Opportunities and Challenges for Implementing Automation among Selected SMEs of Food Manufacturing Industry

Albert Feisal Ismail, Soo-Fen Fam, Heri Yanto, Sri Utami, Suhartono

Abstract—The key objective of automation is to minimize human intervention in the workplace. Automation improve not only production productivity but also strengthen company competitiveness. This research presents an empirical study that uses qualitative research methods for investigating the automation level among the Small Medium Enterprises (SMEs) in the food manufacturing industry. This research investigates the opportunities of applying automation and identifying the challenges confronted the SMEs in realizing automation in the food manufacturing process. Semi-structured interviews were conducted to examine the level of opportunities and challenges of implementing automation among selected food manufacturing SMEs. The findings show that automation enhances productivity, improve product quality and increase manufacturing process efficiency. However, this research also reveals that costing, training and lack of flexibility were the impeding factors for the studied SMEs to implement a fully automated process in food production. Despite the constraints, the companies strive to automate parts of their food production processes by using second-hand automation machines instead of investing in brand new automation equipment, hiring expert technicians and implementing the lean principle. This research presents several innovative recommendations for food manufacturing SMEs to automate their production process in order to increase competitiveness in the industry.

Index Terms: Automation, challenges, opportunities, SMEs.

I. INTRODUCTION

In this rapidly changing environment, Industrial Automation was one of the biggest step changes in the manufacturing industry. According to [1], Industry 4.0 represents the recent trends of automation technologies in the manufacturing industry. In [2] defined that automation is substitutability of humans by machines. Automation always regarded as a competitive advantage to the company which has the potential to improve efficiency in the short period while lowering cost in the long-term goal. Following by the fourth industrial revolution conception, automation became a current trend in monitoring the production and delivery of products and services by reducing or without human intervention. In their case study [3] claim that when business owner or director initiates automation, they frequently with the objective of lowering production cost and the decision of implementing automation tends to be the only consideration.

SMEs act as an integral part of the economy in terms of manufacturing, job creation and generating equitable distribution of income. Under the Eleventh Malaysia Plan, Malaysia Government will continue to focus on the growth of SMEs with the aims of increasing Gross Domestic Product (GDP) contribution from 37.1% in 2017 to 41% in 2020. However, higher cost and economic downturn make it did not achieve the expected target market to remain slow this year. Therefore, a lot of initiatives that given by Malaysia government in order to help SMEs in increasing their productivity, empower human capital, increase the use of technology and innovation. One of the ways to help companies to adopt technology trends, increase productivity and empower human capital was by implementing automation in their business organization.

Presently, the influx of foreign worker was a national issue in Malaysia is having so many foreign workers because most of the company were reluctant to implement automation. Eleventh Malaysia Plan, Industries were largely dependent on semi-and low-skilled workers and foreign labour. Semi-and low-skilled workers made up 72.5% of total employment in 2017 whereas foreign workers made up 15.5%. The overdependence on low-skilled foreign labour, has perpetuated a labor-intensive economy and bring to increase labor cost due to labor shortage while higher demand in the market. According to [4], industrial automation is defined as the use of control systems, such as computers or robots, and information technologies for handling different processes and machinery in industry to replace human labor. Hence, the alternative way was to replace the worker with the automation system. In the Pillar IV in the Six Policy Pillars of Eleventh Malaysia Plan also mentioned that by promoting greater automation can reduce dependency on foreign workers.

The research objectives in the study were (i) to investigate the opportunities by implementing automation that benefits SMEs and (ii) to identify the challenges faced by SMEs to implement automation was the key in this study as well as (iii) to propose the innovative suggestions to conquer the challenges that faced by SMEs in the food manufacturing industry.

This study was to examine the opportunities and challenges by implementing automation towards SMEs in the food manufacturing industry and propose an innovative suggestion to conquer the challenges. The scope of this study was focused on opportunities and challenges by implementing automation towards SMEs in the food manufacturing industry and also the innovation suggestion

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Albert Feisal, Faculty of Technology Management and Technopreneurship, Universiti Teknikal Malaysia Melaka, Malaysia.

Soo-Fen Fam, Faculty of Technology Management and Technopreneurship, Universiti Teknikal Malaysia Melaka, Malaysia.

Heri Yanto, Fakultas Ekonomi, Universitas Negeri Semarang, Indonesia.

Sri Utami, Fakultas Ekonomi, Universitas Negeri Semarang, Indonesia.

Suhartono, Institut Teknologi Sepuluh Nopember, Surabaya, Indonesia.

to conquer the challenges that will be faced. The limitation of this study was the limited coverage of the state which only covered the SMEs in the food manufacturing industry at Negeri Sembilan and Melaka. Thus, the results of the study cannot be represented to every single state in Malaysia. The key assumption was the researcher assumed that the all the respondents were honest and have adequate knowledge on the research topic.

