Assessment of issues faced by SMEs in IT industry while implementing automation: A case assessment of inefficient performance of business at customer touchpoints

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Abstract

The rise of automation is altering corporate practices. Small firms are leading the way in terms of automation since they contribute the most to GDP. As a result, SMEs in the IT industry must implement automation-driven strategies and survival strategic methods in order to overcome the many global problems that the SME sector faces. This study critically reviewed the available literature on global problems for SMEs to have a better understanding of the issues that SME organizations in the IT sector might face related to the implementation of automation. Through the research articles chosen for this study, published information on how SMEs might employ automation to provide effective services was examined with the identification of relative challenges. The review revealed that the applications of IT automation in SMEs are inexhaustible but there are challenges due to which SMEs continue to struggle with multiple areas of concern related to the application of technologies for automation. Moreover, the study considered that the most major effects of automation are the use of technology, the development of massive data, and the analysis of that data. With a case assessment, it was concluded that unique models, extensive evaluations of the difficulties faced, and specific technology to deliver answers can all help these businesses.

KeywordsSME, information technology, automation, chatbots, customer satisfaction.

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1. INTRODUCTION

Globalization is frequently described as a paradigm related to modernized world production systems (Moreira et al., 2010), cultures (Ritzer & Dean, 2019), and political processes (Aspers & Kohl, 2015). The global experience demonstrates the unique function and relevance of small and medium enterprises (SMEs) in national economies (Madanchian et al., 2015). Due to their vital role in GDP growth, new job creation, and entrepreneurship, SMEs are widely recognized as socioeconomic

development accelerators across the world (Karadağ, 2016). The rise of information and communication technology (Heeks, 2010) has accelerated the pace of technological transformation nowadays, and most SMEs are adopting this strategy to increase their market competitiveness (Sung et al., 2016). Many academic studies have been conducted on the adoption of technologies considering the aspects of automation. It is determined that the companies are adapting Artificial Intelligence for better automation and sharp results within the pre-set time. Apart from this, robotics has also taken important space in the IT manufacturing sector to boost production to a certain level. Chatbots and AI-based bots are currently working much more efficiently in the field of customer service technology (Adam et al., 2021). However, many studies have indicated that the industry is significantly lagging in the implementation of the new technology in their workforce due to, lesser technological awareness among the stakeholders, companies focus on traditional operational development rather than establishing smart work through automation, lack of training of the existing employee regarding the advanced technology, etc. Small and Medium IT enterprises are not able to implement technology-based automation in their workforce due lack of infrastructure in their businesses (Ingaldi & Ulewicz, 2020). This has taken a great toll on their business performance and made them less adaptive to the competitive market.

IT companies that have been working long in the industry have been more focused on traditional operational establishment rather than making a smart operational infrastructure using AI technology that is making them not supportive to the ever-changing business scenario and keeping them backward in meeting their business objectives (Rodič, 2017). The growth of any SME depends on the proper training and recruitment of knowledgeable employees, who can help the business grow and meet its performance target well. Understanding the necessity of the technology in the future growth of the IT SMEs, the companies may consider adapting more to the advanced technology in their future endeavors. Therefore, this review paper intends to examine the various aspects related to automation and its implementation within SMEs in the IT industry and particularly aims to assess the issues related to automation which leads to inefficient performance of the business at customer touchpoints. The further sections discuss the aspects that support the objective of the paper and furnish the discussion on findings with recommendations.

2. THEORETICAL BACKGROUND

This section presents the theoretical background of implementing Automation. It covers

a) Evaluation of return on investment in implementing automation

The return on investment is expressed as a profit percentage generated by a certain amount of money after operating expenses over a given timeframe. ROI is a metric used by traders, financiers, and management to examine the effectiveness of various investments. Return on investment is not about profit or the return from equity: they are different ideas but there is a relation. The return on investment is a metric that is used to compare and contrast a variety of investments (Matt, Modrák & Zsifkovits, 2020). It allows observers to compare the prospective level of profit from financing in one business or asset to the next. There are problems when it comes to calculating the return on investment since each of the factors can be changed to suit a particular situation or impact the result. The way expenditures or charges are handled has a significant impact on the accuracy of the ROI figures. Incorporating too much or

eliminating others has a significant effect on the ultimate ROI amount.

