

IMPACT OF OPEN INNOVATION ON GLOBALIZATION: A SURVEY STUDY ON CHINA

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Abstract. The objective of this study is to examine the role of open innovation practices to promote globalization. For this purpose, this study considered two open innovation practices: external knowledge and supplier involvement. A survey was carried out to collect primary data from the respondents. This study preferred Chinese small and medium-sized enterprises (SMEs) to examine the role of open innovation in globalization. Data were collected from the employees of SMEs in China. By employing Structural Equation Modeling, this study addressed the important insights for academicians and practitioners. It is concluded that; open innovation practices have key role to promote globalization. The promotion of open innovation practices among the Chinese SMEs can increase the globalization potential. The strategies of open innovation led to increase in business collaboration across the border business organizations. The business collaboration between the SMEs of various countries is the best way to enhance globalization by increasing the level of social capital. Therefore, those institutions who want to promote globalization should promote open innovation practices among the business organizations.

Keywords: globalization, external knowledge, customer involvement, internal innovation, social capital, SMEs.

JEL Classification: O36, Q55, F63, O35, D83.

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1. Introduction

Globalization is a term used to describe how trade as well as technology have made the world into a more linked and interdependent place (Ahmed et al., 2021; Álvarez et al., 2020; Erturk & Ziblim, 2020). The transfer of trade and technology globally has central importance. As the transfer of trade and technology globally has valuable benefits for the nations. Now a day, world is moving towards a global village due to the increase in technology (Abulela & Harwell, 2020; Anugrah & Dianawati, 2020; Ilori et al., 2022). The world is converting to the global village in which all nations are connected with each other. It has number of benefits for the nations; therefore, nations are trying to promote globalizations through trade and technology.

There are number of factors which can contribute to the promotion of globalization. For instance, business organizations have central role to promote globalization with the help of trade. Similar with the other nations, China is also contributing to the globalization process (Kennedy et al., 2020; Nel, 2020; Umar et al., 2020; Wahhab & Al-Shammari, 2021). In the business industry of China, small and medium-sized enterprises (SMEs) are contributing heavily to the business ratio in China (Cesarec et al., 2020; Duke & Osim, 2020; Fan, 2019; Lebens, 2021). The export of Chinese SMEs is increasing majorly which has impact on the globalization. However, these SMEs are facing various challenges which has effect on the globalization process. Most importantly, the global competition is important for the Chinese SMEs. The survival in the global market can affect negatively to trade internationally. Strong competitors in the market can affect negatively on the global market. Additionally, technological challenges are also important to consider by the SMEs. Furthermore, financial crisis may effect on the globalization process due to the slow entry of SMEs in the global market (Atkočiūnienė & Siudikienė, 2021).

Aforementioned challenges are the hurdle in the globalization process; however, these challenges can be managed through opening up the strategies by the SMEs. Open innovation is two-way process through which the ideas can be shared globally and open strategies can lead to the business development (Lee et al., 2018; Yodchai et al., 2022). Various open innovation practices such as external knowledge incorporation is most significant in business process. Additionally, the involvement of supplier is also important to make various strategies to enter in the global business competition. The open innovation activities increase internal innovation among the companies (Hameed et al., 2018; Hussain & Jergeas, 2022; Olaleye et al., 2022) and develop the social capital between stakeholders which may increase the globalization process.

Literature has discussed globalization extensively through different dimensions (Sinkovics et al., 2018). Various researchers explored various dimensions of globalization and addressed this phenomenon through different perspectives. But the factors effecting on the globalization is not extensively addressed in the literature. Despite the studies discussed globalization in relation to the open innovation (Abulela & Harwell, 2020; Dat et al., 2022; Garvey et al., 2021; Gou et al., 2021; Vanhaverbeke et al., 2013), the role of open innovation is not well established in the literature. In this way, it is important to consider the role of open innovation practices in globalization. Because the transfer of business opportunities can be well managed by promoting globalization.

There is valid reason to use survey data of SMEs belonging to China. Firstly, Chinese setting is being focused as its importance has been increasing not only in the context of emerging economies but also global economy. Ever since economic reform of China, Chinese small and medium enterprises hold greater recognition because of technological innovation and they are considered one of the most active firms in of Chinese market economy. Also, private SME of China also started playing an important role to drive sectorial cooperation and bring various innovative practices to commercialize novel technologies (Chau et al., 2022; Gentile-Lüdecke et al., 2020). There, the context is appropriate to investigate the following questions:

Q1. *Do open innovation practices really promote globalization in the context of Chinese SMEs?*

As open innovation dimensions such as external knowledge and external supplier involvement are still an underexplored (Chen et al., 2017). Therefore, the objective of this study is to examine the role of open innovation practices to promote globalization. The achievement of the objective can help to promote global businesses activities. The interaction of Chinese SMEs to the international market can help to promote globalization process because it helps to enhance the social network between the stakeholders. This study helps the management of SMEs to promote globalization potential through various activities of open innovation. Strategies to promote open innovation is important for companies to make the world a global village, therefore, the management should enhance the open innovation strategies. With the increase in technology among the business organization, the connections between the business organizations are increasing which can be promoted through the help of innovative strategies by the companies. These strategies should involve strategies to promote external knowledge incorporation inside the boundaries of the companies and the promotion of supplier involvement should be promoted by the managers of the SMEs.

