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Practitioner's view of the success factors for software outsourcing partnership formation: an empirical exploration

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Abstract

Software Outsourcing Partnership (SOP) is a client-vendor relationship focused solely on mutual trust and dedication that achieves mutually beneficial objectives. Often, a well-established outsourcing relationship may be converted into outsourcing partnerships. The development of SOP depends on various success factors. The research method attempts to solve the problem following a two-step process of Systematic Literature Review (SLR) and industrial survey with 70 experts. The results obtained are disseminated and analysed based on 'expert level of experience', 'company affiliation', and 'expert outsourcing role'. Moreover, from a client-vendor perspective, factors are classified according to their criticality. Based on Spearman's correlation test (rs =0.406 and ρ=0.040), we argue that the survey results regarding the factors are consistent with the previously published findings of the SLR. The results of this study suggest that, in rode to successfully renew or promote outgoing outsourcing ventures, outsourcing companies should address all the identified factors especially the most critical one.

Keywords Empirical study · Success factors · Client-vendor relationship · Software outsourcing partnership

1 Introduction

Collaborative relationships such as outsourcing partnerships, that transcend traditional organizational boundaries, are the basic criteria for measuring the success of today's trade. New inter-organizational as well as intra-organizational, structures and networks are created by organizations, that compete for competitive advantages through mutual support

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(Fahimullah et al. 2019). Organizational relationships in these networks go farther than old-style trades i.e. order and supply structure (Fahimullah et al. 2019). Here, all the joint struggles like risk, investment, loss, and profit are shared among partners (Lee and Kim 2005). Based on mutual trust, long-lasting corporate ties are established (Bamford et al. 2004). Collaboration also helps to minimize the investment needed for successful professional development to obtain and apply the requisite skills and capabilities. Coalitions, unions, joint ventures, alliances, or collaborations are usually called collaborative associations (Kinnula et al. 2007a).

One of the main strategies of rising companies to succeed in the market has been the advent of partnerships and alliances (Kinnula et al. 2007a). A partnership is an association of cooperation between autonomous organizations. Partnerships may enable organizations to remain competitive by joining new markets (Roy and Aubert 2002), gain access to a new resources pool (Moe et al. 2013), and increasing in-house efficiency (Kinnula et al. 2007a).

Since 1980, various kinds of business networks have been developed as a consequence of globalization, improvements in information technology (IT), economic changes, and quality improvement from developing countries, consequently, different kinds of business relations have been shaped for example strategic nets, multi-vendor contracts, and various types of alliances, association, joint ventures, coalition, and partnership (McIvor 2008). Different classes of organizations having different needs, therefore, various types of trade relations are needed (Lacity et al. 2010). Companies that produce software now uses widespread methods to source software development work; they build internal capabilities, or expand their internal capabilities, through acquisitions, joint ventures, or form outsourcing partnerships with overseas organizations (Lacity et al. 2010).

The work of Kishore (Srinivasan and Brush 2006) presents a theoretical categorisation of outsourcing associations into four kinds. These are assistance, alignment, dependency, and alliance. The partnership is a relation with poor control and a high degree of trust in the execution of the contract. Building partnerships in outsourcing is an alliance (Srinivasan and Brush 2006). Outsourcing partnership is a form of business alliance that is a mixture of both partnering and outsourcing, therefore, sympathetic comprehension of both terms is a pre-requisite to comprehend the compound term outsourcing partnership (Srinivasan and Brush 2006).

Software Outsourcing Partnership (SOP) is a long-time association grounded over the renegotiations of a mutually adjusted task that superseded commitment specified in the opening stage of the alliance as contractual terms and conditions (Lee and Kim 2005). It is a versatile, long-term strategic relationship focused on the exchange of future visions, goals, rewards, as well as risks. In practice, only productive outsourcing relationships are candidates for the promotion to outsourcing partnerships (Bamford et al. 2004). This type of relationship cannot be immediately established, but reasonably it forms over time (Khan and Ali 2015). The topmost difference between SOP and general outsourcing is its depth; the SOP relationship is much deeper (McIvor 2008). An association can be term as SOP, wherever the parties team up, combine resources, exchange confidential information about future plans, share benefits and risks, and make joint decisions in order to attain common advantageous results (Bamford et al. 2004). Outsourcing partnerships are a better tool for overcoming technical uncertainty and ambiguities, for that reason, it can effectually deal with uncertainty by exchanging information on unusual developmental events (Welty Peachey et al. 2018). Relationships with some features to create a trust are part of joint ventures and partnerships literature (Newell William et al. 2019). The distinctive distinction between a contractual relationship and a partnership is that in a partnership relationship organizations mainly focus on obtaining mutual trust

and realizing broad business objectives while in conventional contract-based outsourcing arrangements main focus is given on achieving specific business goals through the fulfillment of formally signed contract (Newell William et al. 2019). The results from this study and published data support this conclusion that partnerships are about relationships not contracts (Newell William et al. 2019).

A partnership is widely reported and extensively explored in the management literature (Kinnula et al. 2007a; Welty Peachey et al. 2018; Newell William et al. 2019; Kedia and Lahiri 2007a). Such as collaboration between companies in the marketing literature (Rave and Piskin 2019a), collaborations among manufacturers and suppliers (Ali and Khan 2016), auditors and customers (Ali and Khan 2014a), manufacturers and sales agents (Li 2013), and buyers and sellers (Lee et al. 2000). In the computer-related literature, empirical studies on the outsourcing partnership begin to grow in the twenty-first century in America, Asia, and Europe (Rave and Piskin 2019a). In this paper, partnership is define as a reciprocally beneficial permanent bond, where future prospects, objectives, confidential statistics and strategies are exchanged with partner organizations on-demand, freely and proactively, in order to assist one another in concentrating on their capitals in the right direction (Ali and Khan 2016).

Kedia and Lahiri (Kedia and Lahiri 2007a) state that, at present organizational business-related studies reports widespread outsourcing of manufacturing work from developed countries to many developing countries, such as India, Ireland, China, Russia, Latin America, Ukraine, Malaysia Pakistan, and the Philippines, etc. This growth is due to the dynamism of the current competitive industrial environment, in which many new organizations are involved in the worldwide outsourcing of products and facilities. The analysis of relationships between clients and their foreign suppliers regardless of the growth of international cooperation is not adequately discussed in academic literature (Kedia and Lahiri 2007a).

This work regards SOP as "a strategic partnering relationship resulting from a method of transferring the responsibility for software development to non-employee group from an employee group for a particular business function, counting the transfer of assets, for example, human resources" (Ali and Khan 2014a).

1.1 Research aim and objectives

The study explores the gap in outsourcing contract modification or SOP creation concerning researchers and practitioners. We are specifically interested in finding and analysing a list of factors in the formation of outsourcing partnerships that are critically important to vendor in this empirical study. To achieve our goals, this study attempts to solve the problem following a two-step process i.e. a questionnaire survey design over the preliminary outcomes of the SLR. In particular, we are interested in examining the factors identified through SLR as well as an empirical survey based on three variables, such as expert level of experience, outsourcing role, and their organizational affiliation. Additionally, we distributed these factors into client-vendor groups based on expert's organizational affiliation. Finally, we compared the results of two approaches used in the analysis to identify important variations between the factors found through the SLR and empirical survey.

To understand SOP from the practitioner's perspective, the subsequent research questions (RQ) are put forward.

RQ1. What are the critical success factors, as reported in the published literature, to be developed by software outsourcing vendor organizations' which contribute in promoting the exiting outsourcing relationship into partnership with client organization?. *This question has been addressed in our published paper* (Ali and Khan 2014a).

RQ2. What are the critical success factors, as reported by the practitioners during survey, to be developed by software outsourcing vendor organizations' which contribute in promoting the exiting outsourcing relationship into partnership with client organization?

RQ3. How the identified success factors are linked with the expert's level of experience?

RQ4. Do the identified factors vary based on the expert's outsourcing role in the company?

RQ5. Do the identified factors vary based on the expert's organizational affiliation?

RQ6. How can one use a reliable reference model to classify the identified factors into client-vendors groups utilizing a robust conceptual model?

RQ7: Are the factors found by literature and surveys substantially different?

1.2 Contribution of the study

The initial results regarding RQ1 were published in a conference paper (Ali and Khan 2014a). In the published conference paper (Ali and Khan 2014a) only the SLR protocol with initial list of factors was presented. No empirical analysis was presented in our previously published conference paper. This paper is based on an empirical survey; the contribution of the SLR is only to find the list of factors to be used in empirical questionnaire. Specifically, in this paper, we have extended our earlier work (Ali and Khan 2014a) in the form of various analyses based on the respondent's level of experience, company affiliation, and experts outsourcing role. We aimed to expand the results of a previous SLR study (Ali and Khan 2014a).

This article extends our preceding work with the addition of the below-mentioned details:

- In connection to RQ1— grounded on the results from SLR, a detailed explanation is given in section 4.1.
- A questionnaire survey was performed to respond from RQ2 to RQ5 based on the outcomes of the previous SLR report. The outcomes of this analysis are summarized in sections 4.2 to 4.5.
- A conceptual model for mapping success factors (SFs) was developed for RQ6 based on the survey outcomes. We present the outcomes of classification and distribution of the SFs for the conceptual mapping through a reference framework in 4.6.
- Finally, to address RQ7, we have compared the outcomes of the empirical survey with those found through SLR in section 4.7.

This entire study aims at the development of a model in the form of a factors classification framework for Software Development Outsourcing (SDO) organizations. The potential applications of the framework model will be in SDO organizations for guiding SDO prior to initiate contract renewal or outsourcing partnership formation endeavors.

1.3 Paper outline

This subsection is based on the paper's structural compositions: An overview of the relevant literature is given in Section-II. A detailed methodology is presented in Section III prior to our results in Section IV. Section V discussed the results while section VI presents the limitations of the study. Section VII is implication while the conclusion is given in Section VIII.

2 Background and Motivation

Literary outsourcing partnership is alienated in three different perspectives, (i) social perspectives, (ii) economic perspectives, and (ii) strategic management perspectives (Li 2013). The former most are based on the theory of agency and transaction cost. It focuses on coordination, corporate governance, productivity, and financial linkages among allies (Lee et al. 2000). But it doesn't care about the reasons for outsourcing except for cost-effectiveness (Li 2013). Social perspective is also grounded on the theory of relationship exchange and social communication, emphasis on the existence of trust among clients and vendors (Li 2013). It is renowned from the rest for its emphasis on some issues for example equity, cooperation, and mutual trust. In addition, the two sides share common goals and are mutually assured over written SLA (Sun et al. 2002). There is a structured contract, but it is not enough for outsourcing deals to succeed alone (Assmann et al. 2003). From this point of view, the basis for the extension or dissolution of a relationship is a two-way agreement (Yang et al. 2005). The final one is grounded on the resource dependency theory that describes how, by introducing an outsourcing model; businesses achieve their objectives (Tuten and Urban 2001). However, it does not deal with the topic of relationship management (Ellram and Edis 1996).

2.1 Existing Literature

Previous authors such as Li (Li 2013), Roses et al. (Roses 2013), Yilitalo (Wang 2011), Kedia and Lahiri (Kedia and Lahiri 2007a), Kinnula (Kinnula et al. 2007a), Ellram (Ellram and Edis 1996), Tuten and Urban (Tuten and Urban 2001), Juntunen (Kinnula et al. 2007b), Gong et al. *(*Gong et al. 2007*)*, Flemming and Low (Flemming and Low 2007), Zhang and Huang (Zhang and Huang 2009), Beulen and Ribbers (Beulen and Ribbers 2002), Bocij (Bocij and Hickie 2008), Ee et al. *(*Ee et al. 2013*),* Kotabe et al. *(*Kotabe et al. 2008*),* Piltan et al. (Piltan and Sowlati 2016), have addressed some of the problem of outsourcing. Few of these are summarized below:

Wang (Wang 2011) researched, the evolution of outsourcing association with connection to the development of client and vendor organizations and proposed a three-stage evolution model based on the published literature. Furthermore, the author concludes cost-saving, operational quality, and access to skilled human resources as the foremost benefits of outsourcing. According to the author, all these benefits depend on better relationship formation and ongoing management (Wang 2011).

Through a literature survey of previous outsourcing management research and a manifold case analysis of four outsourcing relations, Gong et al. (Ee et al. 2013) built an IT outsourcing relationship model. Four interconnected components comprise the

model design, operationalisation, partnership efficiency, and outsourcing performance. Another research focuses on the operationalisation of the relationship, which includes five key aspects that affect the quality of the relation between the parties (performance management, transfer, agreement management, operational relationship, and knowledge exchange) (Wei et al. 2018).

Zhang and Huang (Zhang and Huang 2009), discussed partnership quality, outsourcing business characteristics, and other management elements based on typical analysis and proposes an index system model using analytic hierarchy process (AHP) and Hopfield neural network system (HNNS).

A case analysis of an Asian IT outsourcing relationship was carried out by Beulen and Ribbers (Lacity and Hirschheim 2012). Authors state that at present many organizations in the manufacturing industry transfer their companies to lower wages in Asian countries. Utmost vendors in Asia are comparatively inexperienced in terms of managing outsourcing relationships. They added not only the vendors are inexperienced, but the outsourcing clients also do not have a good track record in managing outsourcing relationships. Furthermore, in addition to the experience level of both clients and vendors, cultural issues are also important to be addressed.

Sun et al. (Szu-Yuan et al. 2002) explore the SFs of the IS outsourcing partnership through surveys and case studies based on a social perspective. As an outcome of their study authors design a research model of outsourcing partnership and give recommendations to the partner organizations to safeguard the success of the outsourcing venture.

Dwyer et al. (Dwyer et al. 1987), states that the development of partnerships and cooperation are multifaceted practices, where economic, psychosocial, and legitimate practices are simultaneously happening. Communication, common aims, partner compatibility, and mutual trust are the essential elements of outsourcing partnerships (Ylitalo et al. 2004). bi-directional decision making, increased flexibility, the development of technical skills, free management time, increased financial control, greater quality of service, and cost savings are the key reasons for outsourcing collaborations (Bocij and Hickie 2008).

Li et al. (Li et al. 2008), presented and discussed a special type of outsourcing in which internal service is source to an external provider through organizational restructuring and reform. They further state that the nature of partnerships formed among clients and their suppliers does not receive sufficient consideration in the published literature.

Based on the psychological contract theory and transaction cost theory, from vendors' perspective, Wei et al. (Wei et al. 2018) discuss how the security of outsourcing information impacts the quality of partnerships and project results. Grounded on the data analysed from 180 IT offshore outsourcing projects, they conclude that information security reduces project performance and partnership quality. They further stated that regardless of the increase in research, focused on the significance of knowledge protection in outsourcing partnerships the existing literature offers contradictory interpretations on whether knowledge protection impedes project performance.

In view of Kotabe et al. (Kotabe et al. 2008), in the last two decades outsourcing has gained much attention in the academic discussions and managerial practices. But, we still do not recognize the full consequences of outsourcing policies for enhancing the efficiency of organizations. Furthermore, so far no universal justification has been given for how outsourcing could lead to worsening organization's in-house capability. They create an evolutionary stage model that links outsourcing to the growth of organizational capacity and further find that a backbiting sequence may occur.

2.2 Critical factors in outsourcing partnership formation

Critical factors are those factors that are important for successful breaking or making the SOP i.e. inducing either negatively or positively in SOP formation (Forrest and Martin 1992). Table 1 summaries the success factors identified in relevant studies, few of them are discussed as follows:

Bruce et al. (Bruce et al. 1995), present communication, flexibility, trust, equality in power, commitment, mutual contribution and benefits, and strong personal interactions as SFs for collaborative product development.

Millson et al. (Millson et al. 1996), identified accepting each other strengths and weaknesses, proper information sharing, equal rights for intellectual property, mutual goals, and exit strategy as SFs for new product development.

Virolainen and Veli-Matti (Virolainen 1998), identified shared goals, mutual trust, bidirectional information sharing, timely communication with the client, support from top management, distinct value addition by vendor, mutual understanding, and long-term mutual commitment as SFs for sourcing partnership formation between customer and suppliers.

Forrest and Martin (Forrest and Martin 1992), mentioned bottled up the contract on mutual objectives and goals, good interpersonal relations, commitment, communication, and compatibility as SFs for research-intensive collaboration between a small and large organization in the biotechnology industry.

Bruce (Bruce et al. 1995) identified choice of a partner, equal contribution, founding the ground rules, trust and flexibility in communication, personal relationships and long-term commitment, mutual benefits and power control, and other environmental and employee-specific factors as SFs for ICT product development collaboration.

Millson (Millson et al. 1996) conducted a qualitative study on partnerships between small and large organizations. They noted understanding of each other strengths and faintness, information sharing, joint property rights, strategy-related goals, and exit plans.

Rhodes et al. (Rhodes et al. 2016), argue that relationship interaction factors such as communication, coordination, cooperation, collaboration, integration activities, and conflict resolution has a long-lasting impact on client perceived value than relationship quality factors such as trust and loyalty in the context of services outsourcing. Katato et al. *(*Katato et al. 2019*)*, identify factors affecting long-term business outsourcing relationships through case-study with Thailand-based firms. Sun et al. (Szu-Yuan et al. 2002), mentioned communication, commitment, mutual understanding, inter-dependence, trust, and conflict resolution as SFs.

Gonzalez et al. *(*Gonzalez et al. 2015*)*, explore IS outsourcing satisfaction factors. They take into account the degree of outsourcing, client and provider relationships, and role of the Client Company's top management as IS outsourcing satisfactions factors. In another study (González-Ramírez et al. 2019), authors explore IS satisfaction factor from managers' perspective. Sanchez and Terlizzi (Sanchez and Terlizzi 2017), explore time and cost-related agile project management SFs for IS development projects.

