

# The Mediating Effect of MSMEs Export Performance between Technological Advancement Capabilities and Business Performance

Fawad Hussain, Mohammad Basir Bin Saud, Mohd Azwardi Md Isa

**Abstract**—The aim of this study is to empirically investigate the mediating impact of export performance (EP) between technological advancement capabilities and business performance (BP) of Malaysian manufacturing micro, small and medium sized enterprises (MSME's). Firm's technological advancement resources are hypothesized as a platform to enhance both exports and BP of manufacturing MSMEs in Malaysia. This study is twofold, primary it has investigated that technological advancement capabilities helps to appreciate main performance measures noted in terms of EP and Secondly, it investigates that how efficiently and effectively technological advancement capabilities can contribute in overall Malaysian MSME's BP. Smart PLS-3 statistical software is used to know the association between technological advancement capabilities, MSME's EP and BP. In this study, the data was composed from Malaysian manufacturing MSME's in east coast industrial zones known as the manufacturing hub of MSMEs. Seven hundred and fifty (750) questionnaires were distributed, but only 148 usable questionnaires are returned. The finding of this study indicated that technological advancement capabilities helps to strengthen the export in term of time and cost efficient and it plays a significant role in appreciating their BP. This study is helpful for small and medium enterprise owners who intend to expand their business overseas and through smart technological advancement resources they can achieve their business competitiveness and excellence both at local and international markets.

**Keywords**—Technological advancement capabilities, export performance, business performance, small and medium manufacturing enterprises, Malaysia.

## I. INTRODUCTION

PREVIOUSLY internationalization has long been considered a significant attribute of entrepreneurship research, few studies exist on the potential linkages between internationalization and performance among MSMEs [1]. The performance of internationalization vastly ignored and the question of how to measure performance of internationalization remains unanswered. The negligence of appropriate literature has triggered this research to investigate firm's internationalization performance. Considering that

Fawad Hussain is with the Northern University of Malaysia, College of Law, Government and International Studies, Sintok – Kedah 06010 Malaysia (corresponding author phone: 006011-238-78-308; e-mail: fawadhussain.fawad@gmail.com).

Assot. Prof. Dr. Mohammad Basir Bin Saud is with the Northern University of Malaysia, College of Law, Government and International Studies, Sintok – Kedah 06010 Malaysia (e-mail: basir372@uum.edu.my).

Dr. Mohd Azwardi Md Isa is with the Northern University of Malaysia, College of Law, Government and International Studies, Sintok – Kedah 06010 Malaysia (e-mail: azwardi@uum.edu.my).

“smaller business are not smaller versions of big business” [2], and that micro and smaller enterprises deal with a unique set of size-related, resources, it must be questioned whether performance measures used by large firms, are also applicable to MSMEs [1].

Micro and small firms are completely different from large multinational corporations (MNCs) and mostly micro, small, and medium firms lack to use the fundamental, resources that facilitate their international success [3]. The technological advancement resources and the nature of bigger firms and particularly micro and small are completely different attributes toward internationalizing. That is the reason it is easy for a bigger firm to participate but difficult for smaller. On the other hand, today's competition is getting more intense than ever and firms from countries like Sweden, China and India are giving more critical competition to the global industry. Previous researcher [4]-[8] are examining various attributes to examine what appreciates micro, small and medium enterprise internationalization performance. Furthermore, in 1990's the internet base technology started becoming commercialized, with some limitation and restriction. This delayed many micro and small firms from expanding internationally [9]. There are some other sub areas such as electronic commerce was encouraged through internet as a medium and likewise various businesses have taken this opportunity to venture into international markets.

## II. PROBLEM STATEMENT

The research base on internationalization in emerging markets has been focusing on large firms such as Intel Corporation, Lenovo, HP, Tata India and etc. [5]. Traditionally, efforts to understand internationalization of business have targeted particularly at large multinational companies [5], [10]. Academicians have noted that there is a little research that has been done to help the micro and small entrepreneurs to penetrate successfully in international markets. The micro, small and medium entrepreneurs' factors that could lead them to cross border success remain unpredictable [6], [7] and [11].