2. Review of literature

2.1. Globalization and open innovation

Globalization is an umbrella concept that is used to explain various phenomenon which revolve around “economic, social and political interdependence of countries” (Jeon & Degraevl, 2019; Chen et al., 2023). Globalization deciphers range of business modalities for firms that share similar traits. It is to be noted that firm size may cause variation in benefits that are due to globalization. It is normally assumed that globalization benefits large firms more in contrast to small/medium firms. The reason is due to scale advantage which permits large firms to be open for new opportunities and gain benefit from huge number of resources in order to optimize their existing operations. Thereby, a challenging situation is created for SMEs which they face in terms of increased prices and technological competition. Since, globalization appears to be dynamic and interactive in nature, hence, innovation is a gold ingredient in globalization concept and most of the firms, in order to stay in competition, need to be innovative to fulfill global requirements and criteria (Christiansen & Gad, 2019; Vu et al., 2023).

The central theme of the present study is open innovation which was firstly defined by Chesbrough (2005). According to the author, the main idea behind open innovation is to encourage firms to be involved with different partners. This allows them “to acquire ideas and resources from external environment” and utilize them to compete in market. Scholars argue that the existence of open innovation is long before, however, due to significant changes, the emergence of concept has caught the interest of scholars and managers. As the global market condition is in continuous transition due to rapid changes, thereby, firms are obliged to be involved in constant hunting of partners via networks to become more innovative and face tough competition (Ji et al., 2022; Moslehpour et al., 2022). Scholars argue that globalization expanded the horizon of potential markets as well as competition. Due to this, organizations are welcomed to trade their ideas through effective and improved platforms. Also, novel technologies help entities to have effective communication regardless of long distances. Thereby, open innovation seems to hold greater importance in academia (Un & Asakawa, 2015; Obradović et al., 2021; Surya et al., 2021).

2.2. Open innovation practices

Initially the companies were involved in close innovation process in which the companies were working inside the boundaries of the firm and do not look outside the boundaries for more innovative ideas (Byrka-Kita et al., 2020; Chen et al., 2020; Hameed et al., 2018). In close innovation process, the companies were limited to their internal capabilities and tried not to outsource various capabilities. This process of close innovation provided limited benefits to the companies. Against the close innovation process, now the companies are moving towards open innovation process in which companies are trying to open up their strategies. This is one of the two-way processes in which knowledge enters inside the boundaries of the firm and exit in shape of valuable ideas (Brunswick & Chesbrough, 2018; Clauss et al., 2021). In both cases inside out process and outside in process company gain several benefits. In both the close and open innovation, new business development process and marketing of various new products take place within the boundaries of the firm. However, in close innovation process, ideas developed internally but in open innovation process ideas may be developed externally with the help of various stakeholders. Close model focuses on the introduction of innovation on the market but open innovation focuses to develop new business model. Generally, in the close innovation process, most of the employees work for the company, in open innovation process, the employees work inside as well as outside the company. The reliance on the creation of best ideas internally is not most significant, as open innovation process make the best use of internal along with the external ideas. Therefore, open innovation is one of the significant business models which can help the companies to get more benefits with the help of commercialization of various ideas as well as activities. SMEs are also trying to promote business activities with the help of open innovation ideas which has major benefit on various areas of the businesses. Although, it is one of the difficult processes for the company to follow open business model, however, it has several benefits (Streimikiene & Akberdina, 2021). Figure 1 highlights the comparison between close innovation model and open innovation model.

There are several open innovation practices which are following by the companies to promote open business model. However, the current study considered the most relevant practices of open innovation in relation to SMEs. The first practice is external knowledge (Brunswick & Vanhaverbeke, 2015; Gavurová et al., 2021) which is most important to develop a good business model based on open strategies to develop new ideas as well as commercialization of the ideas through external as well as internal knowledge. The outside in process of knowledge transfer is most important which is connected with the external knowledge. External knowledge can be gathered from the external stakeholders such as customers of the company, external partners of the company, distributors as well as retailers of the company. On the other hand, supplier environment is also key to develop a better business model because supplier has better idea of the requirement of the customers. Framework of the current study is presented in Figure 2.