Santos et al. *(*dos Santos and Macaria da Silva 2015*),* identify SFs of IT outsourcing from the provider perspective. The identified SFs are cost management, price flexibility, service catalogue, and service standardization. Carvalho et al. *(*de Carvalho et al. 2018*)*, integrate and correlated SFs in IT outsourcing.

Mehta and Mehta (Mehta and Mehta 2017), developed an integrated framework for moving toward a successful Offshore IT Outsourcing. Gopalakrishnan (Gopalakrishnan

Table 1 Partnership formation success factors

Factors	Main theme with a target area	Reference
Awareness, exploration, expansion, and commitment	Buyer-seller relationship development	(Dwyer et al. 1987)
Compatibility of the partners, mutual objectives and goals, communication and trust, strong commitment, and interpersonal relations	Research intensive collaboration between a small and large organization in the biotechnology industry	(Forrest and Martin 1992)
Perfect goals fit strategies, mutual consent on weaknesses and strengths, defined withdrawal strategies and informed staff, and well-defined ownership of IPR	Strategic partnering for technology management	(Slowinski et al. 1993)
Joint working and problem solving, information sharing, optimistic conflict resolution mechanism, communication, participation, trust commitment, and coordination	Formation of strategic partnerships between firms	(Mohr and Spekman 1994)
Commitment and coordination, trust and attraction, communication and adaptation	Relationship formation in the advertising sector	(Halinen 2012)
Choice of partner, ensuring equality, founding the ground rules, and other people, environmental, and procedural factors	ICT product development collaboration	(Bruce et al. 1995)
Shared goals, distinctive value-added by partner, mutual understanding, early communication with partner, bi-directional information sharing, top management support, trust between parties, and long-term commitment	SFs, motives, and circumstances outsourcing partnership	(Virolainen 1998)
Economic expectations, support from top management in both companies, mutual trust, long-term perspective, and communication processes and techniques	Partnering implementation for supply chain management	(Ellram and Edis 1996)
Economic expectations are met, the synergy between two businesses, communication processes and techniques, satisfactory performance, fairness and trust, reliability and honesty	Business-to-business partnership formation	(Tuten and Urban 2001)
Win-win mentality, support from top management in both companies, and joint multilevel relationship management strategy,	Outsourcing process and its SFs	(Zhu et al. 2001)
Commitment, interdependence between partners, trust	Information technology outsourcing	(Kern and Willcocks 2000)
Trust, interdependence between partners	Partnerships between distributor and manufacturer firm	(Anderson and Narus 1990)
Similarities across organizational cultures	Successful outsourcing in organization	(Embleton and Wright 1998)
Interaction processes	Cooperative inter-organizational relationships development	(Ring and Van de Ven 1994)
Goal compatibility and resemblance the of the partners, Clear value-addition by both, trust and commitment, open communication	Trustee technology partnership formation	(Blomqvist 2002)
Clear goals, senior management support, trust, confidence, and competence, conflict resolution, partner compatibility, ability to meet expectations,	Assessing and improving partnership relationships	(Brinkerhoff 2002)

Table 1 (continued)

Factors	Main theme with a target area	Reference
Higher work quality, cost reduction, competitive pressure, increased risk sharing, increased focus on core activities, flexibility, business transformation, higher labor skills, inexpensive labor pool, learning scope, cumulative experience, world-class delivery model, availability of global innovative talent	International outsourcing of services	(Kedia and Lahiri 2007b)
Culture fit, trust formation, risk management, information sharing, and search for mutual goals of prospective partners	Partnerships between established and start-ups firms	(Greiner et al. 2012)
Communication, coordination, cooperation collaboration, integration activities, conflict resolution, loyalty, and trust	Services outsourcing relationship management	(Rhodes et al. 2016)
dependence, conflict, communication, mutual understanding, trust, and commitment as SFs	Information System outsourcing partnership	(Szu-Yuan et al. 2002)
Degree of outsourcing, client and provider relationships, and the role played by the client firm's top management	Information systems outsourcing	(Gonzalez et al. 2015)

et al. 2017), explores IT outsourcing satisfaction from vendor viewpoints. Cha and Kim (Cha and Kim 2018), conduct an industrial case study with top IT outsourcing (ITO) companies in Korea and identify SFs, from the client perspective, for mutual collaboration with suppliers in the ITO industry. Similarly, Blijleven et al. (Blijleven et al. 2019), conduct multiple case studies in IT outsourcing for SFs identification in the context of lean implementation for strengthening the stakeholders' relationships.

Ikediashi and Okwuashi (Ikediashi and Okwuashi 2015), identify 31 FSs through a questionnaire survey. The factors were then grouped into six broad categories such as cost, strategy, innovation, quality, time, and social factors. Rahman et al. *(*Rahman et al. 2021*)*, execute a questionnaire survey to explore the factors affecting the decision of offshore outsourcing application maintenance. Könning et al. *(*Könning et al. 2019*)*, conduct SLR on recent research developments in IT Outsourcing. Rahman et al. (Rahman et al. 2020), analyses the factors affecting the decision of offshore outsourcing application maintenance through SLR. Khan et al. *(*Rave and Piskin 2019b*)* explore influential factors for clients in the selection of offshore software vendors.

Ismail and razali (Ismail and Razali 2015) investigate factors for software testing projects outsourcing through a survey. They identify factors like needs identification, vendor selection, contract establishment, project planning, infrastructure setup, project monitoring, quality assessment, testing phase preparation, and project close-out. Bashir et al. *(*Bashir et al. 2020*),* identify SFs for software process improvement (SPI) in outsourcing organizations such as satisfaction, trust, commitment-based organizational culture, information sharing, mutual understanding, and strong relationship between partners from client-vendor perspectives.

Khan et al. *(*Rave and Piskin 2019b*)* find out various factors for clients such as skilled human resources, cost-saving, efficient relationships management, quality of product and services, and appropriate infrastructure in the selection of offshore SDO vendors.

2.3 Problem statement and motivation

Previous authors like Li (Li 2013), Roses et al. (Roses 2013), Yilitalo (Wang 2011), Kedia and Lahiri (Kedia and Lahiri 2007a), Kinnula (Kinnula et al. 2007a), Ellram (Ellram and Edis 1996), Tuten and Urban (Tuten and Urban 2001), Juntunen (Kinnula et al. 2007b), Gong et al. *(*Gong et al. 2007*)*, Flemming and Low (Flemming and Low 2007), Zhang and Huang (Zhang and Huang 2009), Beulen and Ribbers (Beulen and Ribbers 2002), Bocij (Bocij and Hickie 2008), Ee et al. *(*Ee et al. 2013*),* Kotabe et al. *(*Kotabe et al. 2008*),* and Piltan et al. (Piltan and Sowlati 2016), have addressed some of the problems of outsourcing but they do not specifically focus on the identification of SFs. A significant proportion of the studies (Ellram and Edis 1996; Tuten and Urban 2001; Szu-Yuan et al. 2002; Dwyer et al. 1987; Forrest and Martin 1992; Bruce et al. 1995; Virolainen 1998; Rhodes et al. 2016; Gonzalez et al. 2015; Slowinski et al. 1993; Mohr and Spekman 1994; Halinen 2012; Zhu et al. 2001; Kern and Willcocks 2000; Anderson and Narus 1990; Embleton and Wright 1998; Ring and Van de Ven 1994; Blomqvist 2002; Brinkerhoff 2002; Kedia and Lahiri 2007b; Greiner et al. 2012; dos Santos and Macaria da Silva 2015; de Carvalho et al. 2018; Mehta and Mehta 2017; Gopalakrishnan et al. 2017; Cha and Kim 2018; Blijleven et al. 2019; Ikediashi and Okwuashi 2015; Rahman et al. 2021; Könning et al. 2019; Rahman et al. 2020) identifies success factor but majority of the studies conducted in the domain of outsourcing partnerships are from the perspective of business process (Ellram and Edis 1996; Tuten and Urban 2001; Dwyer et al. 1987; Rhodes et al. 2016; Katato et al.

2019; Zhu et al. 2001; Anderson and Narus 1990; Embleton and Wright 1998; Ring and Van de Ven 1994; Blomqvist 2002; Brinkerhoff 2002; Kedia and Lahiri 2007b; Greiner et al. 2012), IS (Szu-Yuan et al. 2002; Virolainen 1998; Rhodes et al. 2016; Gonzalez et al. 2015; Sanchez and Terlizzi 2017) or IT outsourcing (Bruce et al. 1995; Slowinski et al. 1993; Mohr and Spekman 1994; Halinen 2012; Kern and Willcocks 2000; dos Santos and Macaria da Silva 2015; de Carvalho et al. 2018; Mehta and Mehta 2017; Gopalakrishnan et al. 2017; Cha and Kim 2018; Blijleven et al. 2019; Ikediashi and Okwuashi 2015; Rahman et al. 2021; Könning et al. 2019; Rahman et al. 2020).

Only few studies have been conducted on some of the aspects of software outsourcing such as software testing projects outsourcing (Ismail and Razali 2015), managing outsourced software development projects (Ahimbisibwe 2015), client's readiness assessment towards outsourcing software projects (Abd Hamid and Mansor 2016), management of outsourcing in software development processes (Núñez-Sánchez et al. 2019), outsourcing success in software start-ups (Rave and Piskin 2019b), selection of offshore software outsourcing vendors (Rave and Piskin 2019b). Although, like our study, the above studies were conducted from the software outsourcing perspective, still none of them focus on the formation of a partnership in software outsourcing. Moreover, majority of the above were not conducted in an offshore setting.

Kinnula (Kinnula et al. 2007a) was the first one to work on the formation and ongoing management of SOP, but their study was conducted from the perspective of SOP formation lifecycle process and did not identify factors affecting the formation of SOP. Furthermore, they neither conduct SLR nor their study performs industrial analysis from different perspectives. According to our knowledge and relevant keyword searching on different digital libraries, it has been confirmed that the authors of this study are the first ones to conduct an empirical studies on the SOP as a general and the identification and analysis of SFs as a particular.

3 Research Methodology

The method attempts to solve the problem following a two-step process i.e. an SLR followed by a questionnaire survey. These two techniques were incorporated as a data collection methodology for the extraction and verification of factors to SOP formation. To answer RQ1, this study implements the SLR process whereas the remaining RQs are answered through the data gathered using an empirical survey. First of all, the available literature was reviewed by executing SLR, and as a result; we have acknowledged twenty-six SFs for SOP formation. Furthermore, to validate the findings of SLR, based on the initial outcomes of SLR, a questionnaire was designed to get the perception of the experts practicing outsourcing for several years. Through the questionnaire, we get an opinion from experts regarding the factors that motivate outsourcing clients in upgrading or renewing their existing outsourcing relationship to a partnership with vendor organizations. For the sake of analysis, the contributing experts were divided into different levels on the basis of their industrial experience (i.e. senior, intermediate, and junior) and role in outsourcing (i.e. contract negotiator, decision-makers, outsourcing manager, and academician). Further, experts were distributed into client-vendor groups based on their company type and factors were classified as belonging to clients or vendors. Finally, the results of the two methods were correlated. Our approach can be seen as a two-stage process and is presented in much detail in the subsequent subsections.

3.1 Data Collection Phase-1: SFs Identification Via SLR

The outcomes of this section are based on the data collected in two-stage as presented below:

In the first stage of data collection, different factors that influence clients to renew or promote their current contract-based outsourcing relation with their vendors to a partnership were identified. The SLR helps to analyse and test specific data based on study questions by using the analytical approach of primary studies. In our previous research, SLR was also adopted as the main approach (Ali et al. 2019). We developed a review plan, usually called a protocol, before performing the review. The protocol elucidates various phases of the SLR such as planning, conducting, and reporting. Our protocol related information can be found in (Ali and Khan 2014a).

We found 5, 908 papers by using our predefined search string on the listed venues. Just 156 out of 5, 908 publications qualify the criteria of inclusion/exclusion. To finalise, the repetition was removed by rejecting four articles, which were indexed in more than one database. We get 152 articles as a final sample for our SLR. To minuscule the reviewer's bias in data extraction, the inter-rater reliability test was conducted by selecting twenty random articles from the primary sample of articles. Using the listed inclusion/exclusion criteria with the quality checklist the two secondary reviewers make the final selection. To estimate the inter-rater agreement between primary and secondary reviewers, we carried out the nonparametric Kendall concordance coefficient (W). The W value of Kendall falls between 0 (complete disagreement) and 1 (complete agreement) (Von Eye and Mun 2006). The same procedure was adopted, during the primary selection, as an inter-rater reliability test. The results of our SLR study are summarized in Table 2.

3.2 Empirical survey

A survey has been employed here to study the perception of experts regarding the criticality of various SFs through an online questionnaire with outsourcing experts by utilising Google Drive the online survey tool. This is a free survey tool used for such study design.

We choose survey for this empirical study because survey is considered to be an appropriate method for collecting hidden empirical data (Lethbridge et al. 2005). Moreover, it is one of the empirical research methods best suited for the collection of data from heterogeneous sources. That is why survey results often reveal a high level of external validity. It is complementary to other empirical research methods such as controlled experiments that typically show a high-level of internal validity (Ciolkowski et al. 2003). Secondly, our study nature is both quantitative and qualitative and a questionnaire survey is the most common method for such type of mixed research (Creswell 2013). A questionnaire-based survey is considered to be an appropriate tool for collecting tacit quantitative and qualitative information (Lethbridge et al. 2005).

In the below sub-sections, we describe the process of designing, data gathering, and analysis. Here, we will cover data collection, the methods that choose participants, and questionnaire data analysis strategies.

Table 2 Factors identified via SLR

Success Factors	N = 152	%	Sources (List given at the Appendix)
Mutual interdependence and shared values	103	68%	1, 4, 6, 7, 8,9, 12, 13, 14, 17, 18, 19, 20, 21, 22, 23, 27, 28, 29, 31, 33, 34, 35, 37, 38, 39, 40, 41, 42, 43, 45, 46, 47, 49, 50, 51, 52, 53, 54, 55, 56,57, 60, 61, 63, 64, 65, 67, 68, 69, 70, 71, 72, 73, 75, 76, 78, 79, 82, 83, 84, 85, 86, 87, 89, 91, 92, 93, 94, 96, 97, 98,99, 101, 102, 103, 104, 106, 107, 109, 111, 112, 115, 117, 118, 121
Mutual trust	90	59%	1, 3, 4, 5, 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 21, 22, 23, 24, 26, 27, 29, 31, 32, 33, 34, 36, 39,40, 41, 42, 46, 47, 48, 49, 50, 52, 53, 55, 56, 61, 62, 63, 64, 66, 67, 73, 76, 83, 86, 87, 88, 89, 90, 92, 93, 95, 96, 97, 98, 99, 101, 102, 103, 104, 105, 106, 107, 108, 109, 111, 118, 120, 122, 127, 131, 133, 134, 138, 140, 141, 142, 143, 144, 146, 149, 150, 151
Effective & timely communication	88	58%	1, 4, 9, 11, 12, 13, 15, 17, 22, 25, 26, 27, 29, 30, 31, 33, 36, 37, 38, 40, 41, 42, 43, 45, 46, 47, 49, 50, 53, 55, 59, 61, 62, 63, 64, 67, 69, 70, 73, 74, 76, 77, 78, 79, 80, 82, 85, 86, 87, 88, 90, 91, 93, 94, 97, 98, 101, 103, 104, 105, 107, 108, 109, 110, 111, 112, 113, 117, 118, 121, 122, 129, 130, 131, 132, 133, 135, 136, 138, 139, 140, 143, 145, 146, 148, 149, 150, 152
Quality production	87	57%	1, 2, 4, 5, 6, 8, 9, 10, 11, 16, 18, 19, 20, 21, 23, 24, 25, 26, 28, 29, 31, 32, 36, 37, 38, 41, 42, 43, 44, 45, 46, 47, 49, 52, 53, 56, 57, 60, 61, 62, 65, 68, 70, 73, 75, 76, 78, 79, 84, 86, 87, 88, 90, 93, 95, 97, 98, 99, 100, 101, 103, 104, 105, 110, 112, 114, 115, 116, 117, 118, 124, 125, 130, 133, 134, 135, 136, 137, 138, 139, 141, 143, 145, 146, 147, 148, 152
Organizational proximity	79	52%	1, 4, 7, 8, 9, 10, 17, 18, 19, 20, 21, 22, 23, 24, 25, 27, 29, 31, 32, 33, 34, 37, 38, 39, 45, 47, 49, 50, 55, 57, 59, 60, 61, 62, 64, 66, 68, 70, 71, 73, 74, 76, 78, 80, 82, 83, 84, 86, 87, 88, 90, 93, 95, 96, 97, 98, 102, 103, 104, 107, 108, 109, 110, 111, 113, 115, 117, 118, 125, 127, 132, 134, 136, 138, 139, 144, 145, 149, 152
3C (coordination, cooperation, and collaboration)	76	50%	1, 4, 6, 7, 9, 11, 12, 13, 15, 17, 22, 25, 27, 29, 31, 32, 33, 34, 35, 36, 38, 39, 40, 41, 42, 43, 45, 46, 47, 49, 50, 53, 54, 55, 59, 61, 62, 64, 67, 69, 70, 73, 76, 78, 83, 84, 85, 86, 87, 89, 93, 94, 95, 96, 99, 101, 103, 107, 108, 109, 110, 112, 116, 117, 118, 130, 132, 134, 135, 136, 138, 143, 146, 148, 149, 150
Flexible Service Level Agreements	65	43%	6, 12, 13, 18, 20, 22, 23, 25, 27, 29, 33, 34, 38, 39, 42, 46, 48, 50, 52, 54, 56, 58, 59, 60, 61, 62, 63, 66, 67, 69, 70, 72, 73, 74, 76, 78, 82, 83, 85, 86, 87, 88, 89, 90, 91, 92, 93, 95, 96, 102, 103, 104, 105, 106, 110, 115, 117, 119, 122, 132, 134, 135, 138, 144, 147
Bidirectional transfer of knowledge	59	39%	7, 8, 10, 12, 14, 15, 18, 23, 26, 33, 37, 38, 39, 40, 43, 46, 47, 49, 50, 52, 54, 58, 60, 63, 69, 75, 77, 78, 82,84, 86
Long-term commitments	56	37%	3, 4, 10, 12, 13, 18, 20, 22, 23, 25, 29, 31, 32, 33, 37, 47, 48, 49, 50, 53, 54, 58, 64, 65, 66, 69, 70, 76, 78, 83, 84, 85, 87, 89, 93, 94, 95, 97, 99, 101, 103, 105, 107, 108, 111, 112, 115, 116, 118, 126, 133, 138, 139, 149, 150, 151