It is the concern of academicians and practitioner that what are the resources and competencies that improve firm's internationalization performance. Recently is the is most addressed research problems in the area of international business, approximately a hundred studies have investigated the question of whether and how internationalization affects firm performance [12].

Studies on internationalization of MSME's on developed and developing countries are still lacking to explain technological advancement factor [13]-[15] influence MSME's EP and BP. There are few studies which examine the influence of firm's technological advancement capabilities in a set to measure manufacturing MSME's export and BP.

The finding of [5], suggest that Malaysian MSME's are lacking to penetration in the international markets. He further added that the reasons for internationalization are MSME's seeking for more profits and market opportunities are the major reason for MSME's to internationalize. On the other hand, [16] has indicated that currently Malaysian economic condition, EP and foreign direct investment (FDI) have increased significantly since 1990s and based on the current literature available on internationalization does not directly apply to the case of MSMEs based in developing economies, and most particularly Malaysia. However, empirical evidence shows that 56.4 % of Malaysia MSME's are lacking in term of penetrating in the international market [5]. This paper has examined Malaysian manufacturing MSME's technological advancement capabilities, mediated by EP influencing their BP.

### III. OPERATIONAL DEFINITION

The term technological advancement in this research is explained as the initiatives by firms, government, international and regional support to internationalize their MSMEs competitiveness in the international markets. Technological advancement can be through technology capacity building via policies, mechanisms, and system support. This Technological advancement depends on the firm stage of development and other interrelated issues [13].

Technology advancement timely decision by a nation or industry or firm can propel micro, small and medium enterprises to actively participate in the internationalization process [17]-[19].

### IV. LITERATURE REVIEW

While access to globally dispersed resources as a motivation for internationalization is a reasonable proposition, and which can also explain the internationalization of developed countries, on the other hand it is not completely clear how resources lead to capability development for emerging economy firms [20]. There is a rapid growth of technological advancement and industries are taking the best advantage of these technological advancements. This wave of technological advancement can also provide potential opportunities for Malaysian Firms to exploit the potential and use these opportunities for accelerating its economic recovery [21]. It is clearly aware of the fact that the extraordinary speed of transformation of industries via information technology and operational excellences all around the world has triggered Malaysians manufacturing industries to transform and these opportunities if lost can never be compensated. The Malaysian manufacturing sector is going through a process of restructuring, integration, and transformation, with important

industry participants likely to decrease their investment into low-value segments and appreciate their actions in development and research, innovative ideas, high knowledge, high technologies and value-added industries. This fact dictates that any meaningful action or decisions for industry in Malaysia have to be implemented immediately. Malaysia and similar countries hoping to exploit the inherent potential of internationalization process must act immediately and decisively to restructure the domestic MSMEs to play effective role in international markets [5], [16], [22]. Malaysian firms intending to enter a foreign market found that in order to meet the international standards, it is important to know that Malaysian industry is fully aware and capable to internationalize [16]-[23]. As most firms internationally taking advantage from technological advancement and usage of information technology tools such as internet and e-Commerce. Micro and Small manufacturing firms are expected to significantly increase their internationalization success by using advance information technological tools, which can enable them to cut costs, with timely and accurate product delivery. All over the business sector, the usage of information technology is significantly improved, but its effective and efficient usage is still not that what is expected [13], [14], [24].

It has been seen that after the contextualization of new technology, it has been found that it is a revolution in every aspect of the Malaysian industry and MSMEs are using information technology techniques successfully [24].

#### A. Export Performance and Business Performance

The term internationalization or EP is widely explained in the previous research. Researchers [2], [25]-[27] have provided evidence and through literature review on the firm EP. Indeed the subject is extensively discussed is the area of firm international strategy and international business more than three decades, the variables and directions to measure international performance remain inconsistent and contradictory. In the previous research the firm performance and the degree of internationalization [28]-[30] have been investigated separately, which empirically proves the argument between firm financial success and firm international expansion.