II. LITERATURE REVIEW

A. Definition of automation

According to [5], automation was interpreted as a machine agent carry out the activities with a computer function that was previously done by a human labor. In 2018, automation was defined as a process that operates automatically or without constant human intervention [6]. Even though the meaning of automation was transforming from a machine agent to workflow but the meaning of automation was almost the same even after 20 years.

The main objective of the use of automation was to minimize the human intervention or replace workforce as mentioned by [2], automation is the substitutability of humans by machines. Moreover, in [7] argued that implementing automation will decrease the operator's cognitive demand and maximize performance.

1. Lean automation

Lean philosophy was an important element in implementing automation which known as lean automation. In his introduction to lean principle, in [8] identified lean as creating more value for customers while minimize waste. The principle that always highlighted continuous improvement and minimize waste will bring the benefits such as high-quality production, minimize inventory levels and short customer response time [9].

In the case study of [10] stated that SMEs usually need support in Lean automation when talking about manufacturing. The majority of SMEs had heard of Lean principles, but when it came to implementing it was challenging for them. With Lean in mind, some can have avoided automating processes that never should have been created in the first place.

2. Level of automation

The reliability of automation level was important because there were below 70% was worse than no implementation automation [11]. Therefore, choosing the right level of automation in the right machine at the right process was very important to achieve success. In this model, there were five levels of automation that normally deal in manufacturing processes. Other than that, these manufacturing processes can be classified into four groups which were load machine, machine cycle, unload machine and transfer part (Fig. 1).

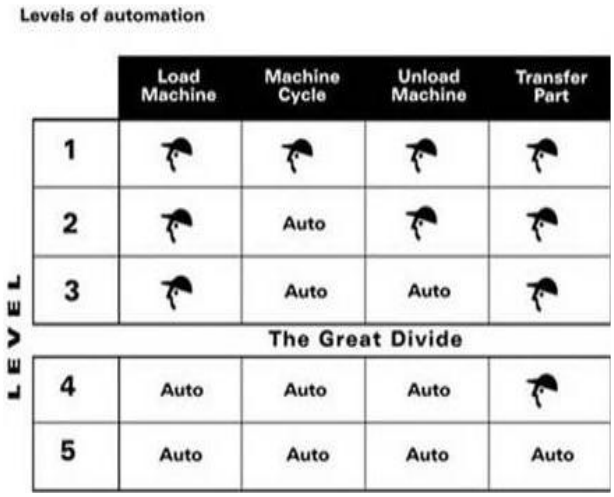

Fig. 1: Five levels of automation [12]

Level 1: All the job tasks are done manually by an operator. The operator fills the materials into machine and starts the work cycles follow by removes the finished part and manually transfers it to the next manufacturing step.

Level 2: The operator manually fills the materials to the machine, the machine will automatically undergo work cycles, and the operator manually removes the finished part and follow by takes it to the next manufacturing step.

Level 3: The operator manually fills the materials into the machine, the machine will work automatically cycles and automatically unloaded it from the machine and follow by operator transfer the part.

Level 4: Machine can automatically fill the materials, automatically cycled and automatically unloaded the finished part but end with manually transferred to the next manufacturing step.

Level 5: It is an entirely automatically level. The machine is run automatically with fills materials, cycled, and unloaded, and the part was transferred by conveyer belt.

3. Rightomation

Rightomation also was known as semi-automation in popular. The expected results on the manufacturing performance will only showed when an appropriate level of automation was applied. If the level of automation was inappropriate such as under automation or above automation, the capability of automation system will not fully bring out the manufacturing competitiveness. Hence, a rightomation which was an appropriate or right level of automation, will resulted positively in several respects, while the under automation and above automation will bring to negative results on its performance [13].

B. Opportunities of implementing automation

One approach to solve automation challenges in SMEs was a collaboration between the organizations, which helped SMEs to clarify their improvement opportunities clearly and benefit from the external capacity to increase their technical internal capabilities [10].

1. Productivity and quality of product

As an organization's market demands grow, solution of increase the productivity will become very important. In [14] claimed that the only possible way to improve product quality while increasing the production quantity and shorten the manufacturing time was to implement automation system. The reasons of implementing automation were to boost the productivity and product quality, eliminating of human error, minimize energy consumption, effective application for a complex task, increase speed, and reduce waste and so on.

In their case study, in [14] conclude their research analysis by there was increasing in productivity and improve products quality by the implementation of automation in manufacturing industry. In result, there was increasing production by avoiding manual delays, increasing productivity by achieving the optimum efficiency of the machine, improves the power saving possibilities and hence reducing the product cost and giving a usefulness data of the machines which increasing the possibility of analyzing the cause of low or poor productivity.