Table 2 (continued)

Success Factors	N = 152	%	Sources (List given at the Appendix)
Joint management infrastructure	50	33%	1, 8, 12, 13, 16, 18, 19, 20, 27, 28, 37, 38, 46, 47, 48, 49, 52, 55, 56, 58, 59, 67, 73, 74, 78, 82, 85, 87, 93, 98, 101, 102, 104, 105, 109, 110, 111, 112, 113, 117, 119, 130, 132, 134, 136, 138, 143, 147, 149, 152
Cross culture understanding & sensitivity	49	32%	1, 3, 5, 7, 12, 15, 19, 22, 25, 29, 30, 31, 33, 35, 38, 41, 46, 47, 49, 50, 52, 60, 61, 63, 67, 69, 70, 76, 78, 80, 82, 83, 86, 88, 90, 98, 105, 107, 109, 110, 112, 113, 118, 132, 138, 141, 144, 149, 152
Success stories of the past projects	49	32%	5, 8, 9, 12, 13, 19, 22, 29, 32, 35, 36, 37, 40, 42, 44, 45, 46, 50, 57, 59, 62, 65, 67, 70, 73, 75, 78, 79, 81, 84, 86, 88, 89, 90, 92, 93, 95, 99, 107, 108, 112, 113, 118, 125, 135, 140, 145, 150, 152
Access to new markets, technology, & complementary skills	47	31%	3, 4, 6, 9, 11, 12, 16, 17, 26, 29, 31, 32, 33, 35, 37, 43, 49, 52, 56, 57, 58, 67, 69, 71, 73, 74, 77, 79, 81, 87, 95, 96, 97, 99, 100, 102, 103, 104, 112, 118, 122, 130, 134, 138, 139, 140, 146
Governance and control	47	31%	3, 4, 7, 12, 13, 15, 18, 22, 25, 26, 27, 28, 29, 32, 33, 37, 38, 39, 40, 46, 48, 50, 62, 65, 71, 74, 75, 85, 87, 88, 92, 98, 102, 104, 105, 110, 112, 116, 119, 122, 132, 133, 136, 138, 144, 147, 151
Relation specific investment and financial stability	38	25%	6, 7, 17, 20, 24, 27, 29, 34, 37, 43, 45, 51, 55, 67, 73, 78, 83, 85, 87, 90, 93, 94, 97, 100, 104, 107, 112, 119, 123, 128, 132, 135, 139, 141, 144, 145, 147, 150
Flexibility and reliability	36	24%	1, 4, 7, 8, 10, 12, 14, 15, 26, 27, 29, 33, 34, 39, 43, 46, 53, 76, 78, 87, 91, 99, 103, 106, 119, 128, 132, 134, 139, 142, 143, 145, 147, 150, 151, 152
Organizational transparency and receptivity	36	24%	6, 8, 17, 21, 24, 29, 31, 34, 38, 42, 45, 46, 49, 50, 52, 54, 59, 61, 72, 76, 79, 82, 97, 106, 107, 110, 115, 117, 119, 122, 132, 134, 135, 138, 144, 147
Spurring innovation	35	23%	8, 21, 22, 24, 26, 27, 29, 31, 38, 41, 42, 43, 52, 55, 57, 69, 75, 76, 77, 83, 87, 99, 104, 112, 116, 119, 125, 131, 135, 140, 142, 144, 146, 149
Win-Win strategy	29	19%	1, 2, 7, 8, 9, 10, 20, 26, 27, 37, 45, 52, 55, 62, 78, 83, 101, 104, 107, 109, 115, 117, 126, 131, 134, 139, 142, 146,148
Effective relationship management	24	16%	1, 20, 21, 24, 37, 52, 59, 60, 73, 74, 78, 82, 93, 94, 101, 102, 105, 110, 117, 126, 131, 139, 142, 146
Constructive conflicts resolution	23	15%	1, 12, 13, 18, 20, 23, 37, 47, 49, 58, 62, 76, 93, 97, 103, 107, 109, 117, 126, 131, 139, 142, 146
Top management engagement	23	15%	7, 20, 25, 27, 29, 31, 32, 37, 47, 49, 58, 62, 87, 91, 93, 108, 111, 112, 117, 126, 131, 139, 142
Social Networking	21	14%	1, 12, 15, 26, 34, 38, 59, 61, 67, 77, 88, 90, 104, 109, 110, 112, 118, 121, 124, 129, 138
Honesty and openness	18	12%	8, 27, 37, 40, 56, 70, 73, 83, 84, 87, 95, 97, 104, 112, 113, 124, 134, 142
New business opportunity	18	12%	13, 15, 17, 22, 26, 32, 33, 42, 55, 83, 88, 97, 102, 113, 118, 124, 129, 141
Human Resource Management	09	6%	14, 28, 38, 47, 59, 60, 62, 112, 125

3.2.1 Survey Design

A survey design provides a numeric or quantitative description of the opinions or trends of a population by studying a sample of that population. The researcher then generalises or makes assertions concerning the population, from sample results. A questionnaire survey is also deliberated as quantitative because it is an appropriate technique for collecting and evaluating quantitative data. It allows the investigator for conversation and exploration of new themes that arise during the data collection (Lethbridge et al. 2005).

Designing a survey is a two-step process i.e. sampling and questionnaire design. Sampling is defined as scanning, listing, approaching, and appointing suitable subject experts to participate in the survey (Creswell 2013). The investigator pre-designed a series of questions for experts to be replied to in the design process. In the subsections below, these steps are further elaborated.

Sampling Sample can be obtained through a methodical approach or non- methodical approach (Creswell 2013). In the methodological approach, with the aid of certain statistics, samples are collected directly from the entire available population. While in a non-methodical approach, it is difficult to list the entire population (Creswell 2013). Our technique can be seen as a non-methodical approach, since it was difficult to enlist all the software companies engaged in outsourcing. Cox et al. (Cox et al. 2009), Niazi et al. (Niazi 2005), and Khan et al. (Khan et al. 2012) have followed a similar approach.

Designing Questionnaire The core component of a survey is its questionnaire. The results of surveys mainly depend on the questionnaire that scripts the dialogue (Krosnick 2018). The script of our questionnaire is composed of the following segments.

> **Composition**: The questionnaire was distributed into three separate parts, i.e. demography, a list of 26 variables to be weighed by the seven-point Likert scale, and indications of submission. The composition was adopted from (Cox et al. 2009; Niazi 2005; Khan et al. 2012).
> **Questions type:** For data collection as an instrument to collect self-reported data, we used a closed format questionnaire. The questionnaire script was based on the SFs identified via SLR. To rank the importance of SFs, the experts were asked to weights each SF relative importance from extremely agree to slightly disagree. To gain the tacit facts on SFs some open-ended questions were also incorporated in the questionnaire to find any other SFs distant from the identified ones.
> **Rating scale:** An evaluation scale is a range (e.g., satisfaction, frequency, agreement) that aid in measuring different phenomena and their characteristics in the questionnaires (Menold and Bogner 2016). Experts participants rate the content of each item and question by choosing the relevant category (Menold and Bogner 2016). The total numbers of response categories are also a very important characteristic of the evaluation scale. It determines the ease of understanding of the range in question and thus contributes to the degree of differentiation of the rating scale. Krosnick et al. (Krosnick and Fabrigar 1997), conclude that the best measurement (in expressions of the degree of differentiation, validity, and reliability) could be reached through a scale with five-seven categories. Studies show that participants also favored scales of this length (Krosnick and Fabrigar 1997).

Study (Menold and Bogner 2016) confirms that using too many rating categories makes it difficult for survey participants to answer the individual question because with the increase in the rating categories, the clarity of the meaning of the individual categories decreases. Conversely, if very few categories are used, the rating scale is not appropriately differentiated (Menold and Bogner 2016). Researchers (Maitland 2013; Menold et al. 2014; Saris and Gallhofer 2014) concluded that test-retest validity and reliability can be increases through verbally labelling all the rating scale categories (Maitland 2013). Menold and Kaczmirek (Menold et al. 2014) and Saris and Gallhofer (Saris and Gallhofer 2014) found that completely verbalized response scales also amplify cross-sectional reliability.

According to Menold and Bogner (Menold and Bogner 2016), a non-substantive category like "no opinion", "not sure", "don't know" in rating scales should always be given because it is expected that participants who do not have an appropriate judgment on the issue in question would then feel obligated to give a substantive answer.

In this study, seven points Likert scale from extremely agree to slightly disagree with "not sure" as a substantive category is incorporated as shown in Appendix 6.

> **Content***:* All 26 factors were used as input to the questionnaire survey for rating.
> **Testing**: Psychometric quality criteria have been used to check the effects of rating scales. These criteria include systematic measurement error, reliability, and validity (Menold and Bogner 2016). The questionnaire test was carried out by six experts working extensively in the domain around the world. Experts were identified based on our previous collaboration experience and were selected based on their expertise and relevance to the research field. In this study, systematic measurement error in the form of item nonresponse, middle response pattern, extreme response pattern, participants preferences, and the technical hitches they face while answering survey questions have been tested (Menold and Bogner 2016; Menold et al. 2014).

3.2.2 Data Gathering

In terms of data collection, this work specifically concentrates on the following two aspects.

1. To confirm the SLR results.
2. To get the perception of the experts engaged in the global outsourcing projects.

Executing On-line Surveys Firstly, experts were invited via an open letter of invitation, which provides brief overview of the work. In particular, the nature of the survey, the topics to be discussed during the survey, and the expected time to complete it were mentioned. It also entrusted the confidentiality and privacy of the participant or its organization through the measures taken by the investigator. The invitation letter was posted on the below listed social media and companies' websites.

- Yahoo groups (https://groups.yahoo.com)
- LinkedIn (https://linkedin.com) and to
- Software Companies in China, Saudi Arabia, and Pakistan.

Besides, we also send an invitation through email to the authors of practitioners' articles, to participate in the online survey. During the SLR, these practitioners' written articles were noted. Sums of 151 experts were contacted back for participation in response to these invitations. After receiving their consent the web link of the survey forms were sent to these experts. We acknowledge 77 completed survey forms within the survey time limit. However, seven survey forms were rejected after the consistency requirements were applied. There were only 70 survey forms left for further review after exclusion. Of the 70 survey forms, 32 were completed by overseas experts, while the remaining 38 were completed by local experts. Our response rate to the survey was 34.65%. Some experts give a quick answer to our survey invitation and for others, we sent a reminder. This reminder helped considerably.

3.2.3 Data Analysis

The final sample of questionnaire data was then further analysed on the basis of expert experience level, their outsourcing role, and organizational affiliation, i.e. vendor-client. The reason behind expert classification is that outsourcing decision requires experts from different experience level in the form of contract negotiator, decision-maker, outsourcing facilitator, dispute resolution specialist, outsourcing manager, or communication engineers, etc. Moreover, prior to the redesign, experts were grouped haphazardly, which often led to experts with significant experience knowing about most of the outsourcing factors, leaving those with little experience confused and frustrated. Furthermore, expert classification is aligns with the preceding literature such as (Khan and Niazi 2012a).

Client-vendor distribution is based on the empirical survey outcome using a reference model developed by Prikladnicki et al. *(*Prikladnicki et al. 2004*)*. The same methodology is used by Khan et al. (Khan et al. 2018; Khan et al. 2017). We also adopted it in our preceding work (Ali et al. 2020). Although, we distribute the factors based on the reference model (Prikladnicki et al. 2004) into either belongs to the clients or vendors. The factors are equally important to both client and vendor because the frequency on the other side is not zero. However, the main target of our study is vendors. Therefore, we recommend vendor to focus on all the mentioned factors, especially the critical ones.

In our survey, contributors are requested to carefully choose the options on the 7-point Likert scale against the listed SFs. Data were then imported into the qualitative software package for further analysis. For analysis purposes (RQ3 to RQ6), we have tested linear by linear association using chi-square tests, to find a significant difference among the identified factors. To evaluate major differences between ordinal variables linear by linear association testing is a more prevailing method compared to Pearson chi-squared testing (Halinen 2012). The result of linear association test will be considered significant if the p-value is $= < 0.05$, which is the designated alpha level.

In order to compare the results of SLR and survey (RQ7), we have conducted the Spearman rank-order correlation test. Since the SLR outcomes were in the form of frequency data (not distributed into groups) and were therefore suitable to be tested using Spearman. Conversely, the questionnaire survey responses were taken on seven Likert scales. Therefore, the responses were assembled into three groups i.e. A, B, and C, as presented in Table 3. First category is positive (A) = (EA + MA + SA). Second group is neutral, neither or not sure (B) while the third category is negative (C) = (EDA + MDA + SDA).

Table 3 Summary of CSFs identified through empirical study

Code	Success Factors	Total Expert Responses = 70									
		Positive				Negative				Neutral	
		EA	MA	SA	A%	EDA	MDA	SDA	DA%	N	N%
F1	3C (coordination, collaboration & cooperation)	44	18	4	94%	0	0	0	0%	4	6%
F2	Entre to new markets, up-to-date technology, and skills not available in-house/source	34	22	12	97%	0	0	0	0%	2	3%
F3	Bidirectional transfer of knowledge	32	24	8	91%	0	0	2	3%	4	6%
F4	Constructive conflict resolution mechanism	20	32	6	83%	0	0	0	0%	12	17%
F5	Cross cultural understanding & sensitivity	30	20	10	86%	2	0	0	3%	8	11%
F6	Effective & timely communication	48	14	6	97%	0	0	0	0%	2	3%
F7	Effective relationship management	42	14	12	97%	0	0	0	0%	2	3%
F8	Relation specific investment and financial stability	26	28	10	91%	0	0	2	3%	4	6%
F9	Flexibility and reliability	30	26	8	91%	0	0	0	0%	6	9%
F10	Flexible Service Level Agreements	20	28	16	91%	0	0	0	0%	6	9%
F11	Governance and control	18	22	10	71%	1	3	6	14%	10	14%
F12	Honesty and openness	32	20	6	83%	2	0	2	6%	8	11%
F13	Human Resource Management	30	22	6	83%	0	2	2	6%	8	11%
F14	Joint management infrastructure	30	12	10	74%	0	4	4	11%	10	14%
F15	Long-term commitments	32	24	8	91%	0	0	2	3%	4	6%
F16	Mutual interdependence & shared values	34	26	6	94%	0	0	0	0%	4	6%
F17	Mutual trust	54	8	4	94%	0	0	0	0%	4	6%
F18	New business opportunity	20	16	8	63%	2	8	8	26%	8	11%
F19	Organizational proximity	18	22	10	71%	0	0	2	3%	18	26%
F20	Organizational transparency & receptivity	26	28	12	94%	0	0	0	0%	4	6%
F21	Quality production	46	18	4	96%	0	0	0	0%	2	4%
F22	Social networking	14	22	8	63%	0	8	2	14%	16	23%
F23	Spurring innovation	22	20	8	71%	0	0	2	3%	18	26%

Table 3 (continued)

Code	Success Factors	Total Expert Responses = 70									
		Positive				Negative				Neutral	
		EA	MA	SA	A%	EDA	MDA	SDA	DA%	N	N%
F24	Success stories of the past projects	44	18	6	97%	0	0	0	0%	2	3%
F25	Top management engagement	44	16	8	97%	0	0	0	0%	2	3%
F26	Win-Win strategy	24	22	12	83%	0	0	0	0%	12	17%

Agree (A), Extremely Agree (EA), Moderately Agree (MA), Slightly Agree (SA), Disagree (DA), Extremely Disagree (EDA), Moderately Disagree (MDA), Slightly Disagree (SDA), Not Sure, or neutral (N)

4 Results

The section presents the results of the SLR and empirical survey. Specifically, the outcomes relevant to study research questions are discussed. We have responded to RQ1, RQ2, RQ3, RQ4, RQ5, RQ6, and in subsections 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, and 4.7 below.

4.1 Summary of Factors, Identified Via Systematic Literature Review (RQ1)

After completing the final selection phase, we start extracting data from the finally selected articles. A list of quotes from each article in the final sample of 152 articles was noted at the last stage of the data extraction process. For the purpose to classify these quotes into different groups each primary investigator individually goes through these quotes. To reach an initial categorisation of the factors, a primary investigator codes factors with the help of a secondary investigator.

For coding, a qualitative coding method based on the Grounded theory (Strauss and Corbin 1990) was used, and finally a list of 39 factors names were coded. These names were further analysed by overseas collaborators and some names were merged. Finally, we got twenty-six factors as illustrated in Table 2.

This process was explored in more detail in our previously published conference paper (Ali and Khan 2014a). Six of these SFs were ranked as *critical success factor (CSF)* such as 'mutual interdependence and shared values', 'mutual trust', 'effective and timely communication', 'organizational proximity', and 'quality production'.