If the return on investment of a company's activities is less than the capital cost to sustain such activities, shareholders would find it better to withdraw their funds and move on to another venture. The return on investment is a significant issue for marketing and promotional budgets since it enables businesses to determine how much profit they may expect from different degrees of sales revenue (Kassem & Trenz, 2020).

The mechanization of the American economy is progressing at a rapid pace. From corporate investments in 1987 to a maximum at the close of 2000, investing in pattern recognition equipment and software increased steadily. Since then, as failures with nonprofitable results become apparent, dependence on information technologies has declined. Given the growing cynicism about the advantages of technology and automation, companies looking to boost profits are unlikely to consider information technologies as a viable investment option. Board members and CEOs are now considering rules that would steer investments away from hopeful pledges and toward investments that can be verified (Andulkar, Le & Berger, 2018). Initial computer technology expenditures were focused on the automation of repetitive duties performed by clerks and administrative professionals, raising fears of massive unemployment among these workers. Organizations sought to save money by replacing ever less expensive computers for workers that demanded more wages. Although these investments were quickly becoming obsolete, putting in endless waves of additional computer investment became appealing. Falling office automation costs were also bringing new capabilities for automating office tasks.

For a brief while, a popular idea that computer technology will increase unemployment, particularly among women employees, proved to be a popular fantasy. In time, the administrative and clerical personnel developed a passion for computers and saw the rising benefit of higher technical expertise as a stepping-stone to better-paying professional jobs. Saturation levels have been reached as personal computers have become more widely used in the office (Kumar & Vaishya, 2018). Even though computers are used by over 90% of the information workforce, numerous managerial and supervisory workers are unable to do their tasks in less time or at a cheaper price. The contradiction is manifested in the fact that getting jobs accomplished now takes around twenty billion extra hours, at incomes that have increased twice as fast as it did for the remaining workforce.

The use of robotic automation stimulates this physiologically based mindset. However, when it pertains to the claimed human-robot job market battle, things might be less catastrophic. Robotic process automation uses structured data to automate manual, repeated, and principal processes, boosting growth and profitability while lowering the risk of human mistakes. To synthesize data and automate tasks or operations, RPA employs software robotics (Bag, Gupta & Kumar, 2021). While RPA is frequently known as robots, it only consists of software that executes rule-based tasks that otherwise would have been completed by a person. Transactional automation, dynamic data processing, and streamlined interaction are all possible with RPA. Complex systems may take longer for less knowledgeable employees to complete, but a network specialist may be able to skip phases that are already familiar. Allocating senior people to adjustments solely to maximize productivity and/or enhance the product quality, on the other hand, maybe excessively expensive in and of itself (Bhise & Sunnapwar, 2019). Moreover, regardless

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of skill, the possibility for human error grows as system complexity increases. Both human processing time and estimations of time spent identifying and resolving errors should be included in the analysis.

Determining which processes should be computerized depends on the type of the operation, size, manual labour, regularity, the importance of business rule standardization and consistency, repeatability, type and format of input data, and existing exception rates, to mention a few factors. This initial round of prioritization must be driven by data and documented business pain concerns (Varga et al., 2017). The purpose of this stage is to determine the relative value of automating the operation. The intricacy of operations, the price of automation, and the possible benefits of process automation must all be completely comprehended to achieve this. Organizations can pick the top prioritized applicants depending on the value score of the procedure possibilities once the assessment is carried out.

The next and the last step is to move from an actual qualification measure to thorough prioritization parameters, evaluating non-quantitative performance measures such as a program that is designed alignment with an organization's main functionality, system scalability, improving information accuracy and reliability, equitable development, command, and standardization, and enhanced employee productivity.

b) Inefficiency in performance at customer touchpoints

Customer service is unquestionably vital for a small or medium-sized organization. Customer retention to the brand and business will be enhanced or diminished depending on the quality of that service. With the market in a slump, shoppers have more options than ever before. Customers who find a company that is responsive to their queries, concerns, or other demands might gain a significant competitive edge (Holcombe & Kemp, 2019). That is why it is critical to grasp how technological advances may help in anticipating client wants, modify business operations to best serve clients, and ultimately increase the company's efficiency – although the latter can help in cutting expenses. There are a few important areas where the technology may currently assist organizations in gaining key benefits in client loyalty by enhancing customer service:

Consumers can address their queries or look for answers from others in sections on the site. Utilizing e-mail to increase efficiency and respond to specific requirements or help queries more rapidly. Cohesive communications to keep in mind that the client who dropped a voicemail had sent an email a few days ago with the very same demand. More advanced data-gathering techniques, such as customer relationship management software, can help in obtaining better management of client relationships. Small and medium-sized businesses are critical to a country's sustainable development. Such organizations help an economy's economic development (Barbieri *et al*., 2019). However, this industry has numerous obstacles, including a low-skilled workforce, small-scale operations, the use of antiquated machines, a complicated supply chain, wasteful working capital, ineffective strategy and planning, and a shortage of concentrated decision-making. The fact is that any firm, whether small or medium, will find it difficult to expand beyond a certain point, especially if it continues to execute its tasks manually. In such a situation, automation can be a lifesaver. SMEs in many economies throughout the world are now turning to technology to help them streamline and regulate their daily business procedures. There is a plethora of solution providers available these days, with Value Creation Automation being one of the most popular. VCA has an advantage

over other automated systems on the market since it is intended to provide sophisticated technological capability through a comprehensive approach. Robotic customer service, also known as call center automation or call center robotics, is customer service that uses automation rather than human workers to fulfill tasks. It is easy to optimize entire procedures (Wang & Siau, 2019). Limited AI, robotic process automation, artificial intelligence, and speech recognition are frequently used in call center automation technology. Contrary to popular assumptions, automating a process does not result in the loss of a human position. Robotics is a key instrument in the future growth of the global workforce since it frees individuals from dull and repetitive tasks, allowing them to focus on more subtle and difficult concerns.

Speed is the utmost important element for an excellent customer service experience for 75% of consumers. The kind of speed that customers anticipate is simply not possible for most businesses. Businesses can finally meet, if not surpass, these demands thanks to technology. Email automation technology, for example, may analyze incoming emails and motor responses for agents to evaluate and deliver most of the time (Mentsiev, Engel & Gudaeva, 2020). Companies that choose to provide Facebook Messenger customer support, frequently use a bot as the front step, escalation to a real person only when the chatbot is not capable of resolving the issue. Self-service solutions such as chatbots, which may address issues before they contact a real person, represent a significant cost-cutting opportunity, in part because they eliminate the need for a telephone conversation, diverting traffic away from more costly channels. Human error is reduced by using call center automation technology. People are amazing at empathizing with others, but they can't match automation's ease and accuracy when it goes to repeated, time-consuming chores like inputting information into a case or searching across hundreds of skill set articles to locate the right one. While using AI and machine learning in contact center automation systems, the technology improves and becomes more efficient over time (Nawaz & Gomes, 2019). This is owing to their capacity to study from prior experiences and absorb new knowledge that alters their behaviour in the future. Automating key aspects of customer service can help the company future-proof itself in two ways: by providing it with the capacity to handle enormous traffic surges, such as those experienced during the COVID-19 crisis in 2020, and by enabling it to actively communicate with new consumers. Call centers achieved tremendous call volumes during the initial days of the COVID-19 disease outbreak as frightened consumers seek for information – and inquired a whole fresh series of questions, such as when toilet roll and mouthwash would be restocked, what precautionary measures were being chosen to take against the virus, whether stores were accessible, and so on. There is certainly no reason to do it without automation. The second way that computerized customer service can help a company future-proof itself is by allowing Millennials and Generation Z customers, who are gaining in purchasing power, to engage in their preferred manner.

c) Variation in cost of labour as per working hours post-implementation of automation