In the current market, successfulness of an organization was measured by how efficient the product can reach to the targeted market, meet customers' requirements in terms of quantity and quality. Thus, automation system has been namely by speed, accuracy, competitiveness and also increased financial incomes of the organization [15].

2. Grants from government

In [10] found that some SMEs are still being conservative mind about changes as they afraid of bringing something new to the company even there are available financing facilities for SMEs such as Soft Loan Scheme. Government agencies and trade associations have been actively urging SMEs to look into the use of automation in order to enhance efficiency, increase productivity and increase sales. However, most of them will only invest in new equipment as a replacement but not an expansion of capacity or new product line. Due to the limited capital flow, they tend to focus their attention on the survival of the company on daily basis.

National Budget 2018 underlined SMEs was targeted to achieve the 41% of GDP by 2020. In order to achieve this target, Malaysia Government has set aside the largest ever allocation of RM1 billion for SMEs in the budget 2018. The amount of RM1 billion was provided as loans to the companies that under SJPP with 70% guaranteed by the Malaysia Government. It aimed to help SMEs in automatingproduction process and reduced the use of foreign workers. In addition, SMEs will utilize the benefits provided under the National Budget 2018 so that they will not depend too much on manual labor especially foreign worker.

3. Reduce labor cost and labor problem

Most of the organization faced the same problem which were increase the profitability. In [16] believed that labor costs were expected as the major cost in the company balance sheet. Moreover, labor problem always was a major uncontrolled problem to the organization. For example were late to work, required lunch break and sickness leaves which mentioned by [15].

Other than that, Malaysia was facing big issues that lack of foreign worker and rising cost of hiring local labor. One of the way to reduce the dependence on foreign workers and local worker, especially for low skilled workers was by using modern technology which was automation. It was essential for those industries which were labors intensive replace workers with semi-automation or automation machinery. In the future, the manufacturing industry cannot rely only on the labors of low cost, but to utilize technology and be of capital intensive [17].

C. Challenges of implementing automation

From the turn of the century to today, automation had been considering as improving the competitive status of the manufacturing industry. In [15] concluded that the automation could resulted in both positive and negative effects within its development. For the negative side, automation not only had disadvantages but it was also challenging in implementing it into production. The researcher strongly believed that a clear view of the challenges of implementation automation before implementing it could help them to overcome their problems.

1. Cost

The most challenging part in implementing automation was large investment cost. According to [18], the automation system was the major operating cost for a company. In [18] also mentioned that, an automation system can be up to millions of dollars depending on the type and degree of automation. Besides that, it also had the unexpected costs which may more than the actual cost saved by the automation itself. For instance, Costs on research and development, yearly maintenance costs, and also the training cost for employees on handling the automation system and equipment.

Maintenance cost also always as one of the important consideration. According to [19], maintenance was crucial in order to keep the automation system operating well, as well as maintaining the efficiency it was put there to provide in the first place. In contrary, the automation system will not run smoothly even system down will occur if not establishing a regularly scheduled maintenance.

A recent study by [20], there was another challenges with the release or launch a new product onto the presently manufacturing line especially the customized product that needed to substantially redesigned or totally replaced the current automated manufacturing equipment. Therefore, customized automation system for mass production in the manufacturing industry tended to have high "write-off" costs.

2. Training

A specialized skills and knowledge were needed to design, handle, deployment and control of automation system and equipment. In [21] pointed out that before implementing automation, a continuous way of training operator with the right skills and career opportunities need

to be carry out. The lack of skilled labor to operate and manipulate the automation process correctly can be much more difficult and it was a bigger challenge when implementing automation into a company. In fact,the training given by organization was often not enough to develop skills or to build the workers' confidence in their ability to perform the task adequately [22].

According to the case study of [22], training needed to be carried out depending on skill twist or de-skilling. Skill twist was defined as the old skills were replaced by new skills, and the operators had to learn completely new skills while de-skilling was known as the new technology reduced the level of skills required to do a job. Other than that, retraining process also need to be carry out every few years due to current technologies tend to have short life cycles. Retraining process can help worker adapt to the technological changes and adjust themselves in the latest technological environment.

3. Choosing the right automation technology and process

The right automation technology was important because there were below 70% was worse than no implementation automation [11]. Therefore, the company must devote a lot of time and resources in choosing automation technology and process in order to employ the right automation technology and process in the company. According to [19], there had common issues that people realized that employ a wrong technology and process after the implementation phase has done.

A full automation system must have an interconnected system that make sure all the automation system updated in real time. It was crucial to all the labor to have a centralized the information that was helping to expedite the process. Typically, not all the companies were suitable for implementing fully automation. This was because of low product demand, short product lifecycle, and low capital. A general solution was to combine the manual and automated process into semi automation manufacturing systems were suggested by [3].