'Mutual interdependence and shared values' (68%) is the most common SFs identified in our study. Similarly 'mutual trust' (59%) is the 2nd most cited CSF in our findings. It was also found that 58% of articles in our study have cited 'effective and timely communication' as a generally recognised CSF to be addressed by vendor organizations. Likewise, 57% of the papers in our study have quoted 'quality production' while more than half of the articles in our study described 'organizational proximity' (52%) and '3C- coordination, cooperation and collaboration' (50%) as CSFs for outsourcing partnerships.

4.2 Summary of Factors, Identified Via an Empirical Survey (RQ2)

Table 3 demonstrates that all the reported factors were positively agreed upon by more than 60% of the survey experts. Likewise, other highest-ranked SFs, in the survey are 'quality production', 'success stories of the past projects', 'effective communication', 'top management engagement', 'access to complementary skills, new markets, and technologies', and 'effective relationship management', where 97% of the participants agreed positively on all these factors. Literature as described follow has obtained similar findings:

- In view of Webb (Webb and Laborde 2005) effective and timely client-vendor communication gives an organization a chance to form strong relations for quality production. Partnerships are the most appropriate way to enter new markets, new technologies, and skills that are not available from internal sources.
- According to Berger et al. (Berger and Lewis 2011), active communication amongst outsourcing partners is supposed to be a vital element of a successful relationship such as partnerships.
- Beulen and Ribbers (Beulen and Ribbers 2002) states that effective relationship management is vital to the formation of an outsourcing partnership.

- Effective communication provides a strong opportunity to build partnerships (Webb and Laborde 2005).
- Today's outsourcing relationships are not formed solely for cost savings, but due to the best quality provided to the other side (Baliyan and Kumar 2014).
- Partnerships provide both parties with entry to new markets, up-to-date technologies, and skills that are not accessible in-house, and to conduct learning activities for mutual benefit (Lee and Lim 2005).
- Success stories of past projects are an important factor and generally mature and successful outsourcing arrangements may transform into outsourcing partnerships (Ali and Khan 2014b).
- Correspondingly, the second extremely agreed SFs in the questionnaire are 'organisational transparency and receptivity', 'mutual interdependence and shared values', '3C (cooperation coordination, collaboration)', and 'mutual trust'.

This also confirms the literature results of the following reports:

- According to Bowersox (Bowersox et al. 2003), a long-term partnering relationship is formed for the purpose to achieve mutual benefits greater than the organizations might be able to attain independently.
- According to Alexandrova (Alexandrova 2012), how organizations 'acquire expertise' from their partners should be given extraordinary attention, as it is the key source of growth in strategic competencies.
- Literature discloses that the present trading style is shifting from competition to cooperation, teamwork, and coordination (Kumar and van Dissel 1996).
- In partnership organizations with mutual goals takes combined decisions, share assets, information, risks, and benefits, and work together with the aim to achieve mutual valuable outcomes (Kinnula et al. 2007b).

The outcome of the empirical survey confirms the following SFs on third ranks (91%) of importance. These include, 'bidirectional transfer of knowledge', 'flexible service level agreements', 'long-term commitments', 'flexibility and reliability', and 'relation specific investment and financial stability'. The following literature shows the value of these factors.

- Many typical organizational partnerships use formally written agreements as a controlling tool. Because they help to put certain limitations on the power and behaviour of the individual partners that are mutually enforceable (Goo 2010). While partnerships use flexible SLA as a control tool for SDO engagements, this will be done through mutual trust (Mingay and Govekar 2002).
- Commitment assures the partner that the relationship can continue for a long period (Henderson 1990), and has been classified as "a lasting desire to stay in a valued relationship" (Cha and Kim 2018).
- The information might have two forms: explicit/formal and implicit/informal. BTK is essential for the apprehension of the capability and is delivered using the channels via active communication among the associates (Zahedi et al. 2016).
- Klepper and Jones (Blijleven et al. 2019) point out that the partner's financial stability is an integral element of the SOP because the relationship needs the client and the vendor company to invest in the relationship.

- The collaboration style relationship is flexible, i.e. it allows for the adjustments over a negotiated period in contract/SLA and project specifications. This partnership is life-long and can lead to contract renewals many times (Klepper 1998).

The findings of this study conclude that the fourth most significant element in the SOP vendor organization is 'cross-cultural awareness and sensitivity', i.e. 86%. More recent work in this area explains the significance of these factors as:

- The failure of many cross-cultural software development relationships is concluded as cultural differences and lack of ability to improve 'cross cultural sensitivity and differences' (Johnson et al. 2006).

'Constructive conflicts resolution mechanism', win-win strategy', 'human resource management', and 'honesty and openness' are classified as fifth-ranked (83% positively agreed) based on our survey results.

- Conflicts represent the extent of disagreement in operational partnerships. Resolve the differences when arises (Kinnula 2006).
- Traditional outsourcing is based on a win-loss mindset, whereas partner outsourcing is focused on a win-win attitude (Ali and Khan 2014a).
- In the partnership, both parties openly share project status information (Kinnula et al. 2007b).
- According to Khan and Niazi (Khan et al. 2009), human resource management is an important factor that vendors should solve effectively in outsourcing relations.

Seventy-one percent of the participants are positive about 'governance and control', 'spurring innovation', and 'organizational proximity' are significant factors for successful outsourcing. The significance of these factors is reported in the literature as follows:

- The factor that governs organizational differences is 'organizational proximity' since it "belongs to the same reference space". It also helps to establish common norms, statements, working standards, and practices (Torre and Rallet 2005).
- Governance and control are concerned with taking corrective actions between distributed partners in problem situations for resolution. Likewise, it also requires the resolution of disputes of concern among various outsourcing partners (Becht et al. 2003).
- Lee and Kim (Blomqvist 2002) state that in order to become partners, outsourcing vendors must be capable of creating innovative ideas.

We found two factors namely 'new business opportunity' and 'social networking' having a percentage below 70 %, i.e. 63%. Moreover, relevant literature also confirms that social networking amongst employees of the partner organization is a constituent component of the partnership (Ali and Khan 2014a).

4.3 Analysis of the Factors, Identified Via Empirical Survey, Based on Practitioner Level of Experience (RQ3)

In our empirical study, a total of 70 outsourcing experts have participated. We distribute these professionals into three different groups based on their proficiencies. 'Junior' experts

are those with 1–5 years of outsourcing experience, those with 6–10 years' experience would be considered at 'Intermediate' while those with more than 11 years of experience were considered as 'Senior' experts. The results of the percentage of responses from various outsourcing experts are shown in Table 3. Out of 70 participants of the survey, 20 experts were 'Senior', 35 were 'Intermediate', and 15 participants were 'Junior' as illustrated in Table 4.

The findings indicate that out of 26 SFs, twenty are those about which more than 80% of 'Junior' professionals say that might play a positive role in the development and management of SOPs. Twenty-one SFs were considered important for SOP formation by 'Intermediate' experts. All except two of the 26 SFs listed are considered critical by senior experts, who have more than ten years of experience. These two factors are:

- 'Governance and control' and
- 'New business opportunity'.

For the given list of SFs as given in Table 3, we did not find any major difference based on levels of expert experience.

Seven factors have been *extremely agreed* upon by more than 50% of the senior-level experts. Factor 'top management engagement' gets the highest score (85%) in the 'senior level' experts category. 'Effective on-time communication' and 'mutual trust' get 80% ratification by senior experts. 'Effective relationship management' and 'quality production' have the third most (75%) in this category. Likewise, '3C (coordination, collaboration, and cooperation)' and 'success stories of the past projects' are the fourth most significant factors to be considered having 65% occurrence.

In the '*extremely disagree*' column of senior level experts, only three factors 'cross culture understanding and sensitivity', 'governance and control', and 'honesty and openness' were found with a count of only one as given in Appendix 5 (: Table 15). Conceptually similar work has also been carried out by Khan and Niazi (Khan and Niazi 2012b).

For intermediary experts, out of the 26 identified SFs, ten factors were *extremely agreed* by >=50% of the intermediary experts. Factor 'mutual trust' gets the highest proportion (71%) of occurrence among the intermediary experts. 'Effective on-time communication' (69%) got the second rank while 'quality production-66%' got the third rank.

'Effective relationship management' and 'top management engagement' both united in the fourth rank with (63%) *extremely agree* endorsement by the intermediary experts.

'Success stories of the past projects' and 3Cs with 60% endorsement are ranked fifth by intermediate-level experts. 'Cross culture awareness and sensitivity', 'access to novel markets', innovations and complementary skills', and 'mutual interdependence and shared goals' are the three SFs that shared the sixth rank with 51% occurrence in the intermediate expert's group.

We found only two factors i.e. 'honesty and openness' and 'new business opportunity' in the extremely disagree list of intermediary experts with a count of only one as given in Appendix 1 (: Table 15). Conceptually similar work has also been carried out by Khan and Niazi (Khan and Niazi 2012b).

For junior professionals, out of the 26 identified SFs, eleven factors have been extremely agreed upon by >=50% of junior level participants. It is interesting to note that in the group of junior level experts, 'mutual trust' has the highest percentage (87%).

'Success stories of the past projects' and '3C (coordination, cooperation, and collaboration)' are the secondly high (71%) recognised factors while 'effective on-time communication', 'flexibility and reliability', 'honesty and openness', 'human resource

Table 4 Distribution of SFs based on expert experience

Code	Success Factors	Expert Responses = 70									Linear-by-Linear association Chi-Square Test with α=0.05 & df=1	
		Senior (N=20)			Intermediate (N=35)			Junior (N=15)				
		A	DA	NS	A	DA	NS	A	DA	NS	X²	P
F1	3C (coordination, collaboration & cooperation)	90	0	10	94	0	6	100	0	0	0.713	0.398
F2	Entrée to new markets, up-to-date technology, and skills not available in-house/source	90	0	10	100	0	0	100	0	0	0.346	0.556
F3	Bidirectional transfer of knowledge	95	0	5	85	6	9	100	0	0	1.430	0.232
F4	Constructive conflict resolution mechanism	80	0	20	89	0	11	73	0	27	1.962	0.161
F5	Cross cultural understanding & sensitivity	80	5	15	86	0	14	100	0	0	0.000	0.982
F6	Effective & timely communication	90	0	10	100	0	0	100	0	0	0.346	0.556
F7	Effective relationship management	90	0	10	100	0	0	100	0	0	0.346	0.556
F8	Relation specific investment and financial stability	95	5	0	86	3	11	100	0	0	0.416	0.519
F9	Flexibility and reliability	95	0	5	86	0	14	100	0	0	0.001	0.977
F10	Flexible Service Level Agreements	95	0	5	86	0	14	100	0	0	0.001	0.977
F11	Governance and control	75	25	0	75	14	11	60	0	40	0.000	1.000
F12	Honesty and openness	65	15	20	86	3	11	100	0	0	1.381	0.240
F13	Human Resource Management	65	20	15	86	0	14	100	0	0	1.381	0.240
F14	Joint management infrastructure	60	15	25	72	14	14	100	0	0	0.575	0.448
F15	Long-term commitments	95	0	5	85	6	9	100	0	0	0.113	0.737
F16	Mutual interdependence & shared values	95	0	5	91	0	9	100	0	0	0.150	0.699
F17	Mutual trust	95	0	5	86	0	14	100	0	0	0.150	0.699
F18	New business opportunity	80	15	5	60	23	9	26	47	27	1.216	0.270
F19	Organizational proximity	80	0	20	71	3	26	60	7	33	0.346	0.556
F20	Organizational transparency & receptivity	90	0	10	94	0	6	100	0	0	0.713	0.398
F21	Quality production	95	0	5	97	0	3	100	0	0	0.346	0.556

Table 4 (continued)

Code	Success Factors	Expert Responses=70									Linear-by-Linear association Chi-Square Test with $\alpha=0.05$ & df=1	
		Senior (N=20)			Intermediate (N=35)			Junior (N=15)				
		A	DA	NS	A	DA	NS	A	DA	NS	X^2	P
F22	Social networking	60	20	15	60	14	26	66	7	27	0.237	0.626
F23	Spurring innovation	75	0	25	71	3	26	66	7	2	0.193	0.660
F24	Success stories of the past projects	100	0	0	97	0	3	93	0	7	0.346	0.556
F25	Top management engagement	100	0	0	97	0	3	93	0	7	0.346	0.556
F26	Win-Win strategy	85	0	15	80	0	20	87	0	13	2.435	0.119

management', 'joint management infrastructure', 'long-term commitments, ' and 'mutual interdependence and shared values', and 'quality production' all share rank three (53%).

We bring into being about only one factor *extremely disagrees* by junior level experts i.e. 'new business opportunity'. However, as seen in Appendix 1 (: Table 15), the factor has a frequency of only one. Table 5 offers information on the distribution of the common critical factors highly recognised by these groups of experts:

- 'Effective relationship management' and 'top management engagement' are quoted as strongly agreed in >= 50% by senior and intermediary level experts.
- 'Mutual interdependence and shared values' are strongly endorsed by >= 50% of intermediate and junior level practitioners.

We found only five factors as extremely agreed by >= 50% of experts in all the three categories of experts. These factors are: '3C (coordination, cooperation, and collaboration)', 'effective and on-time communication', 'mutual trust', 'success stories of past projects', and 'quality production' as shown in Table 5. There is a clear consensus among our findings and other researchers. The following literature refers to the importance of these factors:

- Kishore (Kishore et al. 2003) categorised outsourcing relations into four groups. These are alignment, support, alliance, and reliance. Alliance is a highly trusted relationship with low control over contract execution. An outsourcing partnership is a type of alliance relationship (Srinivasan and Brush 2006; McFarlan and Nolan 1995).
- Webb and Laborde (Webb and Laborde 2005) noted that 'efficient and effective contact' between client and vendor organizations creates an incentive for quality development and establishes an enduring partnership between clients and vendors. The most appropriate way to reach new markets, new technology, and skills that are not accessible internally is possible through partnerships.
- Berger et al. (Berger and Lewis 2011), found communication effectiveness among outsourcing partners vital for fruitful partnership formation. Furthermore, for successful

Table 5 Common factors identified by experts having different levels of experience

Critical Factors	Senior (n=20)	Intermediate (n=35)	Junior (n=15)
	% of Strongly Agree	% of Strongly Agree	% of Strongly Agree
Mutual trust	80	71	87
Effective & timely communication	80	69	53
Quality production	75	66	53
3C (coordination, cooperation & collaboration)	65	60	67
Success stories of the past projects	65	60	66
Effective relationship management	75	63	**(33)**
Top management engagement	85	63	**(33)**
Mutual interdependence & shared values	**(40)**	51	53

  relationships such as partnerships, effective interaction among outsourcing partners is
  considered vital (Berger and Lewis 2011).
- In view of Brown (Hagel and Brown 2005), companies began to recognize the advan-
  tages of outsourcing strategies, not to gain advantages in terms of production costs, but
  also to take advantage of the quality standard provided by offshore suppliers, owing to
  the development of free markets space under the conditions of globalization and devel-
  opments in ICT.
- Kumar (Kumar and van Dissel 1996) states that the current inter-organizational sys-
  tems literature focuses on the transition from competition to collaboration, cooperation,
  and coordination in inter-organization system.
- The success stories of the past projects are a significant factor and outsourcing partner-
  ships will usually transform into established and profitable outsourcing arrangements
  (Ali et al. 2017).
- Vendors should deliver quality software products by enhancing their software develop-
  ment skills in order to support the partnership relationship for upcoming outsourcing
  projects (Greiner et al. 2012).

4.4 Analysis of Factors, Identified Via Empirical Survey, Based on Expert Outsourcing Role (RQ4*)*

All the 70 responses we have received from various experts are split into four groups
depending on the outsourcing role: academicians, outsourcing managers, decision-makers,
and contract negotiators. The academician category consists of academic staff members,
postdoc and academic researchers, and Ph.D. students having the experience and/or sound
knowledge of software outsourcing. By decision-makers, we mean CEOs and CTOs. Out-
sourcing manager's category consists of senior and junior managers, team leaders, and ana-
lysts while the negotiator category consists of the negotiators, facilitators, dispute resolu-
tion specialists, and outsourcing consultants.

In our survey eight participants were academicians, twenty-one participants were out-
sourcing managers and fifteen were decision-makers while twenty-six were negotiators/
facilitators or dispute resolution specialists. This form of expert grouping was adopted
from (Rave and Piskin 2019b). The distribution of views of the experts' participants based
on their outsourcing roles is given in Appendix 2 (: Table 16).

More than 75% of the academicians are agreed about all the SFs except 'honesty and
openness', 'Social networking', 'new business opportunity', and 'human resource manage-
ment' while more than 75% of the outsourcing managers are positive about the importance
of all SFs except the 'new business opportunity'. About seventy-three % of the decision
makers have agreed about all SFs except the factor 'new business opportunities', 'social
networking', and 'governance and control' and more than 75% of the negotiators agree
with the importance of all the SFs except the 'social networking', 'new business oppor-
tunity', 'governance and control', 'social networking', and 'spurring innovation'. The per-
centages of various SFs across the outsourcing roles are shown in Table 6. We have not
noticed any major difference across expert outsourcing roles as illustrated in Table 6. The
distributions of the most common SFs based on the expert's role are shown in Table 7.