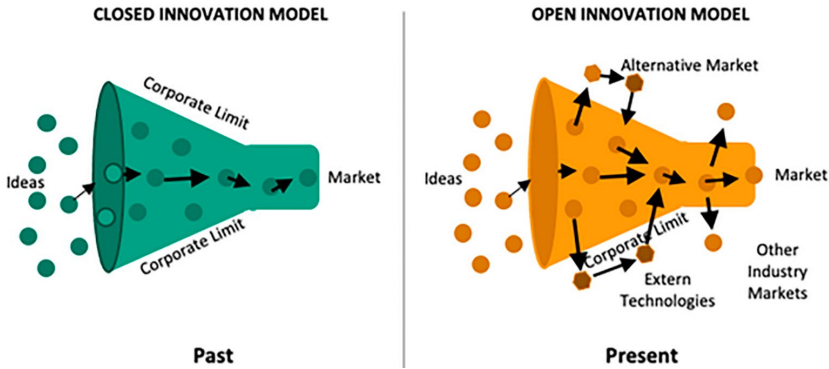


Figure 1. Close innovation and open innovation

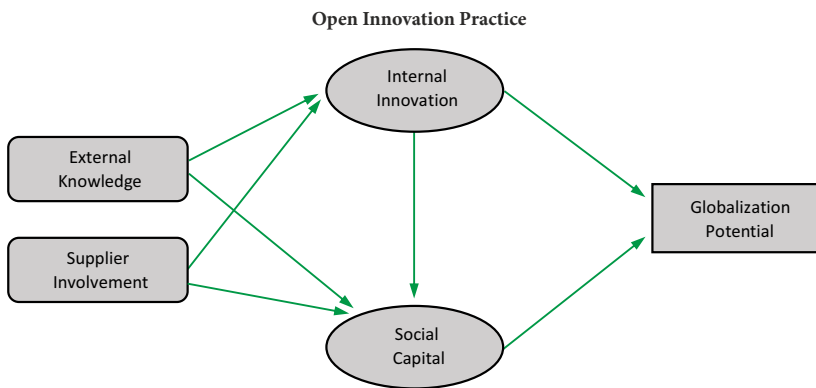


Figure 2. Framework of the current study highlighting the relationship between open innovation practices and globalization

2.3. Open innovation practices and internal innovation

Internal innovation is based on the innovative idea generation inside the boundaries of the firm. Internal innovation is key to the success in open business model (Delshab et al., 2022) because internally developed ideas can be commercialized through licensing. For open model, the companies are dependent on the internal innovation, therefore, the maximization of internal innovation is most important. To maximize the internal innovation, the role of external knowledge has key importance. Because the development of valuable ideas within the boundaries of the company requires valuable and fresh knowledge from outside the boundaries of the company. To produce customized products, it is important to have the knowledge about the demand of the customer (Lam et al., 2021; Shafi et al., 2022). In this way, the external knowledge can help the employees to produce valuable ideas. The information gathered from the external stakeholders of companies can help to access the demand of the market. The features in the new products must be in line with the requirements of the customers. In this way, the valuable information from the market can be used to develop good models for business success. The valuable knowledge from the external sources can provide a pathway

to generate valuable ideas. Although, there is huge amount of information exist outside the boundaries of the company, however, the extraction of valuable information is most important. External knowledge practice of open innovation is not only limited to the gathering of information from the external sources but it is also based on the extraction of valuable knowledge for the idea development. Therefore, the extraction of important information is most important to generate internal innovation.

Another most important way to promote internal innovation is the involvement of supplier. Supplier is one of the most important stakeholders among the companies which is always remain rich of valuable information. Because supplier has the direct connection with the customers (Fauziah et al., 2019; Hussain et al., 2022), therefore, it has better ideas related to the requirements of the customers. Thus, the involvement of the supplier inside the boundaries of the companies may have valuable benefits. The valuable information provided by the suppliers to the employees of the company can help to develop valuable business model and it has the potential to enhance open innovation process. As open innovation process is majorly based on the information gathered from the external sources to generate (Hannen et al., 2019; Niaz, 2022) and commercialize the valuable ideas to the market. Therefore, the above discussion highlighted that both the practices of open innovation; external knowledge and supplier involvement has direct relationship with internal innovation.

H1. External knowledge has relationship with internal innovation.

H2. Supplier involvement has relationship with internal innovation.

2.4. Open innovation practices and social capital

Because external knowledge is through the connection between the external stakeholders of the company and internal stakeholders of the company, it creates a social network between the stakeholders (Marin-Garcia et al., 2022). The internal stakeholders such as employees of the company contact with the external stakeholders such as customers, external partners, retailers and various others stakeholders of the company to get valuable information for idea development. This exchange of information between two parties help to develop social capital among them which is also valuable in open business model. As open business model is only based on the connection between various stakeholders to generate business opportunities mutually, therefore, external knowledge extraction process is strongly connected with social network between various parties and lead better business model. Previous studies indicated the relationship between external knowledge and social capital (Akram et al., 2020; Chang & Fu-hai, 2020). But this connection is not tested by the previous studies among the Chinese SMEs. Thus, it is important to address that in open innovation process external knowledge extraction has important role to produce social connections. Therefore, from the above discussion, the current study highlighted that external knowledge has relationship with internal innovation.