4. Physical and psychological stress

Safe Work Australia published a yearly report regarding the injuries and workers' compensation claims in Australia and the supporting statistic was provided. According to the report, most of injuries and workers' compensation cases for serious claims in Australia were due to physical injury and musculoskeletal disorders which contained 91%, while the remaining claims were made up by other diseases like mental illness [23].

According to [22], increasing the use of the automation in workplace had increase to produce these disorders. New technologies and new workplace might bring advantages to the efficiency but also increased the urgency, uncertainty and complexity of decisions at the same time. Hence, changing of technology environment, work organization, and job tasks were possible to contribute to the problems rising such as cumulative trauma disorders and psychological stress.

5. Flexibility

The flexibility of a manufacturing system can be defined and determined by its sensitivity to change and can also be described as a capacity of an automation system that able to handle on how many different product variants. A flexible automation system was a system that had been planned and designed to have the capability to deal or adapt with changes effectively. Besides, flexible automation system able to response changes in a short period and at a low cost within an existing manufacturing system. Lack of re-configurability could be another challenge to the automation which defined as a system's unable to response quickly in changing needs and opportunities of the environment [20].

Not every automation effort will yield positive results. In order to evaluate the return on investment, a flexibility automation manufacturing system was very important. The researcher believed that if a manufacturing system was non-flexible, it will become a big challenge of the company future. This was because in the trend of technology, product lifecycle will become shorter and new product always emerges.

D. Conceptual approaches

This research was focused on the opportunities and challenges of implementing automation towards SMEs in the food manufacturing industry. Through this implementation of automation, it was expected to generate or impact on the systemic changes in the work organization and job design [22]. Thus, a balance work system model (Fig. 2) designed by [22], [24] was crucial to examine the changes within the situation and environment of automation implementation.

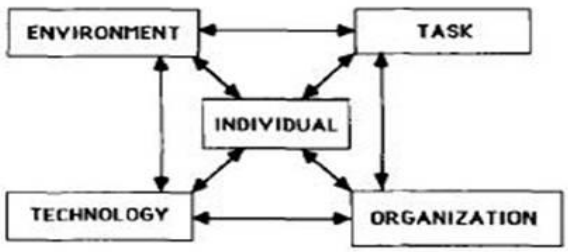

Fig. 2: Model of the balance work system [24]

In [22] believed that there are no perfect jobs and workplaces which provide no dangerous and well psychological satisfaction for all staffs and workers. It was an unachievable model to believe that a perfect workplace can be reached by using an under-estimated financial condition, and even no financial constraints were effect in perfection was not necessarily possible. Therefore, the only things that people can do was improvements at the workplace such as redesign and plan for prioritizing needs.

An approach was proposed by [24] was a balance theory of job design which discussed a balance between human labors with the technology. This approach can be undergoes effective in generalizing the effects of technological change on work organization environment and stress. As stated in the system's model, a technological change such as implementing automation will directly results in the whole

work system, such as the tasks, organizational structure, the environment, and the individual as shown in the Fig. 2.

The technological change environment created a disorder in the work system that results in both positive and negative sides. For instance, in the research carried out by [22], the first section described some of the negative sides of implementing automation and follow by the next section with automation results on positive side like increased task variety and qualifications.

E. Conceptual framework

In this research, the conceptual framework was focused on opportunities and challenges of implementing automation. The aims of this conceptual framework was to study how a SMEs in the manufacturing industry can achieve sustainability in managing the manufacturing process by capturing the possible opportunities and challenges that will occur when going through by implementing automation.

In this sub-section, two part of the research outcome of the theory of automation had been outlined (Fig. 3). First, the researcher studied the theory on the opportunities of automation to understand the value of the changes in automation in the current era of globalization. The researcher listed up three opportunities with the trend and development related to automation in sustainable manufacturing which consisted of increasing productivity and quality of the product, grants from government and reduce labor cost and labor problem.

Second, the researcher studied on the challenges of automation to understand the importance of automation. The researcher pointed out five challenges that will face by SMEs in implementing automation which consisted of cost, training, choosing the right automation technology, physical and psychological stress, and flexibility.

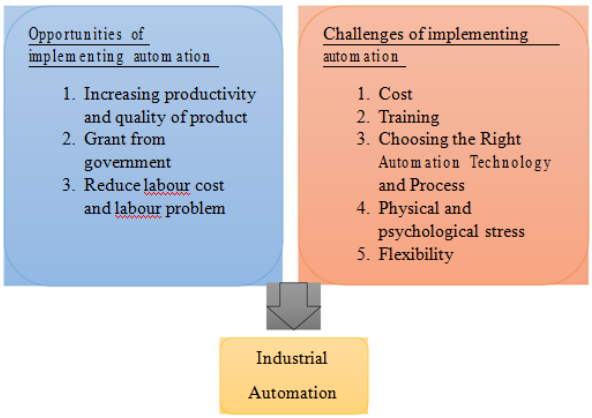

Fig. 3: Conceptual framework

III. METHODOLOGY

The researcher used exploratory research to investigate the opportunities and challenges of implementing automation. In [25] pointed out that exploratory research was to ask open-ended questions to determine what was happening and gain insights about the research topic. The researcher will conduct an interviewing 'expert' in the subject in order to get the information or results.