The most significant impact of automation would be on the reduced costs of labour. Implementation of automation would reduce the working costs of labour. Implementing automation can also help in reducing the working hours of the labourers and this, in turn, would benefit the organization from automation and cost (Veglis & Maniou, 2019). The variation in

cost is largely responsible due to factors such as the cost of implementing automation and how the initial level of lumpsum investment can pay back the returns over a period. Considering this, it is crucial to identify how the cost of labour as per working hours post-implementation of automation is impacted. The initial fixed costs of investing in automation are significantly high. This is due to investment in technology and skilled labour who would be versatile with the application of such systems. However, in the long run, the labourers would be required to work with a lower number of working hours. The variations in the cost of labour in terms of working hours would significantly be reduced. Call center automation allows the organization to redirect its most expensive employees to higher-value tasks, allowing more time to tackle more complex client concerns as well as improve and control the automation tools. Smart social listening software recognizes critical or emotionally charged customer comments and routes them to the appropriate agency using rules-based navigation. Furthermore, well-designed customer support chatbots can act as the first line of defense on the internet and mobile platforms, providing precise and detailed resolutions in minutes. Customers expect businesses to be open and receptive across far more platforms than they did perhaps a decade earlier. Automation seems to be the only method to handle additional interaction channels without increasing considerable personnel.

3. METHODOLOGY

This study intends to examine the difficulties associated with automation that contribute to inefficient company performance at customer touchpoints by reviewing current information on automation and its implementation within SMEs in the IT industry. As a result, the papers for this review article were chosen based on a thorough online search and the identification of papers from various journals that were relevant to the study based on the major keywords search. The key methodological constraint of this review is that it was only reliant on a web search to find papers for it. This restriction was acknowledged in the study, and it was observed that there was potential to further widen the review subject's comprehension.

4. DISCUSSIONANDFINDINGS

The applications of IT automation in SMEs cannot be finitely defined. The most important ones could include cloud automation that enables the automation of infrastructural resources for the IT admins in a self-serving manner. Other than that, provisioning of resources and configuration are other important aspects that help SMEs. This can be of great help in order to stop security breaches that can cost them a fortune. IT automation provides the security that SMEs require to protect all business-related data. The amount of data an SME holds can be huge and require a lot of manual work done by professionals, losing productivity hours (Veglis & Maniou, 2019). However, with IT automation, SMEs can easily create instructions that can handle these data in a more efficient way. Chatbots may not be quite efficient when it comes to interacting with consumers and understanding their needs. This might lead to a higher degree of dissatisfaction. Automation also comes in the form of mobile solutions to the small businesses where processes like transactions between company and customer can be monitored via smartphones, bookings, cancellations of services, etc. The amount of time these applications will save, both for the SMEs and the consumers is incredible. On the other hand, since the development of automation and machine learning has not yet reached its limit, there are a few disadvantages as well. Automation is still considered to be inflexible since the

programming and instructions provided to automation can only work in a very narrow and specific way (Wang & Siau, 2019). It is designed to handle a particular situation and thus when a new situation arises, they need to be re-programmed to adapt to the situation. In order to solve this, certain developments were made to handle different situations such as fixed, flexible and programmable automation. However, more development is yet to be observed in these sections so that they are more adaptable.

So, it can be easily said that especially in the SME sector, the implementation of this technology is inevitable and necessary for survival in today's day and age. However, it can be also observed that there is a continuous struggle and undesirable approach from the SMEs on the application of this technology. Mostly, these SMEs are focused only on manpower and their own production. They refuse to look beyond that and only consider the present. They also lack the skills required to apply automation due to the cost factor of it. However, we have seen such situations at the time of the technological revolution as well. Soon, the application of IT automation will not be a necessity but a mandate for all kinds of industries, just for the sake of survival (Nawaz & Gomes, 2019). This can be achieved with Governments across the globe stretching their helping hands towards these enterprises with organizational education and financial help in terms of short-term and long-term loans. In recent times, due to COVID 19 and nationwide pandemic in almost every country, as the demand has decreased, the automation industry has also seen a dry patch, but it is estimated to peak up steadily in the year 2021-22.

