined that a supplier synergistic collaborative approach has a major and positive bearing on performance appraisals in buyer-supplier relationships. Duffy and Fearn (2004:57) and Sheu *et al.* (2006:24) further endorse the vital role that synergistic driven relationships have in enabling them to achieve the required level of productivity and competitiveness. Moreover, the supplier's willingness to engage in strategic synergistic partnerships has been described as effective in increasing their overall performance in terms of innovative capabilities and strategies (Parker, Zsidisin & Ragatz 2008:71). This therefore authenticates that supplier synergy is a critical and instrumental antecedent factor enabling SMEs' suppliers to perform at the best of their capabilities.

Limitations and suggestions for future research

The present study yielded significant insights with regard to achieving the purpose of this study. However, the study is limited in scope since it was geographically restricted to businesses in southern Gauteng. An expansion of the scope of the study from SMEs to large organisations may prove vital in future studies. Future studies on the same topic may also be conducted in other geographic contexts, which could provide a basis for comparisons. Since this study used a quantitative approach, greater accuracy and other insights may be obtained if future studies make use of the mixed method, which combines both qualitative and quantitative methods. Moreover, as shown in the results, one of the four hypotheses was not supported. Future studies could add more variables or replace some of the variables used in this study for greater validity and reliability.

Conclusion and managerial implications

The aim of this study was to determine the influence of information sharing, supplier trust and supplier synergy

on supplier performance amongst SMEs. In order to empirically investigate these suggested relationships, data were collected from a sample of 309 owners and managers of SMEs drawn from the southern Gauteng province of South Africa. Three out of the four hypotheses formulated in order to achieve the aim of the study were empirically supported and accepted. It can be concluded then that the sharing of information between SMEs and their suppliers has the effect of improving the synergistic cooperation as well as shared trust existing between these partnerships. Synergies between SMEs and their suppliers in turn have the effect of improving the performance of these suppliers. However, the existence of mutual trust between SMEs and their suppliers does not necessarily stimulate improvements in supplier performance.

The present study has managerial implications. Managers in the SME sector should strive to strengthen supplier trust and synergy existing by improving the quality and amount of information shared with suppliers. Information sharing may be increased by ensuring that the information shared with suppliers meets the expectations and requirements of both parties in terms of usefulness. This may allow for a better and more adequate utilisation in their daily operations. SMEs can also improve their supplier selection procedures and criteria in order to ensure that selected suppliers match for the profile of their enterprises. This may facilitate avoiding any unforeseen situations in which suppliers are not able to supply their partners with valuable data.

Since supplier synergy has a positive influence on supplier performance, there is a need to generate initiatives aimed at enhancing supplier synergy. SMEs should engage in mutual and joint forecast activities with their suppliers in order to develop and strengthen collaboration. This will enable these partners to reciprocate in sharing key strategies and policies as well as in providing plans aimed at coping and meeting customer demands. Furthermore, such collaborations are likely to empower the supply chain by strengthening their joint alliance as well as the integration processes, which will likely improve performance (Liu & Kumar 2003:532). Given that the impact of supplier synergy on supplier performance is stronger than that of supplier trust, the study recommends that efforts made by SMEs to cultivate supplier synergies should be higher than those directed towards nurturing supplier trust.

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Competing interests

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Authors' contributions

D.P. (University of Johannesburg) wrote and organised the manuscript, V.W.L.-O. (Vaal University of Technology) collected data and some literature, C.M. (Vaal University

of Technology) contributed in the literature review and research methodology sections.

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Appendix 1 starts on the next page →

APPENDIX 1: Measurement scale items

Information sharing

C1	We inform our suppliers in advance of changing needs.	Strongly disagree	1	2	3	4	5	Strongly agree
C2	Our suppliers share proprietary information with us.	Strongly disagree	1	2	3	4	5	Strongly agree
C3	Our suppliers keep us fully informed about issues that affect our business.	Strongly disagree	1	2	3	4	5	Strongly agree
C4	Our suppliers share the knowledge of core business processes with us.	Strongly disagree	1	2	3	4	5	Strongly agree
C5	We and our suppliers exchange information that is useful in business planning.	Strongly disagree	1	2	3	4	5	Strongly agree
C6	We and our suppliers keep each other informed about developments that may affect the other partners.	Strongly disagree	1	2	3	4	5	Strongly agree

Supplier trust

E1	The relationship between our business and its major suppliers is characterised by high levels of trust.	Strongly disagree	1	2	3	4	5	Strongly agree
E2	We generally trust our major suppliers to stay within the terms of the contract.	Strongly disagree	1	2	3	4	5	Strongly agree
E3	Our major suppliers do not try to alter the facts in order to get concessions from us.	Strongly disagree	1	2	3	4	5	Strongly agree
E4	Our major suppliers are good at keeping their promises.	Strongly disagree	1	2	3	4	5	Strongly agree
E5	We trust that our suppliers will deliver goods and services on time.	Strongly disagree	1	2	3	4	5	Strongly agree
E6	We trust that our suppliers will deliver high quality most of the time.	Strongly disagree	1	2	3	4	5	Strongly agree

Supplier synergy

F1	We are happy with the relationships that we have with our suppliers.	Strongly disagree	1	2	3	4	5	Strongly agree
F2	Part of our profits are realised from procurement cost savings.	Strongly disagree	1	2	3	4	5	Strongly agree
F3	Our suppliers depend on our business for achieving their business goals.	Strongly disagree	1	2	3	4	5	Strongly agree
F4	Our suppliers have some level of bargaining power.	Strongly disagree	1	2	3	4	5	Strongly agree

Supplier performance

G1	Our suppliers provide us with goods and services of good quality.	Strongly disagree	1	2	3	4	5	Strongly agree
G2	Our suppliers deliver products on time.	Strongly disagree	1	2	3	4	5	Strongly agree
G3	Our suppliers provide the right quantity of goods.	Strongly disagree	1	2	3	4	5	Strongly agree
G4	Our suppliers are conveniently located.	Strongly disagree	1	2	3	4	5	Strongly agree
G5	The procurement costs of our suppliers' products are highly competitive.	Strongly disagree	1	2	3	4	5	Strongly agree