Supplier involvement is one of the most significant parts of any business activity (Shahzad et al., 2022; Wang et al., 2021). In the current study, supplier involvement is based on the information gathered from suppliers to generate innovative ideas. Supplier involvement is the important element of open innovation because suppliers have valuable ideas related to

the products as well as customers. The direct interaction of suppliers with the customers or wholesalers is the valuable source of information to develop business models. Similarly, the suppliers of SMEs have the potential to provide different ideas related to the business models. The environment of supplier inside the boundaries of the company in the innovation process is most significant. Previous investigations also highlighted that supplier involvement generate a social network between the stakeholders (Cera et al., 2022; Cheng & Shiu, 2020). The connection of the suppliers with the employees of the companies generates a social network which help the companies to collect valuable information. Furthermore, supplier involvement connected the employees of the company with the customers and this social network provide several benefits to the company through generation of customized products as well as services. In the literature, it is highlighted that supplier involvement has relationship with social capital (Zhu & Lai, 2019), however, it is not considered in relation to the open innovation model of SMEs.

H3. *External knowledge has relationship with social capital.*

H4. *Supplier involvement has relationship with social capital.*

2.5. Internal innovation and social capital

As the promotion of internal innovation in open innovation process is directly connected with external knowledge and supplier involvement. Literature highlighted the key role of open innovation practices in internal innovation (Matuszewska-Pierzynka, 2021). The promotion of internal innovation is based on external knowledge and external knowledge help to enhance valuable relationship between the employees of the company and external stakeholders which is one of the ways to promote social capital. It is a valuable process which is only based on the social connection between the stakeholders. Similarly, supplier involvement to promote internal innovation is also the good example of valuable social network between the employees of the company and suppliers of the company. It has the potential to connect customers with the company which lead towards the development of social capital. As social capital is the important process of open innovation model (Padilla-Meléndez et al., 2013; Setini et al., 2020), therefore, internal innovation has the capability to produce social capital. Different studies conducted on various dimensions also highlighted the relationship between internal innovation and social capital (Sanchez-Famoso et al., 2017). Social capital development through internal innovation is one of the automatic processes which can be promoted through open innovation practice.

H5. *Internal innovation has relationship with social capital.*

2.6. Internal innovation, social capital and globalization potential

Globalization is the process of interaction and integration among people, companies, and governments worldwide (Barragán Codina & Leal López, 2013). It is grounded on the trade and technology which made the world into a more connected as well as interdependent place. The current study considering the trade and technology in business market. Globalization is connected data exports and imports of various companies in business perspective.

Similarly, SMEs are also connected with the globalization process. Important source which can promote global potential with the help of transferring various business-related services. In this way, internal innovation and social capital has key importance. Internal innovation among the company is based on the development of new ideas with the help of external market. The external market is also based on the national as well as international market. The promotion of internal innovation with the help of international market can lead to increase the globalization potential. Similarly social capital is the key factor of globalization potential (Islam, 2019) because globalization is majorly based on the social connection between the businesses. The social network between the SMEs of different countries can produce valuable transactions. Therefore, the transactions related to the trade and technology among the companies can promote globalization. It is also mentioned in the previous that innovation has important relationship with social capital and globalization (Phillips & Oliveros, 2018). By following the literature, this study emphasized on the effect of internal innovation and social capital to promote globalization potential.

H6. Internal innovation has relationship with globalization potential.

H7. Social capital has relationship with globalization potential.

H8. Internal innovation mediates the relationship between external knowledge and social capital.

H9. Internal innovation mediates the relationship between supplier involvement and social capital.

3. Research methodology

This study measured external knowledge, supplier involvement, internal innovation, social capital and globalization potential by considering already revealed scale items from literature. External knowledge is measured with the help of six scale items related to the external information from the external stakeholders. These items are given below which are adopted from Hameed et al. (2020).

External knowledge

1. "Bringing of external knowledge to internal system enhances open innovation systems.
2. Our organization encourages employees to initiate the practice of new external collaboration.
3. Collaboration with external partners adds value to our innovation resources.
4. Collaboration with external partners/suppliers or customers adds value to our innovation activities.
5. Collaboration with external partners adds value to customer relationships.
6. Extending the external relationship with customers and suppliers is beneficial for innovation."

Supplier involvement is measured by using five scale items. In these scale items, the current study measured involvement of supplier in product development process. These items

are measured scale items related to the product design. The supplier involvement is considered by highlighting the supplier role to connect company with the customers. Questionnaire for customer involvement is adopted.

Supplier involvement

1. "My company usually gets involved in the new product development process in an early stage of product design.
2. We have an active role in product design specifications.
3. During the product development stage, there is a high level of involvement between our development team and our major customer through supplier.
4. During the product development stage, our major customer often benefits from our expertise and experience.
5. Codesign activity on our product with our customer is a major priority for us."

Internal innovation is measured by using five scale items which are adapted from Hameed et al. (2020). It is measured by highlighting the innovative ideas, communication between partners and by considering the non-financial resources. Additionally, research and development activities and degree of knowledge is considered.