International business (IB) literature has focused on how internationalization and performance are related. Different researchers argue for different kinds of relationships, ranging from no relationship, e.g. [31], positive linear e.g., [32], negative linear e.g., [33], U-shaped e.g., [34], inverted U-shaped e.g., [35], to a sigmoid shaped relationship e.g., [36], between internationalization and performance [37].

A study was conducted on 237 Indian firms to know their internationalization performance, which, have carried out exports in the period from 2002 to 2008. Their findings suggested that there is a positive linear internationalization performance relationship with export intensity and a negative linear internationalization performance relationship with foreign direct investment (FDI) activity. The study has supported the firm's networking capabilities (business group

affiliation) and firm age positively moderate the internationalization performance relationships, which signifies resource base effects [37].

There is a connection between the degree of internationalization and performance of a firm which were supported by various scholars, which stated that international expansion of firms represents a prerequisite for greater financial success. They found that internationalization is beneficial for a firm and previous studies conducted in 70's and 80's have shown a linear relationship between the level of internationalization and firm performance [12]. Recently, researchers [38], [39] have combined these concepts by recommending that an S - horizontal curve can best describe the firm internationalization performance. On the other hand, there are authors [40], who used economic based variables using the theory of resource base view. The resources which they included are product advantage and resource available for international expansion influencing internationalization. The study has also utilized organizational learning as moderator variable, which is further categorically divided into social, technology and market learning. In the study, it is found that technological learning does not moderate internationalization and firm performance.

## V. RESEARCH OBJECTIVE

The aim of this paper is to measure the mediating influence of firm EP on of Malaysian manufacturing MSMEs business performance. The efficiency of firms to make best use of its technological resources and export a part of its goods and services abroad is increasingly regarded as a significant step towards a competitive performance [41], [42].

Various researches [4], [43], have indicated that firm exporting and business performance has lacked a focus specifically from small firms perspective.

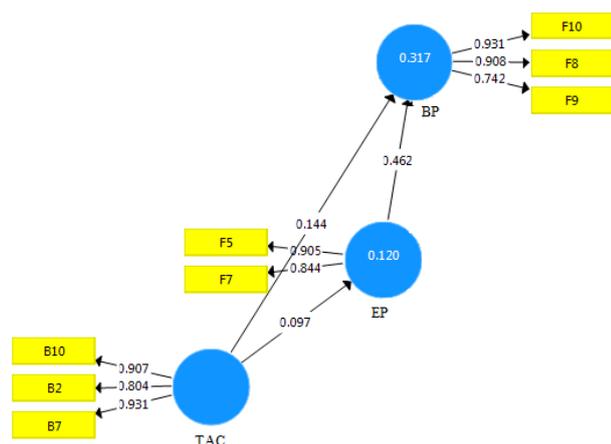


Fig. 1 Research Framework

## VI. TECHNOLOGICAL ADVANCEMENT CAPABILITIES

Superior Technological advancement techniques can enable the micro and small level firms to make their primary market entry with product innovation and differentiation from their counter competitor [44], [45]. Technological advancement has

transformed and revolutionizes major changes in almost of aspects of our industry that are impacting the competitive environment. Technological factors are comprised of the rate of challenges, i.e. the latest innovations and technological discoveries replacing the current technologies [46] have found that technological leadership and the strategies of differentiation and focus are the main drivers for greater international performance in Born Globals. The degree to which the innovations and technology is changing has put a great impact on the new industries to find blue oceans with emerging markets and firms need to change their patterns the ways in which the present industries compete. There are various aspects of technological advance, which comprise of the perfect combination of hardware and software, internet, nanotechnology and genetic engineering and still more to come. The industrial dynamics have changed the nature of competition and rate of speed with the help of technological advancement blessings and many industries are taking cost, time, effort, and resources base benefits. One can scan around and see these technological advancement operational excellences in banking, insurance, health, tourism and other micro, small and medium level entrepreneurs industries. This has enabled new firms to enter the competition at comparatively with competitively priced services and products and continually gaining market share in the course [47], [48].