Nine factors i.e. '3C (coordination, cooperation, and collaboration)', 'access to new
market, technology, and complementary skills', 'effective on-time communication', 'flex-
ibility and reliability', 'shared values and mutual interdependence', 'quality production',
'mutual trust', 'success stories of the past projects' and 'top management engagement'

Table 6 Distribution of the SFs based on respondent role

| Code | Success Factors | Expert Responses = 70 | | | | | |
| | | Academician (N = 08) | | | Outsourcing Manager (N = 21) | | |
		A	DA	NS	A	DA	NS
F1	3C (coordination, collaboration & cooperation)	100	0	0	90	0	10
F2	Entrée to new markets, up-to-date technology, and skills not available in-house/source	100	0	0	90	0	10
F3	Bidirectional transfer of knowledge	100	0	0	90	0	10
F4	Constructive conflict resolution mechanism	100	0	0	81	0	19
F5	Cross cultural understanding & sensitivity	87	13	0	90	0	10
F6	Effective & timely communication	100	0	0	90	0	10
F7	Effective relationship management	100	0	0	90	0	10
F8	Relation specific investment and financial stability	100	0	0	90	0	10
F9	Flexibility and reliability	75	0	25	86	0	14
F10	Flexible Service Level Agreements	100	0	0	86	0	14
F11	Governance and control	75	25	0	76	10	14
F12	Honesty and openness	50	0	50	81	0	19
F13	Human Resource Management	50	0	50	81	0	19
F14	Joint management infrastructure	75	25	0	81	0	19
F15	Long-term commitments	100	0	0	90	0	10
F16	Mutual interdependence & shared values	100	0	0	90	0	10
F17	Mutual trust	100	0	0	90	0	10
F18	New business opportunity	50	25	25	67	28	5
F19	Organizational proximity	75	0	25	76	5	19
F20	Organizational transparency & receptivity	100	0	0	90	0	10
F21	Quality production	100	0	0	90	0	10
F22	Social networking	50	25	25	76	14	10
F23	Spurring innovation	75	0	25	76	5	19
F24	Success stories of the past projects	100	0	0	90	0	10
F25	Top management engagement	100	0	0	90	0	10
F26	Win–Win strategy	87	0	13	81	0	19

| Code | Expert Responses = 70 | | | | | | Linear-by-Linear association Chi Square Test with $\alpha = 0.05$ & df = 1 | |
| | Decision Maker (N = 15) | | | Negotiator (N = 26) | | | | |
	A	DA	NS	A	DA	NS	X^2	P
F1	100	0	0	92	0	8	0.713	0.398
F2	100	0	0	100	0	0	0.346	0.556
F3	74	13	13	100	0	0	1.430	0.232
F4	73	0	27	85	0	15	1.962	0.161
F5	86	7	7	81	0	19	0.000	0.982
F6	100	0	0	100	0	0	0.346	0.556
F7	100	0	0	100	0	0	0.346	0.556
F8	74	13	13	100	0	0	1.430	0.232

Table 6 (continued)

| Code | Expert Responses = 70 | | | | | | Linear-by-Linear association Chi Square Test with α = 0.05 & df = 1 | |
| | Decision Maker (N = 15) | | | Negotiator (N = 26) | | | | |
	A	DA	NS	A	DA	NS	X²	P
F9	100	0	0	96	0	4	0.001	0.977
F10	93	0	7	92	0	8	0.001	0.977
F11	53	0	47	77	23	0	0.000	1.000
F12	87	13	0	92	8	0	1.381	0.240
F13	87	13	0	92	8	0	1.381	0.240
F14	80	20	0	65	12	23	0.575	0.448
F15	80	13	7	96	0	4	0.113	0.737
F16	100	0	0	92	0	8	0.150	0.699
F17	100	0	0	92	0	8	0.150	0.699
F18	60	20	20	63	27	8	1.216	0.270
F19	73	0	27	65	4	31	0.346	0.556
F20	86	0	14	100	0	0	0.713	0.398
F21	100	0	0	100	0	0	0.346	0.556
F22	40	20	40	69	8	23	0.237	0.626
F23	73	0	27	65	4	31	0.346	0.660
F24	100	0	0	100	0	0	0.346	0.556
F25	100	0	0	100	0	0	0.346	0.556
F26	93	0	7	77	0	23	2.435	0.119

were ranked first with citation of 63% while two factors i.e. 'effective relationship management' and 'organisational transparency and receptivity' were ranked as second with exactly 50% endorsement by the academicians as '*Extremely Agree*'. We found three factors as the least important (*Extremely Disagree*) according to academician. These factors are 'cross-culture understanding and sensitivity', 'governance and control', and 'new business opportunity'. However, the frequency of occurrence is only one.

Eleven factors have been endorsed by >=50% of the outsourcing managers as '*Extremely Agree*'. Factor 'mutual trust' got the maximum proportion (76%) of endorsement among the managers. 'Quality production' (67%) got the second rank while 'success stories of the past projects' and 'top management engagement' both shared the third rank with (62%) occurrence in the expert manager's group. Three factors i.e. '3C', 'effective on-time communication', 'long-term commitments' shared rank three while four factors i.e. 'effective relationship management', 'joint management infrastructure', 'organisational transparency and receptivity', and 'mutual interdependence and shared values' shared rank four.

From the perception of managers, we considered only one factor as the least important (*Extremely Disagree*) i.e. new business opportunity.

The results of this analysis confirm that 12 factors have been endorsed by more than 50% of the decision-makers as '*Extremely Agree*'.

Similar to the outsourcing manager group 'mutual trust' received top rank (80%) in the group of decision-makers. 'Effective on-time communication', 'quality production', 'top

Table 7 Summary of common factors across the expert's outsourcing role

Success Factors	Academician (N=08) % of Extremely Agree	Manager (N=21) % of Extremely Agree	Decision Maker (N=15) % of Extremely Agree	Negotiator (N=26) % of Extremely Agree
3C (coordination, cooperation & collaboration)	63	57	67	65
Effective on time communication	63	57	73	77
Effective relationship management	50	52	60	69
Top management engagement	63	62	73	58
Mutual trust	63	76	80	81
Quality production	63	67	73	62
Success stories of the past projects	63	62	73	58
Flexibility and reliability	63	(10)	60	54
Entrée to new markets, up-to-date technology, and skills not available in-house/source	63	(33)	53	50
Mutual interdependence and shared values	63	52	(33)	50
Organizational transparency and receptivity	50	52	53	(12)
Honesty and openness	(25)	(43)	53	50
Joint management infrastructure	(25)	52	53	(35)

management engagement', and 'success stories of the past projects' shared rank two with (73%) strongly endorsement by the expert managers. '3C (coordination, cooperation, and collaboration)' was considered as third rank (67%) while both 'flexibility and reliability' and 'effective relationship management' were marked as fourth rank (60%) factors by the decision-makers.

'Organisational transparency and receptivity', 'access to complementary skills, new markets, and' technology', 'honesty and openness', 'joint management infrastructure', received fifth rank (53%) based on the extremely agree column in the group of decision-makers in our practitioner's survey. We found two factors as the least significant (*Extremely disagree with a frequency of only one*) in the views of the contract negotiator. These factors are 'cross-culture understanding and sensitivity' and 'honesty and openness'.

As shown in Appendix 2 (: Table 16), the contract negotiator/facilitators show a complete agreement on the listed 26 factors incorporated in our survey. Out of these 26 factors, thirteen factors were cited with a percentage >=50 in the 'extremely agree column'. It should be noted that 'mutual trust' has the highest percentage (81%) in the category of contract negotiators. 'Effective on-time communication' (77%) and 'effective relationship management (69%) are the second and third highly recognized factors by the contract negotiators. '3C-65' was ranked fourth while 'quality production-65%' was ranked fifth.

Other highly recognised factors by the contract negotiators are 'top management engagement' and 'success stories of the past projects' (58%) shred rank six, 'gaining access to new markets, technology, and opposite skills', 'bidirectional transfer of knowledge', 'relation specific investment and financial stability', and 'flexibility and reliability' (54%), shared rank seventh while 'honesty and openness' and 'mutual interdependence and shared values' (50%) shared rank eight. We found only one factor i.e. Honesty and openness as opposing (*Strongly Disagree*) by the facilitators.

Table 6 summarises the distribution of these factors analyses through expert role while summary of the most common SFs extremely agreed by all four types of experts are given in Table 7. Details are as follow:

- Seven SFs such as '3C (coordination, cooperation, and collaboration)', 'effective on-time communication', 'effective relationship management', 'top management engagement', 'mutual trust', quality production', and 'success stories of the past projects' were extremely agreed by >50% of the practitioners across four categories.

Table 8 Summary of common factors from the client-vendor perspective

Critical Success Factors	Client (n=26) % of Strongly Agree	Vendor (n=44) % of Strongly Agree
3C (coordination, cooperation, and collaboration)	69	59
Effective on time communication	58	75
Effective relationship management	54	64
Mutual trust	73	80
Quality production	65	66
Success stories of the past projects	69	59
Top management engagement	62	64

Table 9 Distribution of the SFs based on expert organizational affiliation

Code	Success Factors	Expert Responses = 70						Chi-Square Test (Linear-by-Linear association α = 0.05), df = 1	
		Client (N = 26)			Vendor (N = 44)				
		A	DA	NS	A	DA	NS	X^2	P
F1	3C (coordination, collaboration & cooperation)	100	0	0	91	0	9	6.819	0.0330
F2	Access to new markets, up-to-date technology, and skills not available in-house/source	100	0	0	95	0	5	2.749	0.0973
F3	Bidirectional transfer of knowledge	92	17	0	91	0	9	18.331	0.0001
F4	Constructive conflict resolution mechanism	85	0	15	82	0	18	0.3442	0.8418
F5	Cross cultural understanding & sensitivity	100	0	0	77	5	18	20.397	0.0000
F6	Effective & timely communication	96	0	4	98	0	2	1.0206	0.6003
F7	Effective relationship management	100	0	0	95	0	5	1.9086	0.3851
F8	Relation specific investment and financial stability	92	0	8	91	5	5	3.3644	0.1859
F9	Flexibility and reliability	100	0	0	86	0	14	13.3038	0.0013
F10	Flexible Service Level Agreements	100	0	0	86	0	14	13.3038	0.0013
F11	Governance and control	100	0	0	55	23	23	55.381	0.0001
F12	Honesty and openness	100	0	0	73	9	18	27.7775	0.0001
F13	Human Resource Management	77	33	8	86	0	14	31.1188	0.0001
F14	Joint management infrastructure	69	50	8	77	5	18	30.7277	0.0001
F15	Long-term commitments	88	8	8	93	2	5	38.4350	0.0001
F16	Mutual interdependence & shared values	100	0	0	91	0	9	13.4940	0.0012
F17	Mutual trust	96	0	4	93	0	7	0.8658	0.6486
F18	New business opportunity	77	17	15	55	36	9	11.6120	0.0030
F19	Organizational proximity	88	0	12	61	5	34	165.4163	0.0001
F20	Organizational transparency & receptivity	100	0	0	91	0	9	6.819	0.0330
F21	Quality production	100	0	0	95	0	5	2.749	0.0973
F22	Social networking	65	42	15	61	11	27	19.5052	0.0001
F23	Spurring innovation	81	8	15	66	2	32	11.2054	0.0037
F24	Success stories of the past projects	92	0	8	100	0	0	5.6291	0.0599
F25	Top management engagement	100	0	0	95	0	5	2.749	0.0973
F26	Win-Win strategy	77	0	23	86	0	14	2.6861	0.2611

- 'Flexibility and reliability' and 'access to new markets, technology, and opposite skills' were strongly endorsed by >=50% of all experts except the manager.
- 'Mutual interdependence and shared values' was not endorsed by >=50% of the decision-makers only, while 'organisational transparency and receptivity' was not endorsed in the strongly agreed list by >=50% of the negotiator only.
- 'Honesty and openness' was referred to as extremely agreed by >=50% of the decision-makers and negotiators while 'joint management infrastructure' was quoted as strongly agreed by >=50% of the decision-maker and manager only.

4.5 Distribution of the Factors, Identified Via Empirical Survey, Based on Experts Affiliation (RQ5)

In our practitioner survey, the experts were asked to mention their organizational affiliation as a client or vendor in the SDO arrangements. Out of 70, 26 experts were from client organizations while the remaining 44 experts represent vendor organizations as illustrated in Appendix 4. Experts' opinion distribution based on their organization as client-vendor are shown in Appendix 3 (Table 17) while the classification of CSFs into client or vendor based on the criterion are given in Tables 8 and 9.

To measure the criticality of the identified SFs based on the extremely agreed by >=50% criterion, this study classified the SFs into four classes i.e. belongs to both client and vendor, none of the client and vendor, to the vendor only, or the client only. Venn diagram as illustrated by Fig. 1 reflects the distribution of the factors using the above-mentioned criterion.

Seven CSFs as shown in Table 8 are found commonly critical to both Client-Vendors. Furthermore, six SFs as illustrated by the Venn diagram in Fig. 1 were found critical from the client's view but are not critical from the vendor's view.

The SFs critical from client's perfective are:

- Cross-cultural understanding & sensitivity– 58%
- Access to new markets, technology, and opposite skills– 54%
- Honesty and openness – 54%
- Flexibility and reliability – 54%
- Mutual interdependence and shared values – 54%
- Governance and control – 50%

We found only two SFs that are critical to vendors only. These are:

- Human Resource Management – 50% and
- Joint management infrastructure – 50%

Furthermore, nine factors were such that, which were found not critical to none of the clients or vendors. These factors are:
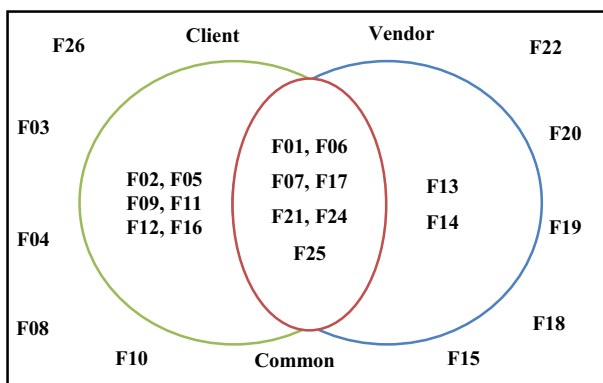

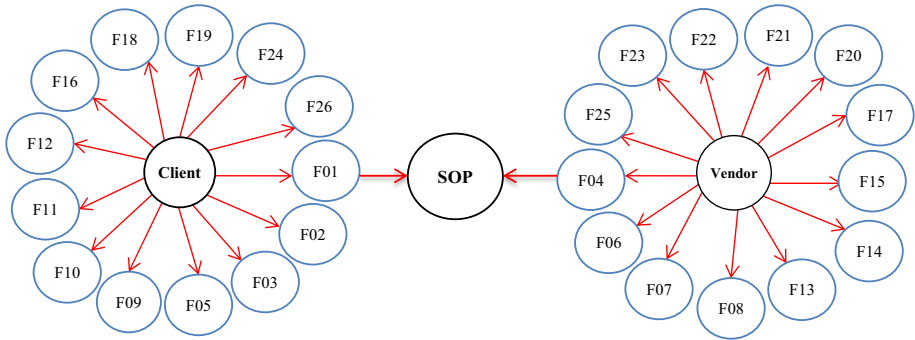**Fig. 1** Venn diagram of success factors distribution

Fig. 2 mapping of the identified success factors into Client-Vendor

- Bidirectional transfer of knowledge (46%, 45%)
- Constructive conflicts resolution mechanism (27%, 30%)
- Relation specific investment and financial stability (35%, 39%)
- Flexible service level agreements (31%, 27%)
- New business opportunity (31%, 27%)
- Long-term commitments (42%, 48%)
- Organizational transparency and receptivity (35%, 39%)
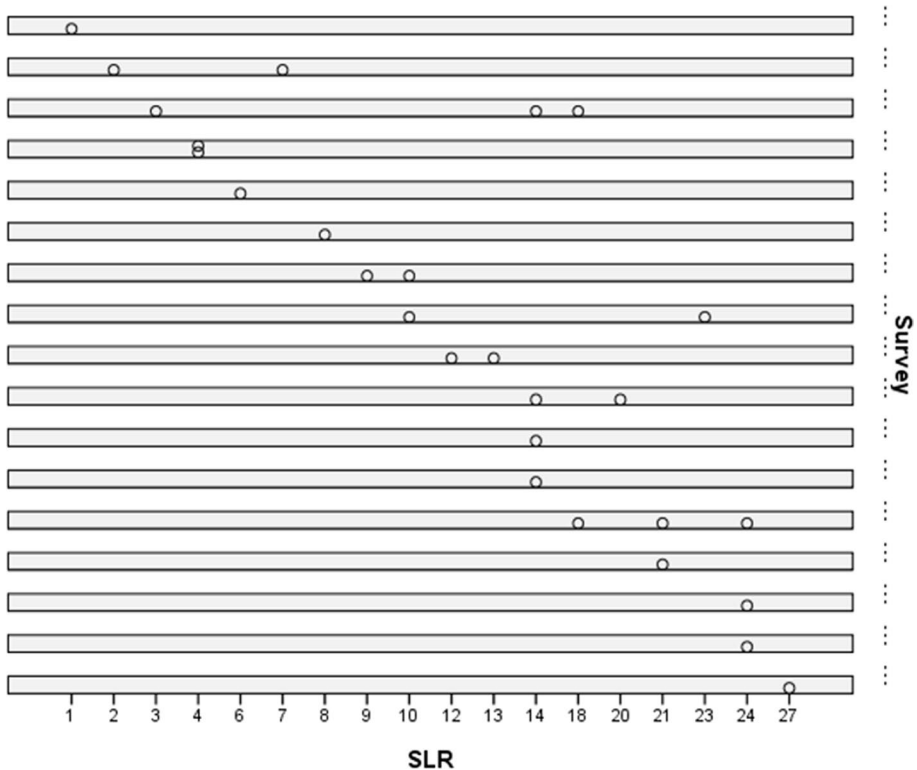- Social Networking (19%, 20%)
- Win-Win strategy (35%, 34%)

Fig. 3 Scatter Plot SLR vs Survey

Table 10 Association of the SFS identified via SLR and survey

Code	SLR n = 152		Survey n = 70		Middling Rank
	%age	Rank	%age	Rank	
F1	50%	6	94%	7	7
F2	31%	13	97%	1	7
F3	39%	8	91%	11	10
F4	15%	21	83%	17	19
F5	32%	11	86%	16	14
F6	58%	3	97%	1	2
F7	16%	20	97%	1	11
F8	25%	15	91%	11	13
F9	24%	16	91%	11	14
F10	43%	7	91%	14	11
F11	31%	13	71%	22	18
F12	12%	24	83%	17	21
F13	6%	26	83%	17	22
F14	33%	10	74%	21	16
F15	37%	9	91%	11	10
F16	68%	1	94%	7	4
F17	59%	2	94%	7	5
F18	12%	24	63%	25	25
F19	52%	5	71%	22	14
F20	24%	16	94%	7	12
F21	57%	4	96%	6	5
F22	14%	23	63%	25	24
F23	23%	18	71%	22	20
F24	32%	11	97%	1	6
F25	15%	21	97%	1	11
F26	19%	19	83%	17	18

4.6 Classification of the Factors into Either Client or Vendors Only (RQ6)

In relation to RQ6, we have distributed the 26 factors into the vendor group or client group only using a robust reference model. In other words, we classify factors as belongs to either vendors or clients. In order to classify the identified factors from the clients' only or vendors' only perspective, we assembled the responses into A, B, and C groups, as illustrated in Appendix 3 (Table 17). Column A sums the all the positive responses i.e. A = extremely agree + moderately agree + slightly agree; Similarly, C sums all the negative responses i.e. C = slightly disagree + moderately disagree + extremely disagree, while column B counts all the not sure responses respectively as shown in Appendix 3 (Table 17). For the classification of factors, the approach used here is based on the work of (Prikladnicki et al. 2004). This reference model guides us in classifying the factors into either clients or vendors groups based on the opinion of the participant experts

Based on the strongly agreed responses, factors that were important to clients were put into the 'client' group while factors significant from the vendor's perspective were put into the 'vendor' group. To determine the importance of a factor from the client-vendor

perspective, we compare the %age of 'extremely agree' replies of both client and vendor as given in Appendix 3 (Table 17). For instance, 69% of the client organizations considered '3Cs (coordination, cooperation, and collaboration)' as an SF for SOP formation. Though, this factor was significant to 59% of the vendor organizations. Therefore, 3Cs was assigned to the client's group. Grounded on the extremely agree column %age in Appendix 3 (Table 17), clients' or vendors' only classification of the factors is accessible from Fig. 2.