Internal innovation

1. "Internal ideas are always welcomed in our organization.
2. Communication between partners occurs without problems.
3. Sufficient non-financial resources are available in our organization to achieve desired internal innovation.
4. Conducting open innovation activities requires an internal R & D activity.
5. The degree of knowledge which is shared between our partners is sufficient to promote internal ideas."

Social capital is measured by highlighting social network of company with the stakeholders. Therefore, it is measured through the consideration of personal relationships, contacts which are characterized by mutual respect and the contacts which are characterized by mutual trust. Furthermore, personal friendship and degree of reciprocity is also considered. Total five items are used which are adapted from García-Villaverde et al. (2021).

Social capital

1. "We have close and personal relationships with our contacts.
2. Relations with our contacts are characterized by mutual respect.
3. Relations with our contacts are characterized by mutual trust.
4. Relations with our contacts are characterized by personal friendship.
5. Relations with our contacts are characterized by a high degree of reciprocity."

Globalization potential is the dependent variable in the current study. It is measured by using the four scale items. It is measured through technological development for production process, purchasing power of the customer, new markets development and expansion of the markets, adapted from Şengül et al. (2015).

Globalization potential

1. "The technological development speed of the production processes in the industry has increased, because of globalization.
2. The purchasing power of the customer's increased because of globalization.
3. New markets are emerging because of globalization.
4. Markets are expanding because of globalization."

By considering the above measures, the questionnaire was developed. Questionnaire was designed by using 5-point Likert scale which is important to collect data. Likert scale is important to get the opinion and views of the respondents. Moreover, 5-point Likert scale is best to get the original response by decreasing the frustration level of the respondents. Several previous studies identified 5-point Likert scale as most appropriate scale for data collection.

Furthermore, while choosing the sampling techniques, the current study identified cluster sampling as most significant for the current study. The population of the current study is the SMEs working in China. As population spread on large area, therefore, cluster sampling is suitable in the current study. Various clusters were made by considering the states of China and few clusters were selected randomly. After the selection of clusters, this study considered data collection randomly. The current study selected 1000 sample size which is considered as large sample size. Thus, total 1000 questionnaires were distributed among the employees of SMEs in China. Only these SMEs were selected which were dealing with the exports of goods and services. It was not easy to collect data physically from whole population, therefore, this study selected online survey. Finally, 325 questionnaires were received in response and used in data analysis. After the careful data screening process, data statistics are provided in Table 1 which shows the missing value, mean, median, minimum and maximum scale value, observed minimum and maximum scale value, standard deviation and normality of the data through Skewness and kurtosis.

4. Data analysis

4.1. Measurement model assessment

First part of this study is connected with the factor analysis. In factor analysis, this study identified the factor loadings of scale items which are reported in Table 2. This study followed various previous studies to carry out data analysis and followed the recommended step to consider the reliability and validity (Hair et al., 2017; Hair Jr et al., 2014). Previous studies recommended that all the values of factor loadings should be more than 0.7 to retain the items. Items having factor loading below 0.7 should be deleted. This study has not deleted any item because none of the item found factor loading less than 0.7.

Table 1. Data statistics after initial data screening (source: author's estimation)

Name	No.	Type	Missing	Mean	Median	Scale min	Scale max	Observed min	Observed max	Standard deviation	Excess kurtosis	Skewness
EK1	0	MET	0	3.258	3	1	5	1	5	1.525	-0.468	0.119
EK2	1	MET	0	3.306	3	1	5	1	5	1.81	-0.574	0.463
EK3	2	MET	0	3.55	3	1	5	1	5	1.902	-0.851	0.309
EK4	3	MET	0	3.517	3	1	5	1	5	1.867	-0.753	0.391
EK5	4	MET	0	3.541	3	1	5	1	5	1.708	-0.47	0.298
EK6	5	MET	0	3.517	4	1	5	1	5	1.807	-0.711	0.245
SI1	6	MET	0	3.55	4	1	5	1	5	1.835	-0.862	0.163
SI2	7	MET	0	3.689	4	1	5	1	5	1.831	-0.748	0.18
SI3	8	MET	0	3.718	3	1	5	1	5	1.885	-0.808	0.314
SI4	9	MET	0	3.684	3	1	5	1	5	1.938	-0.818	0.342
SI5	10	MET	0	3.56	3	1	5	1	5	1.858	-0.671	0.399
II1	11	MET	0	3.56	3	1	5	1	5	1.842	-0.626	0.355
II2	12	MET	0	3.593	3	1	5	1	5	1.88	-0.735	0.354
II3	13	MET	0	3.483	3	1	5	1	5	1.769	-0.467	0.453
II4	14	MET	0	3.512	4	1	5	1	5	1.91	-0.914	0.233
II5	15	MET	0	3.498	3	1	5	1	5	1.793	-0.619	0.305
SC1	16	MET	0	3.699	4	1	5	1	5	1.747	-0.576	0.291
SC2	17	MET	0	3.038	3	1	5	1	5	1.509	-0.096	0.625
SC3	18	MET	0	3.153	3	1	5	1	5	1.533	0.452	0.928
SC4	19	MET	0	3.23	3	1	5	1	5	1.472	0.733	0.948
SC5	20	MET	0	3.115	3	1	5	1	5	1.495	0.406	0.788
GLP1	21	MET	0	3.081	3	1	5	1	5	1.434	0.409	0.69
GLP2	22	MET	0	3.148	3	1	5	1	5	1.541	0.339	0.768
GLP3	23	MET	0	3.134	3	1	5	1	5	1.484	0.532	0.847
GLP4	24	MET	0	2.981	3	1	5	1	5	1.457	-0.242	0.482

Note: where EK – External Knowledge; SI – Supplier Involvement; II – Internal Innovation; SC – Social Capital; GLP – Globalization Potential.