## VII. SCOPE

The units of analysis of this study are owners of Malaysian manufacturing micro, small, and medium enterprising firms. In fact, the Malaysian manufacturing MSME's needed to involve in IB activities and play their role to bring in economic stability. In addition to that, this study will also help to encourage micro, small, and medium entrepreneurs in developing their international confidence to promote their product.

## VIII. RESEARCH HYPOTHESIS

The influence of the internationalization process on the technological capabilities was also measured by [49]. Their study used the internationalization of Brazilian Export Producer Companies Model, which was built by [50] who measured technological capabilities of Brazilian firms. The finding concluded that different levels of internationalization required different functions and different levels of technology. Their study found a positive significant relationship between the process of internationalization and the development of technological capabilities in the Brazilian firms. The author has further noted that the firms will remain competitive in international markets, if they build diverse cross border alliances (networking capabilities), expertise skills along with technological capabilities.

This research has the following research hypotheses:

- H1. *Export performance has a significant effect on business performance.*
- H2. *Technology advancement capabilities have a significant effect on export performance.*

H3. Technology advancement capabilities have a significant effect on business performance.

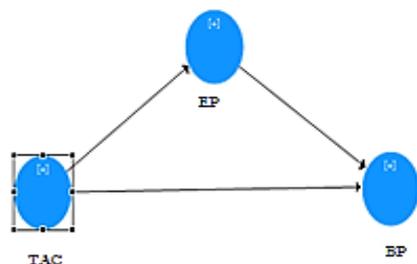


Fig. 1 Mediation Effect of EP between TAC and BP

### IX. METHODOLOGY

The research instrument used in collecting data will be a questionnaire that will be distributed among the owners of micro, small and medium manufacturing enterprises in Malaysia. The present study will have owners of internationalizing firms as the unit of analysis. This study uses a Smart PLS-3 method to check the casual relationship between technological advancement resources, export and business performance. The data were collected from Malaysian Manufacturers in Malaysia peninsular east coast industrial zones from major cities and these cities are considered to be the most important industrial hub of MSMEs in Malaysia. The List of Small and Medium Manufacturers were obtained from the Federation of Malaysian Manufacturers (FMM) directory as per 2013. Seven hundred and fifty (750) questionnaires were distributed, but only 148 usable questionnaires are returned. According to [51], sampling frame chart if total of 378 MSMEs required from 37, 861 total manufacturing MSMEs, as it will be appropriate samples at 95% confidence level. However, as due to low response rate intentionally we distribute more questionnaires in order to meet the required sample size. Therefore, a total of 148 questionnaires (response rate 19.7%) was considered valid and usable to analyze the data, such response return rate is comparatively same to that reported by [52], [53]. On the other hand, it should be noted that 15 to 20 % response rate in acceptable rate for the studies conducted in similar industry; due to the nature of this study that examines manufacturing MSMEs at the organizational level.

### X. ANALYSIS

The findings indicated full mediation of EP between technological advancement capabilities and business performance. The direct effect was 0.46 between export performance and business performance. The indirect effect between technological advancement capabilities was 0.144, which shows a full mediation.

To test the hypotheses, the construct equations were interpreted with standard errors and test statistics. The construct equations, measure the extent to which one factor relates to another, that is, the extent to which the structural path coefficient and t-values between hypothesized constructs

reflected direct relationships [54], [55]. The t-values must be significant to support the hypothesized paths and should be greater than 1.96 or 2.56 for alpha protection levels of 0.05 and 0.01, respectively [56]. Table II shows the path coefficient and t-value results.

TABLE I  
 DIRECT AND INDIRECT RELATIONSHIPS

Path	Outer loading	t	p-value
TAC -> EP	0.097	2.144	0.03
TAC -> BP	0.144	1.292	0.2
EP -> BP	0.46	6.113	0.00

**Hypothesis 1. (H<sub>1</sub>) Export Performance (EP) has a Significant Effect on Business Performance (BP).**

There is a significant association between export performance and business performance (t=6.11, p<0.05). Hence, export performance did influence business performance. As export performance goes up, the business performance goes up as well.