The present milieu of digital transformation has brought about real-time changes in the infrastructure and organization. The main goal of industrial automation is to understand customer demands and to meet those. But on the contrary, there are several examples of SMEs who are finding it difficult to cope with such changes. They are not able to incorporate well-formulated planning, strategies, and execution (Nawaz & Gomes, 2019). The incessant growth of technology and inventions make it tough for these enterprises to monitor. It simultaneously causes complexities within such groups. Such examples are seen in Turkey where SMEs that cannot maintain these technological incorporations face strong competition with other enterprises. This report deals with the challenges faced by SMEs in IT industries in espousing automation processes with regards to transformations, organizations, and cost analysis. It also evaluates the practices through two processes- the analytical hierarchy process (AHP) and the analytic network process (ANP). These two processes are the components of multi-criteria decision-making methods. This would help the major stakeholders and managers to recognize the main issues and address them properly. The AHP process is a method that assesses the criteria affecting the problem in an instinctive scenario of decision-making (Wang & Siau, 2019). These criteria are measured on a scale of hierarchy based on different comparison indices. It can be used to address daily concerns. It consists of four steps:

- Identifying and defining the problem and constructing the hierarchy
- Introducing the comparison indices
- Calculating the criteria weightage
- Checking the ratios of consistency

The ANP process is a step forward as it assesses the link between the factors and their correspondence to each other. It also has four steps:

- Identification of the problem and creating the network
- Creation of comparison matrices
- Studying consistency analyses

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●Understanding and generating the supermatrix

The concern of paramount importance in the SMEs of IT is their preconceived prejudices against industrial automation. The fact that they are not persuaded by the era of automation is perceived from the fact that their high rates of investment are not being backed by efficient returns. These enterprises and IT hubs are poorly equipped and therefore find it problematic to advance in the application (Barbieri *et al*., 2019). Several pieces of literature have identified the current issues faced by the SMEs of IT. They comprise a wide spectrum of factors such as organization, understanding of the problems, environmental issues, lack of expertise, complications, competitiveness, and cost-based concerns.

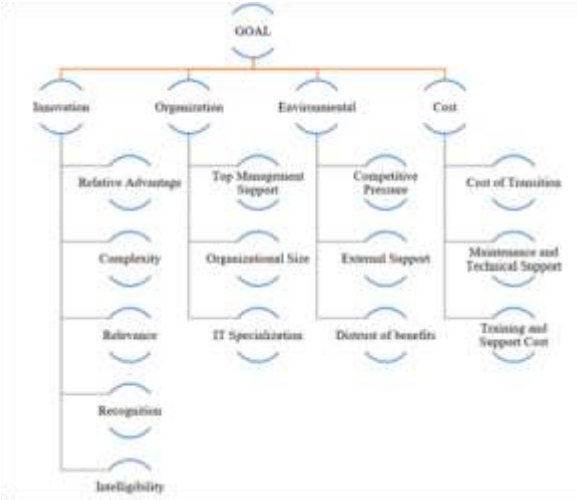

Fig I: Hierarchical structure of the issues faced by SMEs

(Source: Veglis & Maniou, 2019)

Another highlighted area of issue is human resource management in the SMEs in IT industries. Almost 80% of these groups have muddles with human assets. There are no experts to monitor the universal devices present in the market. This is the main reason for economic drawbacks faced by most organizations of concern in IT. There are also affairs related to the product portfolio.

A case assessment: The Czestochowa Industrial District is the third biggest commercial area in the Silesian Voivodeship. This place mainly deals with metal industries and metallurgical factories. These enterprises are old-fashioned and equipped with outdated machinery. Because of very low-profit returns, minimal yield, and output, these SMEs are unable to purchase new automated machines (Di Gaetano & Diliberto, 2018). Even if they are able to invest in these machines, often the fact is that the efficacy of such a machine is too high for the given enterprise. Together with this, numerous SMEs in Poland are deficient in terms of computer use and internet accessibility. Another additive problem is hiring staff for such advanced machinery. These shabby machines also bring a harmful impact on the surrounding environment due to a rise in emissions and waste production. Another aspect is the lack of skillful employees in Poland. Poland is one of the countries facing a good amount of brain drain every year. Instead, the workers hired from other countries such as Turkey, Ukraine, Serbia show a dearth of essential skills. On the other hand, Chinese workers despite being very adept are not adjustable in the country. There is also a disturbing language communication problem among the workers and global clients in such enterprises. Most of the employees from other countries are unable to learn Polish, which is one of the most difficult languages to learn (Aalipour *et al*., 2018). Comprehensive shifts and changes in various components of business industries are mainly due to the dynamic changes in the digitalized assets of today's era. Industry automation is fact-based on digitization. Thus, this causes impacts of varying magnitudes in the industries, especially in the SMEs and IT industry. Therefore, the most pivotal factors to