Construct reliability and validity is an important measure before hypotheses testing process through Smart PLS. For this purpose, value of composite reliability and average variance extracted (AVE) is observed which is given in Table 3. Literature recommended 0.7 as minimum level of acceptance for composite reliability and 0.5 for AVE. Both the values are presented in Table 3 which confirmed the reliability and convergent validity of all the constructs. The convergent validity is achieved through AVE as literature reported that to achieve the convergent validity, AVE should be higher than 0.5 which is confirmed in the current study. Additionally, to achieve the discriminant validity, this study used AVE Square Root. It is reported in Table 4, AVE Square Root confirmed the discriminant validity.

Table 2. Factor loadings (source: author's estimation)

	EK	GLP	II	SC	SI
EK1	0.804				
EK2	0.906				
EK3	0.707				
EK4	0.887				
EK5	0.894				
EK6	0.906				
GLP1		0.929			
GLP2		0.734			
GLP3		0.839			
GLP4		0.894			
II1			0.89		
II2			0.912		
II3			0.907		
II4			0.816		
II5			0.893		
SC1				0.734	
SC2				0.875	
SC3				0.705	
SC4				0.899	
SC5				0.893	
SI1					0.891
SI2					0.901
SI3					0.915
SI4					0.837
SI5					0.792

Note: where EK – External Knowledge; SI – Supplier Involvement; II – Internal Innovation; SC – Social Capital; GLP – Globalization Potential.

Table 3. Construct reliability and validity (source: author's estimation)

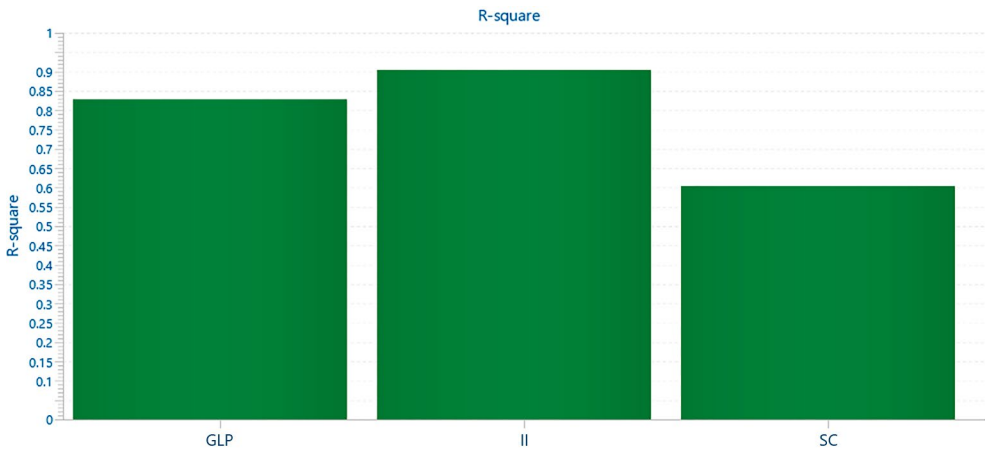
	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
EK	0.953	0.954	0.963	0.811
GLP	0.943	0.944	0.959	0.854
II	0.944	0.944	0.957	0.816
SC	0.913	0.914	0.936	0.746
SI	0.95	0.95	0.962	0.834

Note: where EK – External Knowledge; SI – Supplier Involvement; II – Internal Innovation; SC – Social Capital; GLP – Globalization Potential.

Table 4. AVE square root (source: author's estimation)

	EK	GLP	II	SC	SI
EK	0.901				
GLP	0.721	0.924			
II	0.692	0.647	0.904		
SC	0.776	0.791	0.731	0.864	
SI	0.636	0.666	0.646	0.739	0.913

Note: where EK – External Knowledge; SI – Supplier Involvement; II – Internal Innovation; SC – Social Capital; GLP – Globalization Potential.