The researcher believed that qualitative research method was the most suitable strategies to use for this research. This was because interviewing experts need to be carried out and observation on data collection also can be done through this qualitative research method. Since automation were already implementing in a large company but not yet popular in SMEs due to some challenges on it.

In this research, the researcher conducted a semi-structured interview with respondents or interviewee for collecting data purpose. In the semi-structural interview, the researcher has to list down and cover all the possible question because it may be different depending on the situation. In addition, the sequence of the question may also be different depending on the conversation flow. Usually, in a semi-structured interview, a question need to follow by another additional question for exploring more detail.

IV. DATA ANALYSIS& RESULTS

A. Respondent background

1. Respondent A

The first respondent that the researcher had interviewed is Respondent A. Respondent A has been working as director at Chop Lucky Bakery for more than ten years. Chop Lucky Bakery is a food manufacturing company located at Negeri Sembilan that manufacture margarine filling bread more than 50 years. She is the daughter of the business owner and has the power to make decision. Currently, Chop Lucky Bakery has been implementing semi-automation system in the manufacturing process around six years.

2. Respondent B

Second respondent that the researcher had interview is Respondent B. Respondent B is working as director at Y&L Trading, Negeri Sembilan. He is a fresh graduated from Degree of Accounting. He started his business two years ago during study. Y&L Trading is a food manufacturing company that processing and packaging Tongkat Ali. Currently, Y&L Trading has four machines in helping the processing and packaging operation and plan to implement automation system in the future.

3. Respondent C

Third respondent that the researcher had interview is Respondent C. Respondent C is the business owner of KW Food Enterprise located at Negeri Sembilan. KW Food Enterprise manufactures the traditional Chinese food and pastry for more than 34 years. Until today, KW Food Enterprise is still using only three machines and more rely on labor in manufacturing the traditional Chinese food instead of using automation system.

4. Respondent D

The forth respondent that the researcher had interview is Respondent D. Respondent D is the son of the business owner of Bak Lai Fish Ball Food Industries Sdn Bhd, Melaka. He had more than seven years working experience in this company.

Bak Lai Fish Ball Food Industries Sdn Bhd has been operating more than 40 years and implement semi automation around 20 years. It is a company that manufacture the fish ball by using semi-automation.

5. Respondent E

The fifth respondent that the researcher had interview is Respondent E. Respondent E is the director of Apple Bakery. Apple Bakery is located at Melaka and has been operating more than five years by using semi-automation and plan to implement fully automation system in the next few years. Respondent E is graduated from Bachelor in Electrical Engineering. Therefore, he has a lot of expert opinion in manufacturing process and the benefits of using automation in the manufacturing process.

B. Opportunities for implementing automation

The researcher had conducted few interview sessions with the experienced respondents to identify the opportunities that really benefits to the selected respondents. There are a lot of opportunities given by implementing automation that benefits to SMEs companies in food manufacturing industry. The researcher found that there are three major opportunities of implementing automation that benefits to the selected respondents which are to increase the productivity, to improve the product quality and to increase the manufacturing process efficiency.

As mentioned in the Table 1, the major opportunities given by implementing automation that benefits to the Respondent A, Respondent B, Respondent D and Respondent E are to increase the productivity, to improve the product quality and to increase the manufacturing process efficiency. On the other hand, as mentioned in the Chapter four, Respondent C do not implement automation in the production process, so he have no comment about the opportunities given by implementing automation and will give his opinion in the challenges part.

Moreover, the selected respondent said that, all the investment capital are loan from bank but not apply grant from government. Besides, the reduce labor cost and labor problem also do not happened in their organization because the intention of implementing automation is to expand their business but not replace the human labor. Therefore, the human labor are remain unchanged and only the job task of the labor are different than before in their production line.

Table 1: Opportunities given by implementing automation that benefits to the selected respondents

Opportunities / Respondents	A	B	C*	D	E
To increase the productivity	/			/	/
To improve the product quality	/	/			/
Grant from government					
To reduce labour cost and labour problem					
To increase the manufacturing process efficiency	/	/		/	/

*Respondent C do not implement automation in the production process

1. To Increase the productivity

The philosophy that implementing automation in the manufacturing system which benefit to the company is now being popular in the literature. Organization can gain and achieved competitiveness by maximized the automation process. This is because, automation was implementing in order to reach a high production throughput and high levels of productivity with greater levels of value added. The researcher analyzed the result from the respondent and the secondary data as an evidence to prove that implementing automation will increasing the productivity is true.