govern such changes are the efficiency of the available and incorporated resources, raising machine output, and worth per employee. Automation is not always about machines, it is also about novel ways of working together with various groups of people. Henceforth, it should be remembered that customer bases can be successfully increased by the adoption of electronic methods within a very short time. Sustainable management practices need to be inculcated among these business groups through proper economics and societal norms. Implementing automation should also be complemented with hiring a skilled workforce that is capable of handling such systems (Veglis & Maniou, 2019). There have been various improvements in aspects such as database management systems and various aspects which are possible only through automation without which it would not have been possible to manage such an enormous volume of data. The success of a management group relies on how effectively they grow and increase their competition and profit. Here come the problems with SMEs as they have very minimal capital, smaller employee populations, and less productivity.

5. CONCLUSION AND RECOMMENDATIONS

Various studies have explored how automation has benefitted small and medium enterprises. This study however highlights how automation would actually lead to customer dissatisfaction if their demand requirements are not understood. Automation and use of chatbots may be beneficial for the organization but it is imperative to note in this regard that this may create dissatisfaction among the customers (Suhel *et al*., 2020). This is due to the fact that these chatbots may not be able to understand human queries and may not be able to appropriately respond to the same. The cost of this automation also varies making it difficult for SMEs to obtain and implement them. Although with the rise of demand in automation, the cost has reduced making it obtainable, the small-scale industries are still struggling to attain them. Also, whilst the industries that have yet not opted for IT automation, and continuing with human workforce, it can be observed that the number of errors in processing is higher than the ones who have implemented IT automation. Having said that, it is also possible that IT automation throws an error, and in such cases, it is way more complex to resolve and may end up costing more than the human workforce (Aalipour *et al*., 2018). Another very important aspect that comes with the application of automation in IT industries is the increase in unemployment of manual professionals who lose their job as collateral. With the increase in the number of SMEs all over the globe, it is considered to be a very important part of building the economy for a nation. Also, it is considered a primary source of employment generation. However, this also increases the competitiveness in the market, and often it is observed that the SMEs, especially the small enterprises struggle to keep up with this constant change and increasing competition in the market. Automation has a significant role to play in helping these enterprises to survive this market turmoil and retain their vision for the future. Automation in the IT industries enables them to have a stable manufacturing unit that mostly focuses on cost, adaptability, shorter lead-time, and improved performance (Di Gaetano & Diliberto, 2018).

The process of creating software to support systems that will eliminate the use of repetition in various processes and decrease manual intervention is what automation is all about. From the perspective of SMEs (Small and Medium Enterprises) in IT industries, this provides

acceleration in production and delivery in the minimal time which was not possible with manual human intervention. With the rise in virtual networks and cloud systems, IT automation is a strategy that helps SMEs deliver their services with a huge improvement in speed, accuracy, and consistency. This also frees up the IT sector professionals to focus more on strategizing, rather than being kept busy with the administrative work. Such powerful tools can be used by SMEs to keep a check on their finances to a great deal and deliver their services with the least number of errors. In recent times, we have also witnessed the rise of artificial intelligence which can help streamline the existing process and make it more reliable and efficient in dealing with unpredictable situations. It is specifically useful to replace processes that take more time with a process that can deal with increased complexity and provide a faster solution. Similar to the technology revolution, IT automation was embraced by the larger industries at first, but with the rise and increasing demands of automation in every industry, it is becoming more cost viable. This enables the SMEs with the opportunity to make full use of automation in their industries and help themselves grow at a much faster rate. Thus it is recommended that future research should assess the way automation and chatbots may help in improving customer service by catering to basic requests and demands even though they cannot possibly replace human beings who are directly involved in understanding the needs of the customers. Lastly, it is recommended that organizations should focus on specific models for automation with thorough analyses of the problems faced and particular technologies to bring the solutions.

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