4.7 Comparison of SFs Across Two Data Sets RQ7 (Questionnaire Survey vs SLR)

The findings of a comparative study of the factors found by SLR and questionnaires are presented in this section. Such comparison provides solid ground for the documentation of similarities and differences amongst the statistics of the two datasets.

Table 2 presents summary of the factors identified via SLR while Table 3 provides a summarized view of questionnaire survey responses. The SLR outcomes were in the form of frequency data and therefore were not distributed into groups. Conversely, the questionnaire survey responses were taken on seven Likert scales. Therefore, for the sake of convenience; the responses were assembled into three groups i.e. A, B, and C, as presented in Table 3. For obtaining tacit knowledge on the factors, as part of the open-ended question during the survey design, we ask the participants to write novel factors apart from those listed. Yet, no new factor was mentioned by the experts and this is the reason that the numbers of factors identified via the two datasets are the same as shown in Table 10.

Our survey results, as shown in Table 3, demonstrate none of the factors has a frequency equal to zero. We noticed that these factors were ranked up and down in both data sets. For Example, F16 (mutual interdependence & shared values) is the utmost relevant SF in the SLR data set and the eighth most critical factor in the data set for the empirical survey. Although, as illustrated by Fig. 4, the distributions of these variables are not the same in the two datasets, the variations are still less than the similarities as given in Table 10.

As stated before, that questionnaire survey data does not have a normality assumption, therefore, we performed Spearman's rank-order correlation test for quantitative analysis of the two data sets. We computed the significant correlation among the outcomes of the SLR and empirical survey. Spearman's association test is extensively adopted in qualitative studies as a non-parametric test for discovering positive or negative associations between two ordinals or continuous variables. Before proceeding with Spearman's correlation test, first, we verify its two basic assumptions. The first assumption of ordinarily of data is clearly holding because the factors were evaluated using 7-point Likert scales from *"extremely agree"* to *"extremely disagree"* in the questionnaire survey. To check that scores on one variable are monotonically associated with the other variable a Scatter Plot was obtained as illustrated in Fig. 3. For conducting the Spearman's association test using SPSS, data was prepared to be analysed using SPSS. For ranking the outcomes columns of the two data sets, we have applied MS excel rank function.

To compare these two datasets, in order to answer RQ7, Table 10 is obtained using % age of A (positive answer in the survey as shown in Table 3) only. It should be kept in mind that in Table 10, we assign the lowest ranks to the maximum % age of A and vice versa. When two or more factors have the same percentage, we keep them at the same ranking position and then adjust the ranking of the next factor accordingly. For example, in Table 10 both factor F5 (cross-culture understanding & sensitivity) and F24 (success stories of the past projects) have the same incidence rate in the SLR i.e. 32%. Therefore, they share ranks 11 and 12 and both receive rank 11 while the next factor F6 (access to a new

marketplace, technology, and complementary skills) receives rank 13 because both rank 11 and 12 have been used.

This is acknowledged from Table 11 that r_s (the coefficient of Spearman) is 0.406 at significance level $\rho = 0.040.0$. Since r_s is similar to one that denotes the positive relation between the SLR and survey outcomes, i.e. when the frequencies or percentage of the SLR factors increase, the frequencies or percentage age of the survey factors will also increase and vice versa.

5 Summary and Discussions

After a rigorous examination of the sample paper using SLR, we came up with a list of 26 factors for SOP. To validate and extend the SLR findings, SLR was followed by an industrial survey and the outcomes of SLR were used as input to the empirical survey. This study results confirm the significant positive impact of the identified factors on outsourcing clients in the promotion of the vendor's current contractual outsourcing agreements into a partnership. The results are confirmed to be equally impacting client in renewing their existing contact with the vendor organization. The long-term research objective of the present investigation is to provide strong support to SDO practitioners with a comprehensive system model in the form of factors that can help them in preparing and executing effective outsourcing ventures. The paper at hand aids to one module of the proposed framework i.e. the validation and analysis of the identified factors via an empirical survey. The results obtained suggest vendors should focus on all the listed factors in Table 2, particularly those stated with a high extremely agree count in Table 3. Factors indicate which key areas management should focus on to better design the SOP formation plan. The following criteria will be used to decide the criticality of the factors in this exploratory study:

If a factor is reported in the SLR final sample with a proportion greater than or equal to 50 %, or it is endorsed by the participant experts with an extremely agree in the survey with a > =50% then that factor will be measured as a CSF in this practitioner oriented empirical study.

Many authors (Khan et al. 2017; Khan et al. 2009; Khan and Niazi 2012b; Niazi et al. 2013; Garousi et al. 2016; Azeem and Khan 2011), for example, Niazi et al. (Niazi et al. 2013), described critical factors in SPI with similar criteria.

The same criteria were also adopted in our previous studies (Ali and Khan 2016; Ali and Khan 2014a; Ali et al. 2019; Ali et al. 2018). A study was conducted by Khan et al. (Khan et al. 2017), according to them, if a factor is reported by > =50% of the sample articles then that factor should be measured as critical. Analogous criteria have also been reported by some other authors (Khan et al. 2017; Nguyen-Duc et al. 2015; Khan and Azeem 2014). On the other hand, SDO researchers and practitioners are free to design their own criteria in order to decide the criticality of the listed variables.

To address RQ1, using the above criterion, six SFs i.e. 'effective communication', 'mutual interdependence & shared values', 'quality production', 'organizational proximity', '3Cs', and 'mutual trust' were ranked as CSFs as shown in Table 2. In the promotion or renovation of established outsourcing arrangements to a partnership, these CSFs play a positive role.

Prior work in the relevant domains are aligned with our findings such as Gopal et al. (Gopal et al. 2011), Niazi et al. (Niazi et al. 2013), Dominguez (Dominguez 2006),

Delen et al. (Delen et al. 2016), Samantra et al. (Samantra et al. 2014), Verner (Verner et al. 2014), Søderberg et al. (Soderberg et al. 2013), Khan et al. (Khan and Niazi 2012b), Nguyen-Duc (Nguyen-Duc et al. 2015) Lahiri and Kedia (Lahiri and Kedia 2009), Mathew and Chen (Mathew and Chen 2013), Khan and Azeem (Khan and Azeem 2014), Hagel and Brown (Hagel and Brown 2005), Sangaiah and Thangavelu (Sangaiah and Thangavelu 2013), Kinnula et al. (Kinnula et al. 2007b), and many more (Khan et al. 2017; Nguyen-Duc et al. 2015; Khan and Azeem 2014; Khan and Khan 2017).

- The results presented in (Ali et al. 2019) support the positive effect of trust in the development of a software outsourcing partnership between client and vendor organizations.
- Wang (Liu et al. 2017) put forward that, parallel to other collaboration modes, the success of offshoring is subject to better coordination and effective communication.
- Conferring to Delen et al. (Delen et al. 2016), the reasons for the failure of the outsourcing relationships are directly or indirectly related to the factors such as effective communication, bidirectional trust, goals alignment, vendor technical capabilities, and better relationship management.
- In view of Mathew and Chen (Mathew and Chen 2013), SDO would be made more effective by implementing factors such as better provision of services, product quality, and effective relationship management.
- Verner et al. (Verner et al. 2014) state that organizational proximity and work culture have a great effect on outsourcing arrangement.
- The study of Søderberg et al. (Saris and Gallhofer 2014) suggests the recruitment of cross-cultural workers who are able to identify, perceive, and respond quickly and reliably in contradictory circumstances due to cross-cultural differences.

In response to RQ2, we have noted seven CSFs using the criticality criterion grounded on the "*extremely agree*" column percentage in Table 3.

1. 3Cs (cooperation, coordination, collaboration)
2. Success stories of the past projects
3. Effective & timely communication
4. Effective relationship management
5. Top management support
6. Quality production and
7. Mutual trust

In the course of this work, we discovered that 'mutual trust' is the utmost agreed factor in this study, i.e. 77%. Based on the findings of this study, in order to succeed in the global outsourcing market, we suggest that vendors should enhance the quality of offered services and products. The published literature such as (Samantra et al. 2014; Bhatnagar and Madon 1997; Terdiman and Karamouzis 2002) discloses that the Indian software market is known for high-quality production (Bhatnagar and Madon 1997), which makes India a favorite destination for clients for offshore outsourcing (Terdiman and Karamouzis 2002).

Dominguez (Dominguez 2006), discusses the partnership as a manifestation of mutual trust. Partnerships are needed when countless and faster collaborations are needed. One of the key factors of partnership type relationships is the need to provide a trustworthy atmosphere between outsourced customers and suppliers.

- According to Delen et al. (Delen et al. 2016), effective and instant communication provides a solid chance to form partnerships.
- In view of Nguyen-Duc (Nguyen-Duc et al. 2015), besides the cost advantages, now a day's companies practice outsourcing arrangements in order to benefits from the high-quality that offshore vendors provide.
- According to Khan et al. (Berger and Lewis 2011), previous projects success stories are a significant factor and outsourcing relationships that are usually mature and successful can be turned into outsourcing partnerships.
- Sako et al. (Baliyan and Kumar 2014), analysed that in effective collaborations and successful partnerships, top management support is required to guarantee that the effort is given full attention and resources in order to attain success.
- Wang (Wang 2011) reports that all these benefits of outsourcing depend on better relationship formation and ongoing management.
- Beulen and Ribbers (Beulen and Ribbers 2002) states that effective relationship management is vital to the formation of an outsourcing partnership.

The outcomes of this study and published data support this conclusion that SDO should focus on the identified factors as usual and CSFs in a particular in order to get partner positions in the future outsourcing business projects. From the %age values of the 'negative' column of Table 3, we can notice that the majority values are below 14% apart from for the 'new business opportunity' 26%. Thus, the results presented in this paper support the argument that large numbers of practitioners have experienced the positive effects of these factors. Likewise, in the 'neutral' column, the majority of the values are below 26% except for 'organizational proximity' and 'spurring innovation' which are relatively less explored concepts in outsourcing. The majority of the practitioners did not seem to be aware of these emerging factors.

Regarding RQ3, the outcomes are summarized in Table 12. 'Effective on-time communication', 'mutual trust, 'quality production, 'success stories of the past projects', and '3Cs', were extremely agreed by $>=50\%$ of practitioners in all three levels of expertise, respectively as presented in Table 12.

For RQ4, the results of the analysis are summarized in Table 13, '3Cs (coordination, cooperation, and collaboration)', 'effective on-time communication', 'effective relationship management', 'top management engagement', 'mutual trust', 'quality production', and 'success stories of the past projects' were found commonly critical across the four groups of experts'. The results were directly compared with the previously reported findings (Khan and Niazi 2012b) on contractual outsourcing and complete agreement was found on the relevant findings.

The results of analysis summarized in Table 5 and Table 6 confirm that factors 'effective on-time communication', 'mutual trust, 'success stories of the past projects', 'quality production, and '3Cs' are found commonly critical from both practitioner's level of experience and their role. The significance of these factors in outsourcing arrangements has been identified by several studies:

- Dominguez (Dominguez 2006), discusses the partnership as a manifestation of mutual trust. They state partnerships are needed when countless and faster collaborations are needed. One of the key factors of partnership type relationships is the need to provide a trustworthy atmosphere between outsourced customers and suppliers.
- Vendors need to improve the relationship through clear and timely communication at all levels with the client organization in order to get a partner role. Publicising of

results and milestones to all relevant stakeholders would also be included in this correspondence (Berger and Lewis 2011).

- In view of Hagel and Brown (Hagel and Brown 2005), previously cost saving was the main reason for outsourcing, nowadays organizations have to start considering outsourcing arrangements for taking advantage of the improved quality that offshore vendors provide.
- According to Sangaiah and Thangavelu (Sangaiah and Thangavelu 2013), India is the leading provider of high-quality software, and hence most of the world's outsourced projects go to India.
- Nguyen-Duc (Nguyen-Duc et al. 2015) states that sometimes a client firm is excited to know the technical capability of vendor organization (Nguyen et al. 2006).
- In view of Khan et al. *(*Khan et al. 2019*)*, the success stories of the past projects are an essential factor, and generally mature and successful outsourcing arrangements can be transformed into outsourcing partnerships.

The literature shows that the current inter-organizational pattern is shifting from competition to partnership, teamwork, and cooperation (Kumar and van Dissel 1996). The level of achievement of outcomes set as contract targets in the previous outsourcing agreement is another important factor. This level should reflect the divergence between the actual benefits and the relative costs that would have to be invested by the client company without the unique relationship being realised (Ali and Khan 2014b).

The findings of this study suggest that sound technical capacity will assist vendor organizations in producing a quality product and eventually gaining client's confidence because sound technical capability will assist vendors in providing client organizations with appropriate services.

We recommend that vendor's companies must hire skilled workers with degrees in computer science, software engineering, or management sciences, as employees with good technical skills are the backbone of the SDO organization (Nauman et al. 2004).

To address RQ5, in light of the extremely agreed by $\geq = 50\%$ criterion, the factors were classified as belongs to clients or vendors or both. Besides, nine factors were also identified which are critical to none of them as illustrated in Fig. 1

Important findings of the classification are presented in Table 8 and Table 9. These tables outline that seven SFs were common to both client-vendor. Six SFs were critical only from the client's angel while two were critical from the vendor's angel only. The remaining nine factors were found non-critical to both clients and vendors. Furthermore, the distribution of factors based on positive responses $\geq =50\%$ are given in Table 14. The classification of the factors into client and vendor groups confirms the relevant findings of Khan et al. (Khan et al. 2017)

To answer RQ6, we classify the identified 26 factors into clients or vendors only group based on a robust reference framework developed by (Prikladnicki et al. 2004). A pictorial view of this classification is illustrated in Fig. 2. Following the framework, Khan et al. (Khan et al. 2017) classify SPI factors in GSD. We found our classification outcomes absolutely consistent with Khan et al. (Khan et al. 2017)

To address RQ7, we have conducted a comparative analysis using SPSS. We conclude from the results of comparative analysis that both datasets have more similarities than differences. Table 11 makes it clear that both datasets have a significant (p = 0.040) positive correlation (rs = 0.406). Based on the data presented in Table 10 and Fig. 4, it is confirmed that all the identified 26 factors including six CSFs are acknowledged by both datasets. In addition, all the six CSFs in the SLR are found also critical in the survey dataset.

6 Limitation of the Study

This section discusses the threats to validity regarding the empirical survey. The first threat to the validity of our study is that the foreign participants in our sample are limited in number. Just 27 participants out of 70 are from abroad. In this study, we consider the participants from the author's countries of residence like China, the Kingdom of Saudi Arabia, and Pakistan as local participants. To address this issue, we have extend our research to several different types of organizations (offshore and nearshore) to further validate our result in the direction to gain better outcomes. We are planning to prolong our research to next phase by including more overseas professionals. But due to a dearth of time and resources, it was not possible for the present study. We have consumed all the existing assets to reach global professionals by sending an invitation for contributions via https://www.linkedin.com to diverse software outsourcing partnership groups. Though, due to volunteer contribution, only twenty seven foreign experts participated in the survey. Since the author's countries also represent diversity in skills, quality, and working environment, therefore, we have full confidence on our results. But still, due to the small number of contributors out of the author's countries, one should be cautious while generalising the outcomes.