**Hypothesis 2. (H<sub>2</sub>) Technology Advancement Capabilities (TAC) have a Significant Effect on Export Performance (EP).**

There is no significant relationship between technology advancement Capabilities and export performance (t=2.14, p>0.05). Thus, Technology Advancement Capabilities have no significant association with export performance.

**Hypothesis 3. (H<sub>3</sub>) Technology Advancement Capabilities (TAC) have a Significant Effect on Business Performance (BP).**

There is no significant relationship between technology advancement capabilities and business performance (t=2.14, p<0.05). Hence, business performance did not influence by technology advancement Capabilities. On the other hand, the path coefficient of the model is shown in Table III.

Fig. 3 shows the path coefficient graph which shows the individual factor relates to each other, this is the extent to which the structural path coefficient constructs shows the direct relationships.



Fig. 3 Path Coefficients

TABLE II  
PATH COEFFICIENTS (MEAN, STDEV, T-VALUE, P-VALUE)

Hypothesis	Path Co-Efficient	Sample Mean (M)	Standard Error (STERR)	T Statistics ( O/STERR )	P Values	Results	
EP -> BP	H1	0.462	0.459	0.076	6.113	0	Accepted
TAC -> EP	H2	0.097	0.111	0.075	1.292	0.2	Accepted
TAC -> BP	H3	0.144	0.14	0.079	1.818	0.07	Accepted

TABLE III  
PATH COEFFICIENT

	EP	BP	TAC
EP	1.000	0.462	0.097
BP	0.462	1.000	0.144
TAC	0.097	0.144	1.000

### XI. FINDINGS

The findings have noted that there is a positive significant influence of firm's technological advancement capabilities on their business performance. On the other hand, it is found that there is a significant mediating influence on export performance between export performance and business performance. This revealed that owners of these manufacturing small and medium enterprises always seek export and business growth opportunities. The above empirical finding have validated that firm's export performance could enhance their business performance. The results concluded that the availability of resources plays a significant role in most internationalization attributes. However, there is no fix or uniform rule, method or strategy which guarantees the export or business success. It depends on individual firms how they tune their technological advancement capabilities, and learning curves to avail their internationalization success.

### XII. RECOMMENDATIONS

The paper has drawn upon MSME's exporting practices influence their business performance, the main factors associated with MSME's is their technological advancement resources, which enables them to appreciate their export leading to improve their business performance. Technology usage further emerged as an important internationalization facilitator, as it assisted to connect the important physical distance associated with the international service provision [57]. It is recommended to promote and educate more technological advancement capabilities for MSMEs to increase their exporting practices and improve their business performance. As technology is helpful in decision making and if it is efficiently used MSMEs risk can also be measured, which is again an important factor for MSMEs as they are comparatively new and have limited financial and non-financial resources. With the help of technological advancement capabilities, the MSMEs can improve their entrepreneurial skills, networking, fast, cost effective and safe international operations. It is highly recommended that MSMEs who lack technological advancement resources in their start-up stage should consider appointing technological qualified international trading experts or agents. MSMEs should also organize capacity building programs for

managerial staff, and undertaking a concerted effort to improve their technological advancement capabilities. On the other hand, Malaysian government and policy makers willing to improve or promote greater exporting practices among MSMEs should take a serious note in this area.

### XIII. CONCLUSION

Malaysian manufacturing firms are struggling hard to gain competitive advantage locally and internationally through their technological capabilities and with the efficient role played by the government as a reagent to appreciate expansion of the micro and small firms [58]-[60]. Technological advancement is transforming small and medium enterprises (SMEs) and this process of transformation is revolutionizing the rules of business, causing these micro, small and medium enterprises transform its structures. Internationalization is not possible without technological advancement, which is having an important impact on MSMEs operations [14]. Malaysian manufacturers, particularly MSMEs need to continuously update their technological advancement capabilities which cannot only be helpful in their export performance, but it could also improve their business performance as well.

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