According to the Respondent A, the main objective of implementing automation in their company is to expand their business. This is due to the high demand in the market, they need to increase the productivity to fulfil the market demand. Chop Lucky bakery had implemented automation for more than six years. Even though they implemented semi-automation instead of fully automation, the volume of the productivity now is more than before. In the case study of Orr, stated that, the use of automation was to reduce the time taken for product conception and design as well as introducing new products at full-scale production volumes as quickly as possible in order to produce larger volumes.

Respondent A also mentioned that, their bakery implementing automation with mass production environment in their manufacturing system as they only have one type of product which is margarine filling bread. Lotte Confectionery is a good example of effectively combining automation together with mass production environment and consequently avoiding the precede problems [38].

According to Respondent D, Bak Lai Fish Ball Food Industries Sdn Bhd had implementing semi-automation in their manufacturing process for more than 20 years. The reason that they decided to grab the opportunity to implement automation is due to the high market demand. He believed that there are only two option that can increase their productivity to respond the high demand in the market which are increase the quantity of labor or implementing automation in the production line. Bak Lai Fish Ball Food Industries Sdn Bhd decided to implement semi-automation to increase their productivity instead of using labor because semi-automation system can increase labor productivity and the total rate of production. This is true because automation able to cover up more than 45 percent of repetitive work, it gives workers time for more higher-value tasks such as problem-solving, finding solutions and developing new ideas. Therefore, productivity will increase with automation which empower the employees, and generate a more engaging and challenging work experience for employees.

Respondent E also agree with implementing automation can increase the productivity. He said that, his company's intention is to enter the bigger market which is hypermarket. He found that the bread in the bakery such as chili sauce sausage bun, mayonnaise sausage bun, and chicken floss bun has a good potential in the hypermarket. However, there are too much variety and high volume of bread have to produce every day which will burden to him and his workers. Therefore, automation manufacturing system did help him to solve his precede problem because automationsystem can fasten the production process such as fermentation, packaging and labeling. For example,

automated packaging machinery will package the bread much faster than the packaged by human labor and follow by increasing the productivity, saving time and providing a faster production line. Machines are taking over the workforce, it is more about an increase in productivity, a change in our relationship with careers and a shift to 'smart' jobs.

The researcher agreed that the implementation of automation in food manufacturing industry can increase the productivity. This have been explained by Respondent A, Respondent D and Respondent E, the main objective for them to implement automation in their production process is to increase their product volume and productivity. In result, automation did help them to push up their product volume and productivity to meet the market demand and achieved their goals.

2. To Improve the product quality

For the second major opportunities of implementing automation that benefits to the selected respondents is improving the product quality. In the case study of Orr mentioned that quality control was more easily achieved with automated manufacturing than with human based quality control processes. Hence, the high level of quality control was a crucial factor in a lean manufacturing production environment. In this research, the researcher focused to investigate how automation system attributed to improve the quality of product for the selected respondents.

According to Respondent A, she found that the automation system do contribute to improve quality of their product. Respondent A points out that, with automated packaging machine, it can be sure that every margarine filling bread are well-protected through a standardized packing process which is pillow type packaging as shown in Fig. 4. Besides that, it can also provide an automated solution like sterilized to ensure the hygiene. Koeris claimed that an automated system can provide food quality and safety management solution by optimizing the effort through automated system which can make operations easier, quicker and more accurate. Respondent A also mentioned that, a good looking and quality packaging will more attractive customer compare to the lousy packaging. Besides that, it can also give customer the first impression and differentiates own brand from others. In [42] also agreed with quality packaging is important in order to stand out and look different from their competitor.

Fig. 4: Pillow type packaging of Chop Lucky Bakery product

According to the Respondent B and Respondent E, they believed that the automation system can help to improve the quality product. Currently, Respondent B having only has four machines which are two slicing machine, one vacuum packaging machine and one oven machine. This machines did help a lot in the processing and packaging process. For example, slicing machine can make sure the thickness of every slice of Tongkat Ali are standardize. Besides that, vacuum packaging machine can ensure that the Tongkat Ali can keep longer in a vacuum state and avoid from humidity.

Last but not least, oven machine did help Respondent B to dry the Tongkat Ali slice especially in a poor weather like raining. This is due to Tongkat Ali is very sensitive to humidity. Previously, the drying process of Tongkat Ali is to dry under the sun but now is put in the oven machine.