The second threat to the validity of our research is that, in this study, a list of potential SFs is given to participants and they have been asked to rate those who play a distinguishing role in SOP formation. This tends to hinder the participant from stressing the SFs included in the list. This study attempted to handle this threat by encouraging participants to also provide SFs other than those already listed in the questionnaire form.

The third threat to the validity of our research is that for any particular reply, the participants do not provide the causes to report these factors. We cannot control this threat independently. In this research, participants in outsourcing collaborations were not expected to write about the root causes of SOP SFs.

Regarding questionnaire-based inquiries, construct validity centers on the measurement scales, in order to confirm whether the measurement scales accurately represent the attributes being measured in the questionnaire. Since, the contents used in this study were adopted from a considerable body of the preceding research reported in (Ellram and Edis 1996; Tuten and Urban 2001; Szu-Yuan et al. 2002; Dwyer et al. 1987; Forrest
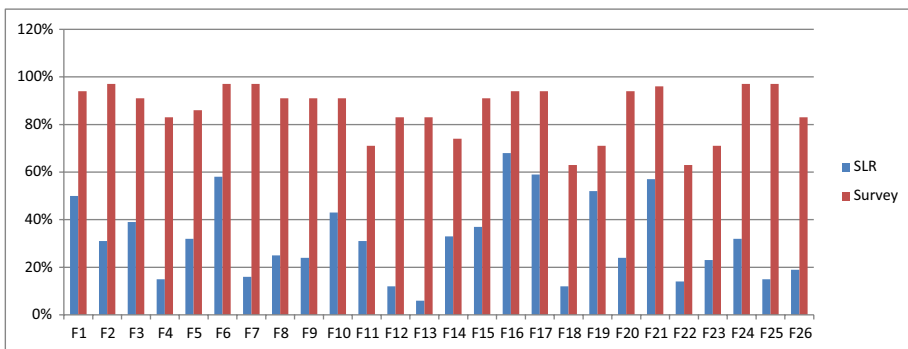

Fig. 4 Comparative summary of the factors found through SLR and the empirical survey

Table 11 Spearman rank-order correlations

		Correlation	Survey	SLR
Spearman's rho	SLR	Correlation Coefficient	1.000	0.406[**]
		Sig. (2-tailed)	.	0.040
		N	26	26
	Survey	Correlation Coefficient	0.406[*]	1.000
		Sig. (2-tailed)	0.040	.
		N	26	26

**Correlation is significant at the 0.05 level (2-tailed)

and Martin 1992; Bruce et al. 1995; Virolainen 1998; Rhodes et al. 2016; Katato et al. 2019; Gonzalez et al. 2015; Sanchez and Terlizzi 2017; Slowinski et al. 1993; Mohr and Spekman 1994; Halinen 2012; Zhu et al. 2001; Kern and Willcocks 2000; Anderson and Narus 1990; Embleton and Wright 1998; Ring and Van de Ven 1994; Blomqvist 2002; Brinkerhoff 2002; Kedia and Lahiri 2007b; Greiner et al. 2012; dos Santos and Macaria da Silva 2015; de Carvalho et al. 2018; Mehta and Mehta 2017; Gopalakrishnan et al. 2017; Cha and Kim 2018; Blijleven et al. 2019; Ikediashi and Okwuashi 2015; Rahman et al. 2021; Könning et al. 2019; Rahman et al. 2020), therefore, we have confidence in the outcomes obtained in this study. Moreover, the attributes were also pretested because these were taken from (Khan and Niazi 2012a; Prikladnicki et al. 2004; Khan et al. 2018; Khan et al. 2017). Furthermore, pilot questionnaires were made prior to the final implementation of the construct and were tested for systematic measurement error, reliability, and validity. The responses of the experts during the pilot study confirm that all the attributes measured were relevant to the main theme. Another possible limitation of construct validity is that the practitioners might have interpreted the factors differently. We do not have any evidence for this limitation as nobody has reported ny problem.

Internal validity is concerned with an overall analysis and examination of the results. The results of the pilot studies provide an acceptable level of internal validity as the variables included in the study were taken from preceding peer-reviewed work (Khan and Niazi 2012a; Prikladnicki et al. 2004; Khan et al. 2018; Khan et al. 2017). Additionally, in empirical survey-based research, it is hard or impossible to obtain a fully representative sample and to deals with them in an entirely objective fashion (Coolican 2018).

To overcome these limitations, only those participants were included who are involved in outsourcing. The claim of the participant was verified through some open-ended question which was difficult to answer by an ordinary developer or manager etc.

Secondly, psychometric quality criteria have been used to check the effects of rating scales. These criteria include systematic measurement error, reliability, and validity (Menold and Bogner 2016). In this study, systematic measurement error in the form of item nonresponse, middle response pattern, extreme response pattern, participants preferences, and the technical hitches they face while answering survey questions have been tested (Menold and Bogner 2016; Menold et al. 2014).

Besides all the stated threats to validity, we have complete confidence in our outcomes as these outcomes confirm the outcomes of our preceding SLR study (Ali and Khan 2014a). We did not observe any major difference between the outcomes of the SLR and the empirical study. Regarding SOP empirical literature, this study might help to fill the gap between academia and industry.

Table 12 Distribution of CSFs across experts levels of experience

Practitioner' experience level	No. of SFs mentioned as extremely agree	No. of critical factors (cited by more than 50% practitioner as in extremely agree)
Senior (n = 20)	26	**The following seven CSFs have been identified.** • Top management engagement (85%) • Effective & timely communication (80%) • Mutual trust (80%) • Effective relationship management (75%) • Quality production (75%) • 3C (coordination, cooperation and collaboration (65%) • Success stories of the past projects (65%)
Intermediate (n = 35)	26	**The following ten CSFs have been identified.** • Mutual trust (71%) • Effective & timely communication (69%) • Quality production (66%) • Effective relationship management (63%) • Top management engagement (63%) • 3C (coordination, cooperation and collaboration (60%) • Success stories of the past projects (60%) • Cross cultural understanding & sensitivity (51%) • Mutual interdependence & shared values (51%) • Access to complementary skills, new technologies, and markets (51%)
Junior (n = 15)	26	**The following eleven CSFs have been identified.** • Mutual trust (87%) • 3C (coordination, cooperation and collaboration (67%) • Success stories of the past projects (67%) • Effective & timely communication (53%) • Flexibility and reliability (53%) • Honesty and openness (53%) • Human Resource Management (53%) • Joint management infrastructure (53%) • Long-term commitments (53%) • Mutual interdependence and shared values (53%) • Quality production (53%)

7 Academic and Industrial Implications

The work presented in this paper has both practical and research implications. Based on the literature review and empirical study, this study provides a visualized set of factors, which functions as a knowledge base for both practitioners and researchers. State of-the-art practitioner view in the context of SOP formation with sufficient triangulation from literature has been provided, which is considered a valuable contribution to both SDO industry and academia. More importantly, the work presented in this paper exemplifies the potential of empirical research by utilising a qualitative approach for the identification and analysis of various factors, which influence outsourcing clients in upgrading or renewing their ongoing relationship with their overseas vendors. Similar to the preceding published works in the context of qualitative factors (Ellram and Edis 1996; Tuten and Urban 2001; Szu-Yuan et al. 2002; Dwyer et al. 1987; Forrest and Martin 1992; Bruce et al. 1995; Virolainen 1998; Rhodes et al. 2016; Katato et al. 2019; Gonzalez et al. 2015; Sanchez and Terlizzi 2017; Slowinski et al. 1993; Mohr and Spekman 1994; Halinen 2012; Zhu et al. 2001; Kern and Willcocks 2000; Anderson and Narus 1990; Embleton and Wright 1998; Ring and Van de Ven 1994; Blomqvist 2002; Brinkerhoff 2002; Kedia and Lahiri 2007b; Greiner et al. 2012; dos Santos and Macaria da Silva 2015; de Carvalho et al. 2018; Mehta and Mehta 2017; Gopalakrishnan et al. 2017; Cha and Kim 2018; Blijleven et al. 2019; Ikediashi and Okwuashi 2015; Rahman et al. 2021; Könning et al. 2019; Rahman et al. 2020), the present study offers a concise overview, which aims to fill some of the research gaps. But, unlike prior work, the work presented in this paper first conducted an SLR study and identifies twenty-six factors to SOP formation from a sample of 152 papers. The SLR results were then triangulated through a questionnaire survey with seventy experts from twenty different countries. Other empirical investigators can adopt this study methodology and structure to carry out similar studies in the pertinent realm.

Exploration of factors from the practitioner's perspective is an important research direction for researchers and industrialist because they can focus and direct their energy on further research in the high priority areas highlights by practitioners with diverse roles, experience levels, and company's affiliations. It is also expected that the prioritised SOP factors based on the practitioner's roles, experience levels, and company's affiliation can guide top outsourcing management in developing outsourcing strategies and policies for a certain category of practitioners (decision-maker, manager, and negotiator, etc.) in order to better guide them towards the formation and ongoing management of SOP for future ventures. In practice, it is obvious to prioritised the influencing factors since not all of them are critical and equally important for all kinds of stakeholders (vendor-client). The prioritised factors will guide the top management and decision makers regarding the investment decisions in high priority and crucial sector. Therefore, this paper will serve as a guidebook for the practitioners such as outsourcing manager, contract negotiator, facilitator, dispute resolution specialist, and decision maker to consider high priority (critical) factors first when assessing their readiness towards SOP formation. SDO vendors and clients may elaborate or add to the existing list to develop new features to implement the high priority factors. In nutshell, this paper provided a consolidated knowledge base of literature and empirical facts, which has not been done before.

The factors identified in this study will function as a knowledge base for practitioners and researchers. The distribution of the factors based on different variables provides a robust framework to facilitate the specific group of practitioners (outsourcing manager, contract negotiator, facilitator, dispute resolution specialist, and decision maker) as well as

Table 13 Distribution of CSFs based on the expert role

Experts' role	No. of SFs mentioned as extremely agree	No. of critical factors (cited by more than 50% practitioner as in extremely agree)
Academicians (n =08)	26	**The following eleven CSFs have been identified.** • Effective & timely communication (63%) • Flexibility & reliability (63%) • Mutual interdependence & shared values (63%) • Mutual trust (63%) • Quality production (63%) • Success stories of the past projects (63%) • Top management support (63%) • Effective relationship management (63%) • Organizational transparency & receptivity (63%) • Access to complementary skills, new markets, and technology (63%) • 3Cs
Outsourcing Managers (n =21)	26	**The following eleven CSFs have been identified.** • Mutual trust (76%) • Quality production (67%) • Success stories of the past projects (62%) • Top management engagement (62%) • 3C (coordination, cooperation and collaboration (57%) • Effective on time communication (57%) • Long-term commitments (57%) • Joint management infrastructure (52%) • Mutual interdependence and shared values (52%) • Effective relationship management (52%) • Organizational transparency and receptivity (52%)

Table 13 (continued)

Experts' role	No. of SFs mentioned as extremely agree	No. of critical factors (cited by more than 50% practitioner as in extremely agree)
Decision Makers (n = 15)	27	**The following twelve CSFs have been identified.** • Mutual trust (80%) • Quality production (73%) • Effective on time communication (73%) • Success stories of the past projects (73%) • Top management engagement (73%) • 3C (coordination, cooperation and collaboration (67%) • Effective relationship management (60%) • Flexibility and reliability (60%) • Access to complementary skills, new technologies, and markets (53%) • Honesty and openness (53%) • Joint management infrastructure (53%) • Organizational transparency and receptivity (53%)
Contract negotiators (n = 26)	26	**The following thirteen CSFs have been identified.** • Mutual trust (80%) • Effective & timely communication (77%) • Effective relationship management (69%) • 3Cs (65%) • Quality production (62%) • Success stories of the past projects (58%) • Top management engagement (58%) • Flexibility and reliability (54%) • Bidirectional transfer of knowledge (54%) • Relation specific investment and financial stability (54%) • Access to complementary skills, new technologies, and markets (54%) • Honesty and openness (50%) • Mutual interdependence and shared values (50%)

Table 14 Distribution of factors into client-vendor groups

Experts' affiliation	No. of SFs mentioned as extremely agree	No. of critical factors (cited by more than 50% practitioner as in extremely agree)
Client (n=26)	26	**The following thirteen CSFs have been identified.** • Mutual trust (73%) • 3C (coordination, cooperation and collaboration (69%) • Success stories of the past projects (69%) • Quality production (65%) • Top management engagement (62%) • Cross culture understanding and sensitivity (58%) • Effective on time communication (58%) • Effective relationship management (54%) • Flexibility and reliability (54%) • Honesty and openness (54%) • Mutual interdependence and shared values (54%) • Access to complementary skills, new markets, and up-to-date technology (54%) • Governance and control (50%)
Vendor (n=44)	26	**The following nine CSFs have been identified.** • Mutual trust (80%) • Effective on time communication (75%) • Quality production (66%) • Effective relationship management (64%) • Top management engagement (64%) • 3C (coordination, cooperation and collaboration (59%) • Success stories of the past projects (59%) • Human Resource Management (50%) • Joint management infrastructure (50%)

an academician (academic researcher, master or Ph.D. student) to concentrate their efforts towards most critical areas relevant to their company's affiliation, outsourcing role, and expertise. For instance, if an academician or practitioner is interested to know about the classification and distribution of factors based on experiences of contract negotiators, outsourcing managers, and decision makers then they should consult the responses given in the table in Appendix 1. In case an academician or practitioner wish to know the perspective of senior, junior, and intermediate level experts, they should consult the responses provided in the table in Appendix 2. In case, an academician or practitioner eager to know the experiences of experts in connection to their industrial affiliation as client or vendor they should consult the responses presented in the table in Appendix 3.

If any individual or organization wishing to know about the CSFs identified from the perspective of academicians (RQ1) and/or practitioners (RQ2), they should focus on the findings presented in.

Tables 2 and 3 respectively. For knowing the distribution of the CSFs based on expert role (RQ3) and their level of expertise (RQ4), they should refer to the findings presented in Tables 4 and 6 respectively. Moreover, if any academician or practitioner is interested in the distribution of the CSFs from the perspective of clients and vendors (RQ5), they should refer to the findings presented in Table 9. For the classification of the factors into either vendor or client (RQ6), they should refer to the conceptual mappings of the factors demonstrated in Fig. 2. The conceptual mapping of the identified factors has both industrial and research implications. If an organization is interested in comparing the factors, from the

perspective of industry and literature (RQ7), they need to consult Tables 10 and 11. Moreover, to know about CSFs based on expert level of experience, role, and their organizational affiliation, then refers to the findings presented in Tables 5, 7, and 8.

This study concludes that in order to achieve enduring benefits organizations needs to go beyond the traditional client-vendor contract based agreement into a more beneficial, collaborative, and trusted position called partnership. The identified list of factors can be considered as an assessment criterion for vendor evaluation in contract renewing or relationship promotion. Clients' organizations might use the rating of the identified factors to assess the vendor capability regarding contract renewal or SOP formation. Vendor's organizations can use these factors as a checklist for their internal readiness assessment for SOP formation. Vendor's organizations may also benefit from this study, to know their weak and strong departments for further improvements. This work will not only benefit outsourcing stakeholders in understanding the positive effects of the listed factors but at the same time will help them to design practices to implement and guide the effect of factors that strengthen the successful SOP formation for future projects. Besides, the SOP formation, these factors are equally important in contract renewal.

8 Conclusions and Future Work

This section discusses the key findings and recommendations for future research. Grounded on the outcomes of SLR and empirical survey, we make a list of 26 SFs for SOP formation where twenty SFs have $>=80\%$ citation as revealed in Table 3. These twenty most popular factors are 'effective on-time communication', 'mutual trust', 'quality production', 'mutual-interdependence and shared values', '3Cs (collaboration, coordination, and cooperation)', 'long-term commitments', 'success stories of the past projects', 'flexible service level agreements', 'cross-culture understanding and sensitivity', 'bidirectional transfer of knowledge', 'access to complementary skills, new markets, and latest technology', 'relation specific investment and financial stability', 'flexibility and reliability' 'organisational transparency and receptivity', 'constructive conflicts resolution mechanism', 'win-win strategy', 'top management engagement', 'effective relationship management', 'human resource management', and 'honesty and openness'.

To further explore it, these factors were analysed based on the practitioner's level of experience, their role, and organizational affiliation as clients or vendors. By carefully examining the analysed data, we noted five factors, i.e. 'mutual trust, 'effective on-time communication', '3Cs', 'success stories of the past projects', and 'quality production' as commonly critical based on experts level of experience. Out of these seven factors, '3Cs', 'effective on time communication', 'effective relationship management', 'top management support', 'mutual trust', 'quality production', and 'success stories of the past projects' as commonly critical based on experts roles while seven factors, i.e. '3Cs', 'effective on-time communication', 'effective relationship management', 'success stories of the past projects', 'mutual trust', 'quality production', and 'top management support' were found critical to both clients and vendors. The conclusions of this study are drawn together and presented in this section. As a conclusive remark, we advise vendors practicing outsourcing should emphasize all the identified factors, specifically those with high frequency in.

Table 2 and Table 3.

In addition to all the mentioned limitations, our research is contributing to both academia and industry. The main achievements, including contributions, may be summarized as follows:

1. This study provides guidelines to SDO vendor's in implementing and projecting successful SOP. Our findings indicate that all recorded SFs, especially key ones, must be adopted by SDO vendors to obtain partner positions.
2. This study will guide SDO Client to make practical decisions about continuing, renewing, or terminating agreements with current vendors.
3. This research enhances partnership stability, as this will guide the parties to consider the demands and priorities of each other in order to sustain long-term relationships.
4. This study will serve as a guide to future software outsourcing relationship planning, especially SOP.
5. This study assists in gaining insight into SOP SFs to ensure successful partnerships.