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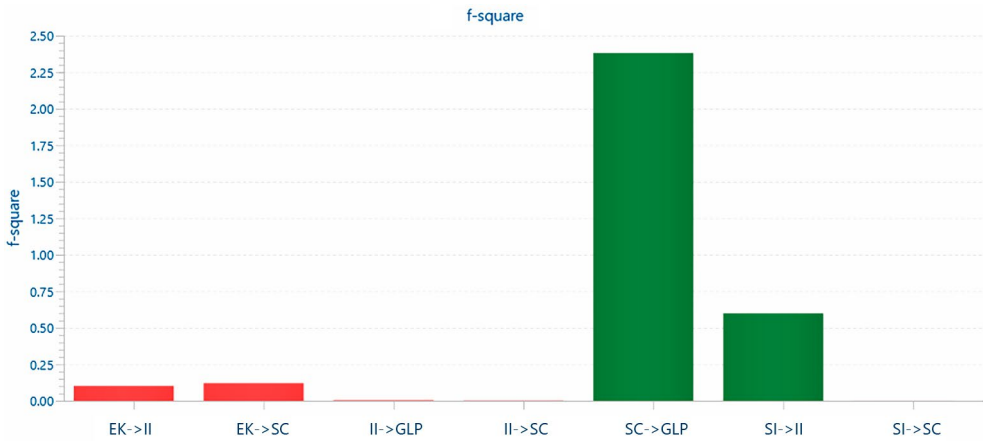
Figure 3. R-square (R²) (source: author's estimation)

R-square (R²) addressed in this study to examine the effect of all the variables on dependent variable. R-square (R²) is reported in Figure 3 which is 0.83. These values reflected that; external knowledge, supplier involvement, internal innovation and social capital can bring 83% change in globalization. This is one of the strong changes which is reported by previous studies. Additionally, the effect of independent variables on dependent variable is addressed through f-square (f²) value which is reported in Figure 4. Social capital has strong effect on globalization; however, internal innovation has minor effect. Furthermore, internal innovation has small effect on internal innovation and supplier involvement.

4.2. Structural model assessment

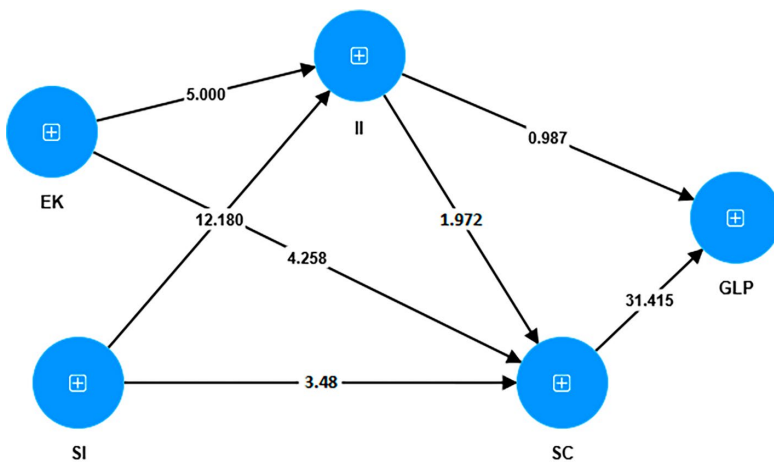
Second step of data analysis is consisted on structural model in which the hypotheses are tested. The results of hypotheses are reported in structural model shown in Figure 5. T-value reported in structural model shows the significance of the relationship. Additionally, all the results are reported in Table 5 and Table 6. Minimum t-value is 1.96 to accept the hypotheses which is recommended by other studies (Hair Jr et al., 2014). It is found that; external knowledge and supplier involvement has significant effect on internal innovation which sup-

ported hypotheses 1 and hypotheses 2. Furthermore, hypothesis 3 and hypothesis 4 are also supported which considered the effect of external knowledge and supplier involvement on social capital, respectively. The effect of internal innovation on social capital is significant which supported the hypothesis 5. Hypothesis 6 is insignificant because the t-value is 0.987 which is less than 1.96. Therefore, internal innovation has no direct effect on globalization. However, social capital is significant effect on globalization which supported hypothesis 7. The mediation effect is reported in Table 6. Hypothesis 8 is not supported which shows the mediation effect of internal innovation between external knowledge and social capital. On the other hand, hypothesis 9 is supported which shows the mediation effect of internal innovation between supplier involvement and social capital.



Note: where EK – External Knowledge; SI – Supplier Involvement; II – Internal Innovation; SC – Social Capital; GLP – Globalization Potential.

Figure 4. f-Square (f^2) (source: author’s estimation)



Note: where EK – External Knowledge; SI – Supplier Involvement; II – Internal Innovation; SC – Social Capital; GLP – Globalization Potential.

Figure 5. Model results (source: author’s estimation)

Table 5. Direct effect (source: author's estimation)

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
EK -> II	0.281	0.284	0.056	5	0
EK -> SC	0.654	0.655	0.154	4.258	0
II -> GLP	-0.037	-0.039	0.038	0.987	0.324
II -> SC	0.083	0.082	0.042	1.972	0.047
SC -> GLP	0.937	0.938	0.03	31.415	0
SI -> II	0.683	0.68	0.056	12.18	0
SI -> SC	0.049	0.049	0.014	3.48	0.001

Note: where EK – External Knowledge; SI – Supplier Involvement; II – Internal Innovation; SC – Social Capital; GLP – Globalization Potential.