The process of Tongkat Ali from slicing to drying and follow by packaging need as soon as possible to make sure a good product quality and avoid from humidity. Therefore, Respondent B strongly believed that automation system can help in improving and maintaining the product quality. Therefore, Respondent B planned to implement automation system in the future. This is true because in [13] also stated that the decision regarding with the automation was a consequence of the manufacturing abilities such as quality that the company wants to reach.

Respondent E also agreed with the automation can help to improve the quality product especially in the packaging process. Therefore, he brought a fully automation packaging machine which will arrive in the near future and then put it into use as soon as possible. He believed that this fully automation packaging machine can help him a lot in improving the packaging quality. It will not only well-protected through a standardized packing process which is pillow type packaging but also provide an automated solution like sterilized to ensure the hygiene like what Chop Lucky Bakery doing just now. The decision of Respondent E is correct because in the case study of [13] also claimed that, improvement and refinement of the automation decision on a strategic level is required in order to fully utilize the manufacturing potentials provided by automation system,

The researcher agreed with that implementing automation really can help to improve the quality of product especially in the packaging process. This have been mentioned by Respondent A, Respondent B and Respondent E, the automated packaging system did help them to improve their product quality. However, the researcher also believed that other than packaging process, the other automated production process like slicing operation, drying process, fermentation process can also help improving the product quality.

3. To Increase the manufacturing process efficiency

Last but not least, the third major opportunities of implementing automation that benefits to the selected respondents is to increase the manufacturing process efficiency. Generally, the benefits of using automation

outweigh the challenges, especially when it can increase efficiency and production [27]. According to [28], efficient was also known as performing or functioning in the best possible manner with the minimum waste of time and effort. A recent study by [3], automated manufacturing systems are often consider as highly efficient, potentially improving the competitiveness of manufacturing companies. Hence, the researcher analyzed that whether automation is able to increase the manufacturing process efficiency.

According to the Respondent A, she agreed that the automation system did increase the efficiency of their production system. Respondent A pointed out that after implementing automation in their factory, there is a significant reduce the human error. This is true because workflow automation uses software to manage which gaining efficiency by reducing repetitive tasks, eliminating human errors and minimize costs [14].

Besides that, Respondent A also said that, there are not only increasing the productivity but also shorten the worker working hour. For instance, after implementing automation, worker in the Chop Lucky Bakery not only can produce a large volume of product to meet market demand but also can end their work earlier every day. This also has been mentioned in the case study of [14], many tools and techniques of automation can be used to various other industries and educational institutions to improve efficiency and productivity.

Respondent B and Respondent D also agreed with the automation can help to increase the manufacturing process efficiency. Respondent B stated that, automation do contribute the efficiency by shorten the manufacturing cycle time. Meanwhile, Respondent D also said that automation also help them to get their job done in a shorten time, faster and efficiency. He pointed out that the process of making fish ball is not complexity but time consuming if by bare hand. Manufacturing cycle time refers to the time spent or required to transform raw materials into finished products.

Respondent B mentioned that the manufacturing cycle time of Y&L Trading is the process from slicing to drying and follow by packaging. It can be faster and shorten with the aid of slicing machine, oven machine and vacuum packaging machine. The opinion of the Respondent B and Respondent D are true because in [44] also claimed that it is realistic to see up to a 30 percent increase in production by using automation in the manufacturing process.

Furthermore, Respondent E strongly believed that automation can bring to the manufacturing process efficiency especially lean automation. Apple Bakery is an organization that implement lean automation. According to [29], a lean organizations claimed that they are more efficient because they only spent resources in activities that add value. Respondent E brought a fully automation packaging machine which will arrive in the near future and then put it into use as mentioned in the 4.3.2. He believed that this fully automation packaging machine can help him a lot in allocation his resources more efficient. This is because the fully automation packaging machine can cover the role that repetitive, non-value added and burden to the worker such as put the bread into the plastic one by one, sealing and labeling. Respondent E claimed that a fully automation packaging machine can covering these repetitive task. Therefore, his workers can more focus on the other task that value added like marketing. This is proven by [30], a lean manufacturing principles by matching with the automated production equipment can produce quality products in the most efficient way possible.

The researcher also agreed with that implementing automation really can bring to manufacturing process efficiency. This have been point out by Respondent A, Respondent B, Respondent D and Respondent E, implementing automation in the manufacturing system can help to minimize the human error, shorten the manufacturing cycle time and replace the human labor in the non-value added process. In result, automation manufacturing process did help in increasing the manufacturing process efficiency.

C. Challenges of implementing automation

The researcher had conducted few interview sessions with the experienced respondents to identify the challenges that faced by the selected respondents in food manufacturing industry to implement automation. There are a lot of challenges given by implementing automation towards SMEs companies in food manufacturing industry. After interviewed with the selected respondents, the researcher found that there are three major challenges of implementing automation faced by SMEs in food manufacturing industry which are costly, lack of flexibility and training. Table 2 shown that the challenges of implementing automation faced by SMEs in food manufacturing industry.