The identified SOP factors were also related on the basis of 'respondent level of experience', 'outsourcing role', and 'organizational affiliation'.

This article recommends that SDO vendors be concerned with all of the factors described in.

Table 2. The percentage of SOP factors in Tables 2, 3, 5, and 8 should also be of concern to SDO vendors. Future directions are related to the improvement of the outcomes in the form of exploratory studies. In future work:

- The advice/practices in SOP relationships will be established and evaluated from the viewpoint of the vendor.
- The key factors to SOP conversion or formation from a vendor perspective will be analysed.
- The root causes why some SFs are not important to a particular category of SDO organizations will be investigated.

The development of the Software Outsourcing Partnership Model (SOPM) is our ultimate goal for the future. The potential applications of the framework model will be in SDO organizations for guiding SDO prior to initiate contract renewal or outsourcing partnership formation endeavors.

This paper offers some feedback on the development of the first stage of SOPM through empirical analysis, such as the identification of different CSFs. In expanding current contractual SDO agreements to SOP with the client company, SOPM would support SDO vendors. SOPM will also guide to facilitate research on outsourcing collaboration models and framework development.

Appendix 1

Table 15 Expert's experience based distribution of responses

Factor	Expert's level									
	Senior (n=15)							Intermediate (n=35)		
	SA	MA	EA	N	ED	MD	SD	SA	MA	EA
F1	2	3	10	0	0	0	0	1	11	21
F2	1	7	7	0	0	0	0	8	9	18
F3	1	8	6	0	0	0	0	6	9	14
F4	0	7	4	4	0	0	0	6	15	10
F5	3	7	5	0	0	0	0	6	5	18
F6	1	5	8	1	0	0	0	4	6	24
F7	2	8	5	0	0	0	0	8	5	22
F8	2	7	6	0	0	0	0	2	15	13
F9	2	5	8	0	0	0	0	4	10	16
F10	4	5	6	0	0	0	0	8	11	11
F11	2	3	4	6	0	0	0	6	9	11
F12	2	5	8	0	0	0	0	3	10	17
F13	2	5	8	0	0	0	0	3	11	16
F14	3	4	8	0	0	0	0	3	6	16
F15	1	6	8	0	0	0	0	2	12	16
F16	1	6	8	0	0	0	0	0	14	18
F17	1	1	13	0	0	0	0	2	5	25
F18	1	1	2	4	1	4	2	5	9	10
F19	3	3	3	5	0	0	1	5	12	8
F20	2	6	7	0	0	0	0	4	15	14
F21	1	6	8	0	0	0	0	2	9	23
F22	2	4	4	4	0	1	0	4	10	7
F23	2	4	4	4	0	0	1	4	10	11
F24	0	4	10	1	0	0	0	4	9	21
F25	4	5	5	1	0	0	0	3	9	22
F26	4	4	5	2	0	0	0	4	12	12

Factor	Expert's level									
	Intermediate (n=35)				Junior (n=20) (1–5) years' experience						
	N	ED	MD	SD	SA	MA	EA	N	ED	MD	SD
F1	2	0	0	0	1	4	13	2	0	0	0
F2	0	0	0	0	3	6	9	2	0	0	0
F3	2	0	0	4	3	8	8	1	0	0	0
F4	4	0	0	0	0	10	6	4	0	0	0
F5	5	0	0	1	1	8	7	3	1	0	0
F6	1	0	0	0	1	3	16	0	0	0	0
F7	0	0	0	0	2	1	15	2	0	0	0
F8	4	0	0	1	6	6	7	0	0	0	1
F9	5	0	0	0	2	11	6	1	0	0	0
F10	5	0	0	0	4	12	3	1	0	0	0
F11	4	0	2	3	2	10	3	0	1	1	3
F12	4	1	0	0	2	4	7	4	1	0	2
F13	5	0	0	0	1	6	6	3	0	2	2

Table 15 (continued)

Factor	Expert's level										
	Intermediate (n=35)				Junior (n=20) (1–5) years' experience						
	N	ED	MD	SD	SA	MA	EA	N	ED	MD	SD
F14	5	0	3	2	4	2	6	5	0	1	2
F15	3	0	0	2	5	6	8	1	0	0	0
F16	3	0	0	0	5	6	8	1	0	0	0
F17	3	0	0	0	1	2	16	1	0	0	0
F18	3	1	3	4	2	6	8	1	0	1	2
F19	9	0	0	1	2	7	7	4	0	0	0
F20	2	0	0	0	6	7	5	2	0	0	0
F21	1	0	0	0	1	3	15	1	0	0	0
F22	9	0	4	1	2	8	3	3	0	3	1
F23	9	0	0	1	2	6	7	5	0	0	0
F24	1	0	0	0	2	5	13	0	0	0	0
F25	1	0	0	0	1	2	17	0	0	0	0
F26	7	0	0	0	4	6	7	3	0	0	0

Senior = 11 years or more experience; Intermediate = 6 to10 years of experience; Junior = (1–5) years' experience

Appendix 2

Table 16 Expert's role based distribution of responses

Factor	Expert's outsourcing role												
	Academician (N=08)							Outsourcing Manager (N=21)					
	SA	MA	EA	N	ED	MD	SD	SA	MA	EA	N	ED	MD	SD
F1	0	3	5	0	0	0	0	1	6	12	2	0	0	0
F2	1	2	5	0	0	0	0	5	7	7	2	0	0	0
F3	2	3	3	0	0	0	0	2	8	9	2	0	0	0
F4	1	4	3	0	0	0	0	2	8	7	4	0	0	0
F5	2	2	3	0	1	0	0	3	8	8	2	0	0	0
F6	1	2	5	0	0	0	0	2	5	12	2	0	0	0
F7	2	2	4	0	0	0	0	3	5	11	2	0	0	0
F8	2	3	3	0	0	0	0	3	10	6	2	0	0	0
F9	0	1	5	2	0	0	0	5	11	2	3	0	0	0
F10	2	3	3	0	0	0	0	8	9	1	3	0	0	0
F11	2	3	1	0	1	1	0	3	3	9	3	0	0	3
F12	1	1	2	4	0	0	0	2	6	9	4	0	0	0
F13	1	2	3	4	0	0	0	2	6	9	4	0	0	0
F14	2	2	2	0	0	1	1	4	2	11	4	0	0	0
F15	2	3	3	0	0	0	0	3	4	12	2	0	0	0
F16	1	2	5	0	0	0	0	2	6	11	2	0	0	0
F17	1	2	5	0	0	0	0	1	2	16	2	0	0	0
F18	1	2	1	2	1	1	0	3	4	7	1	1	2	3
F19	1	2	3	2	0	0	0	5	7	4	4	0	0	1
F20	0	4	4	0	0	0	0	3	5	11	2	0	0	0
F21	1	2	5	0	0	0	0	1	4	14	2	0	0	0
F22	1	1	2	2	0	2	0	2	6	8	2	0	3	0
F23	1	2	3	2	0	0	0	2	7	7	4	0	0	1
F24	1	2	5	0	0	0	0	2	4	13	2	0	0	0
F25	1	2	5	0	0	0	0	3	3	13	2	0	0	0
F26	2	2	3	1	0	0	0	4	6	7	4	0	0	0

Factor	Expert's outsourcing role												
	Decision Maker (N=15)							Contract Negotiator (N=26)					
	SA	MA	EA	N	ED	MD	SD	SA	MA	EA	N	ED	MD	SD
F1	1	4	10	0	0	0	0	2	5	17	2	0	0	0
F2	2	5	8	0	0	0	0	2	5	17	0	0	0	0
F3	2	3	6	2	0	0	2	4	8	14	0	0	0	0
F4	1	6	4	4	0	0	0	2	10	14	4	0	0	0
F5	2	4	7	1	1	0	0	2	14	6	5	0	0	0
F6	1	3	11	0	0	0	0	3	6	12	0	0	0	0
F7	3	3	9	0	0	0	0	2	4	20	0	0	0	0
F8	2	6	3	2	0	0	2	4	4	18	0	0	0	0
F9	1	5	9	0	0	0	0	3	9	14	1	0	0	0
F10	2	5	7	1	0	0	0	2	9	14	2	0	0	0
F11	2	2	4	7	0	0	0	4	11	9	0	0	2	3
F12	1	4	8	0	1	0	1	3	14	4	0	1	0	1
F13	1	3	7	0	0	1	1	2	9	13	0	0	1	1

Table 16 (continued)

Factor	Expert's outsourcing role													
	Decision Maker (N=15)							Contract Negotiator (N=26)					
	SA	MA	EA	N	ED	MD	SD	SA	MA	EA	N	ED	MD	SD
F14	2	2	8	0	0	0	3	2	11	11	6	0	3	0
F15	2	5	5	1	0	0	2	2	6	9	1	0	0	0
F16	1	9	5	0	0	0	0	1	12	12	2	0	0	0
F17	1	2	12	0	0	0	0	2	9	13	2	0	0	0
F18	2	4	3	3	0	1	2	1	2	21	2	0	4	3
F19	1	3	7	4	0	0	0	2	6	9	8	0	0	1
F20	4	1	8	2	0	0	0	3	10	4	0	0	0	0
F21	1	3	11	0	0	0	0	5	18	3	0	0	0	0
F22	2	2	2	6	0	2	1	1	9	16	6	0	1	1
F23	2	4	5	4	0	0	0	3	13	2	8	0	0	1
F24	1	3	11	0	0	0	0	3	7	7	0	0	0	0
F25	1	3	11	0	0	0	0	2	9	15	0	0	0	0
F26	3	5	6	1	0	0	0	3	8	15	6	0	0	0

Appendix 3

Table 17 Client-Vendor distribution of responses

Factor	Expert's organizational affiliation										
	Client (n=26)										
	EA	%	MA	SA	A	%	B	SD	MD	ED	C
F1	18	69%	6	2	26	100%	0	0	0	0	0
F2	14	54%	9	3	26	100%	0	0	0	0	0
F3	12	46%	8	4	24	92%	0	2	0	0	2
F4	7	27%	13	2	22	85%	4	0	0	0	0
F5	15	58%	5	6	26	100%	0	0	0	0	0
F6	15	58%	7	3	25	96%	1	0	0	0	0
F7	14	54%	7	5	26	100%	0	0	0	0	0
F8	9	35%	10	5	24	92%	2	0	0	0	0
F9	14	54%	10	2	26	100%	0	0	0	0	0
F10	8	31%	12	6	26	100%	0	0	0	0	0
F11	13	50%	8	5	26	100%	0	0	0	0	0
F12	14	54%	10	2	26	100%	0	0	0	0	0
F13	8	31%	10	2	20	77%	2	0	2	2	4
F14	8	31%	6	4	18	69%	2	0	4	2	6
F15	11	42%	10	2	23	88%	2	1	0	0	1
F16	14	54%	10	2	26	100%	0	0	0	0	0
F17	19	73%	4	2	25	96%	1	0	0	0	0
F18	8	31%	8	4	20	77%	4	0	1	1	2
F19	8	31%	11	4	23	88%	3	0	0	0	0
F20	9	35%	14	3	26	100%	0	0	0	0	0
F21	17	65%	7	2	26	100%	0	0	0	0	0
F22	5	19%	8	4	17	65%	4	0	3	2	5
F23	8	31%	10	3	21	81%	4	1	0	0	1
F24	18	69%	3	3	24	92%	2	0	0	0	0
F25	16	62%	6	4	26	100%	0	0	0	0	0
F26	9	35%	11	0	20	77%	6	0	0	0	0
Factor	Expert's organizational affiliation										
	Vendor (n=44)										
	EA	%	MA	SA	A	%	B	SD	MD	ED	C
F1	26	59%	12	2	40	91%	4	0	0	0	0
F2	20	45%	13	9	42	95%	2	0	0	0	0
F3	20	45%	16	4	40	91%	4	0	0	0	0
F4	13	30%	19	4	36	82%	8	0	0	0	0
F5	15	34%	15	4	34	77%	8	0	0	2	2
F6	33	75%	7	3	43	98%	1	0	0	0	0
F7	28	64%	7	7	42	95%	2	0	0	0	0
F8	17	39%	18	5	40	91%	0	0	0	0	0
F9	16	36%	16	6	38	86%	6	0	0	0	0
F10	12	27%	16	10	38	86%	6	0	0	0	0
F11	5	11%	14	5	24	55%	10	6	3	1	10
F12	18	41%	10	4	32	73%	8	2	0	2	4
F13	22	50%	12	4	38	86%	6	0	0	0	0

Table 17 (continued)

Factor	Expert's organizational affiliation										
	Vendor (n = 44)										
	EA	%	MA	SA	A	%	B	SD	MD	ED	C
F14	22	50%	6	6	34	77%	8	0	0	2	2
F15	21	48%	14	6	41	93%	2	1	0	0	1
F16	20	45%	16	4	40	91%	4	0	0	0	0
F17	35	80%	4	2	41	93%	3	0	0	0	0
F18	12	27%	8	4	24	55%	4	2	7	7	16
F19	10	23%	11	6	27	61%	15	2	0	0	2
F20	17	39%	14	9	40	91%	4	0	0	0	0
F21	29	66%	11	2	42	95%	2	0	0	0	0
F22	9	20%	14	4	27	61%	12	0	5	0	5
F23	14	32%	10	5	29	66%	14	1	0	0	1
F24	26	59%	15	3	44	100%	0	0	0	0	0
F25	28	64%	10	4	42	95%	2	0	0	0	0
F26	15	34%	11	12	38	86%	6	0	0	0	0

Appendix 4

Background of the survey participants are given in Table 18 and can be found using the following link.

https://drive.google.com/file/d/1LCu5stU2Mpczwhic3DuM6IHoamMHA_0d/view?usp=sharing

Appendix 5

List of finally selected articles can be found at Table 18 and can be found using the following link.

https://drive.google.com/file/d/1S9tou2lRz4bO7k68BvOpw85wZfA594pp/view?usp=sharing

Appendix 6: Questionnaire Sample Used for Data Collection

SECTION ONE

Demographics

- Job Title/Position: [   ]   Qualification: [   ]
- How many years of experience do you have in outsourced software development?
- What is/ was your role in outsourcing partnership formation?

☐ Facilitator   ☐ Negotiator   ☐ Manager   ☐ Decision Maker   ☐ Other

Approximately how many staff are employed by your company/ Organisation?

☐ Less than 20   ☐ 20-199   ☐ More than 200   ☐ No idea

- What is the primary business function of your company? (You may tick more than one)

☐ Onshore development ☐ Nearshore development ☐ offshore development ☐ Other *Please specify*: [   ]

- What is the scope of your company? (please tick as appropriate)
- **Demographic**

☐ National   ☐ Multinational   ☐ Don't know

- You classify your company as?

○ Client   ○ Vendor

- Your company relies on industry standards (e.g. CMMI or ISO)?

○ Yes   ○ No   ○ Do not know

- What is the CMMI level for your company?

○ 1   ○ 2   ○ 3   ○ 4   ○ 5

SECTION TWO

EVALUATION OF SFs IDENTIFIED VIA SLR

The objective of this section is to rank the role of 26 factors, identified through systematic literature review (SLR), in formation of SOP. Please choose relevant option upon your experitise.

Factor Code	SFs (in alphabetical order)	Extremely Agree	Moderately Agree	Slightly Agree	Not sure	Slightly Disagree	Moderately Disagree	Extremely Disagree
F1	3C (coordination, cooperation, and collaboration)	○	○	○	○	○	○	○
F2	Access to new markets, technology, and complementary skills	○	○	○	○	○	○	○
F3	Bidirectional transfer of knowledge (BTK)	○	○	○	○	○	○	○
F4	Constructive conflicts resolution mechanism	○	○	○	○	○	○	○
F5	Cross Culture understanding and sensitivity	○	○	○	○	○	○	○
F6	Effective on time communication	○	○	○	○	○	○	○
F7	Effective relationship management	○	○	○	○	○	○	○
F8	Financial stability and relation specific investment	○	○	○	○	○	○	○
F9	Flexibility and reliability	○	○	○	○	○	○	○
F10	Flexible Service Level Agreements (SLA)	○	○	○	○	○	○	○
F11	Governance and control	○	○	○	○	○	○	○
F12	Honesty and openness	○	○	○	○	○	○	○
F13	Human Resource Management	○	○	○	○	○	○	○
F14	Joint management infrastructure	○	○	○	○	○	○	○
F15	Long-term commitments	○	○	○	○	○	○	○
F16	Mutual interdependence and shared values	○	○	○	○	○	○	○
F17	Mutual trust	○	○	○	○	○	○	○
F18	New business opportunity	○	○	○	○	○	○	○
F19	Organisational proximity	○	○	○	○	○	○	○
F20	Organisational transparency and receptivity	○	○	○	○	○	○	○
F21	Quality production	○	○	○	○	○	○	○
F22	Social Networking	○	○	○	○	○	○	○
F23	Spurring innovation	○	○	○	○	○	○	○
F24	Success stories of the past projects	○	○	○	○	○	○	○
F25	Top management engagement	○	○	○	○	○	○	○
F26	Win-Win strategy	○	○	○	○	○	○	○
Other		○	○	○	○	○	○	○

SECTION THREE

Please return your completed questionnaire form:

By email to: *sikandar@cup.edu.cn, sikandar@uswat.edu.cn.*

OR

By Post: *Sikandar Ali Ph.D. Scholar in Computer Science*
                    Department of Computer Technology,
                    China University of Petroleum-Beijing
            18# Fuxue Rd Changping District, 102249
                    Cell No.   *+86-15611818230*

This can be provided in a different format if required please contact
Thank you for taking the time to complete this Questionnaire form.

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