Table 6. Indirect effect (source: author's estimation)

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (O/STDEV)	P values
SI -> II -> SC	0.057	0.056	0.017	3.351	0.001
EK -> II -> SC	0.023	0.022	0.049	0.48	0.631

Note: where EK – External Knowledge; SI – Supplier Involvement; II – Internal Innovation; SC – Social Capital; GLP – Globalization Potential.

5. Findings and discussion

Findings of the study highlighted that hypothesis 1 is significant which shows that external knowledge has positive effect on internal innovation. In other words, it indicates that the increase in external knowledge among the SMEs can increase the innovation inside the companies. It is also reported by the previous studies that external knowledge has influential role in internal innovations (Simao & Franco, 2018). Therefore, these results are similar with the literature. The innovation inside the boundaries of the firm can be increased through the promotion of external knowledge between supplier involvement and internal innovation which also supported that supplier environment has positive effect on internal innovation. Similar with the external knowledge, supplier involvement has influential role to promote internal innovation (Yeniyurt et al., 2014). Thus, the maximalization of internal innovation can be managed with the help of supplier involvement. The contribution of supplier to provide various information related to the customized products can lead towards the internal innovation. It is reported in the previous studies that involvement of the supplier has the possibility to promote innovation which is in line with the current study.

Hypothesis 3 tested the relationship between external knowledge and social capital which is significant, and findings highlighted that there is a positive relationship between external knowledge and social capital. It is identified that the social connection between the stakeholders can be promoted through external knowledge. External knowledge can be attained with the help of various stakeholders such as customers, external partners and retailers which can develop a social connection between the firm and other stakeholders. This mechanism

enhances the development of social capital. Similarly, the literature also mentioned the relationship between social capital and external knowledge from the market. Hypothesis 4 identified the relationship between supplier environment and social capital. This relationship is significant and positive showing that the increase in supplier involvement can increase the social connections among the employees of the company and external stakeholders. Therefore, SMEs working in China can promote social connection between the employees of the company and external stakeholders with the help of supplier involvement.

Hypothesis 5 indicated the effect of internal innovation on social capital. Findings of the study highlighted that this relationship is positive and significant which shows that increase in the innovation inside the boundaries of the companies can increase the social capital. The process of internal innovation maximization with the help of external knowledge and supplier involvement can form social connections between the stakeholders. As various other studies also highlighted the positive relationship between innovation and social capital (Pio, 2020). Hypothesis 6 identify the effect of internal innovation on globalization potential. The findings of the study identified that internal innovation has no effect on globalization potential. The globalization cannot be enhanced with the help of internal innovation only. This hypothesis is not accepted because internal innovation has no direct effect on globalization but maximalization of internal innovation through the concept of open innovation can lead to the globalization. Furthermore, hypothesis 7 identified the positive effect of social capital on globalization. Social capital in form of social connections between the business organization is the important way to promote globalization process. Because more the social connection between the businesses more will be the transfer of trade as well as technology leading towards the whole world as a global village. Similarly previous studies identified the positive relationship between social capital and globalization (Sargazi & Rahnavard Ahan, 2021). Finally, internal innovation cannot transfer the positive effect of external knowledge on social capital which rejected hypotheses 8. On the other hand, hypothesis 9 is supported. According to the results of hypothesis, internal innovation can transfer the positive effect of supplier involvement which can maximize the globalization potential.

6. Conclusions

Globalization has central importance for the nations which can be promoted through open innovation practices. The activities carried out by the SMEs in China can increase the globalization potential. Open innovation practices such as external knowledge maximization and supplier involvement has the potential to effect globalization. The ways business organizations are carrying out various open innovation practices are leading to the world become a global village. The collaboration of Chinese SMEs across the border in relation to the transfer of trade and technology increase the potential of globalization through the maximization of internal innovation and social capital. Social capital is one of the major instruments which has main contribution to globalization. Open innovation practices increase the social capital among various stakeholders inside and outside the border which can further increase the globalization potential.

Despite the valuable findings, this study is limited to various perspectives. First, this study only considered two practices of open innovation: external knowledge and supplier involve-

ment. Future studies should highlight various other practices such as intellectual property management and motivating spillovers. Second, all these SMEs cannot adopt open innovation due to the financial constraint. Therefore, financial constraint should be considered while addressing the role of open innovation on globalization. Third, the globalization potential can be better promoted through multinational companies, however, the current study has not introduced these companies. Thus, future studies should consider multinational companies instead of SMEs. Moreover, another stream of literature can be built on our provided framework but this time in another country our analysis is specifically restricted to Chinese SMEs. Since, the current study targeted specific factors which comes under open innovation, hence, future studies are recommended to examine OI activities and phases more in depth in order to find out which phase or activity impacts organization's successful globalization. Moreover, as it is stated already that context matters a lot, hence open innovation and globalization must be investigated in numerous context such as in different business structure, different industry, different culture, different intellectual property regime etc.

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