Table 2: challenges of implementing automation faced by SMEs in food manufacturing industry

Challenges / Respondents	A	B	C	D	E
Cost	/	/	/		/
Training	/				/
Choosing the right automation technology					
Physical and psychological stress					
Lack of flexibility			/		/

Respondent D said that, there are no challenges for Bak Lai Fish Ball Food Industries Sdn Bhd while implementing automation. For the challenges of choosing the right automation technology was not agree by all the respondents because they will have a plan before implementing automation. Besides, automation is not going to increase the physical and psychological stress but reduce the physical and psychological stress because automation system can help workers to cover the repetitive task and burden task.

1. Cost

The main challenge often associated with automation is the initial investment cost. The initial investment cost of automation system is expensive and can be considered as the business greater financial budget. According to [31], many automated machines use the latest hardware, software and technology which are very expensive and they require a lot of money and high investment. The researcher analyzed the result from the

selected respondents and the secondary data
as an evidence to show that automation system is a costly investment.

According to the Respondent A, the main challenges of implementing automation in SMEs is initial investment cost. She said that, the most challenge when implementing automation system in Chop Lucky Bakery was huge investment cost. Although it was settled, but it is the most challenge for them when their decided to implementing automation in their factory. This is true because in the case study of [32], they realized with some of the major barriers for SMEs in investment of industrial robotics are costs and the need for expertise and experience. Respondent A also argued that, a brand new automation equipment is costly and need a huge capital investment. Therefore, Chop Lucky Bakery decided to buy second hand automation equipment.

Respondent B also agreed with the main challenge in implementing automation system is initial capital cost. Currently, Y&L Trading is considered as level 2 in level of automation as mentioned in the 2.1.2. In the level 2 of the level of automation, the worker needs to manually put the Tongkat Ali to the slicing machine, the slicing machine will automatically cut and slice the Tongkat Ali into pieces, and the worker removes the Tongkat Ali pieces and follow by taking it to the drying machine. Respondent B stated that, Y&L Trading is unable to buy a brand new automation equipment in this moment as it is a new start-up company and only two years in the industry. Therefore, the machine that using just now is rent now and buy later concept. The automation of a new product or the construction of a new plant requires a large initial investment compared to the unit cost of the product.

Respondent C consent to the most challenges in implementing automation system is initial investment capital. Currently, KW Food Enterprise is considered as level 1 in the level of automation. In the level 1 of the level of automation, all the job tasks are done manually by human labor and it is also known as manually. Currently, there are only three machines are using in the KW Food Enterprise as shown in the Fig. 5. Respondent C said that, he believed that the automation system can really help in his business but it need to take a long time to get the return on investment. Besides that, a huge initial investment cost is burden to him as will affect the company cash flow. He think that, before implementing automation system have to make sure that the company cash flow is good enough in order to overcome the uncertainly. This is true because automation can minimize the variable costs over time, the initial development costs can be prohibitive. It is difficult to correctly estimate the research and development costs on designing the machinery or equipment into automation system. Even though, the business was invest in a predesigned automation system or machines, the initial purchase costs was unable tally with the financial sense at low levels of production. If a company does not have enough and good cash flow and reserves, the automation option may be off the table. In contrast, labor costs are usually predictable and were not front loaded [33].

Fig. 5: Turnip blender

Respondent E also agreed with implementing automation in the manufacturing system is costly. He mentioned that the cost is not just only initial investment cost but also unpredictable costs like maintaining cost, research and development costs, training costs and utility cost. However, Respondent E believed that it can bring to a positive return on investment in a long term goal as the cost per item is reduce. Respondent E opinions is true because the automation require a huge investment capital cost but it can result in a highly effective and bring a positive return on investment in the future.

The researcher agreed that the main challenge in implementing automation towards SMEs in food manufacturing industry is costly. This have been explained by Respondent A, Respondent B, Respondent C and Respondent E, the high initial investment cost is most challenge when they decide to implementing automation in their company. In result, company should have a good cash flow and a good financial plan before implementing automation to overcome the uncertainly.

2. Lack of flexibility

For the second challenge faced by selected respondent in the food manufacturing industry to implement automation is automation system lack of flexibility. Flexible capability of an automation manufacturing systems were considered to be of main strategic importance [20]. However, the flexibility of an automation system is limited than a worker could do. In this research, the researcher focused to investigate the flexibility of the automation system in the selected respondent company.

According to Respondent C, he strongly agreed with the flexibility of the automation system is much more important in his business. One of the consideration in implementing automation system in his business is most of the automation system is more to mass production and only do only few types of repetitive job task every day. However, KW Food Enterprise manufactures the traditional Chinese food and pastry are more than 20 variety every day.

Respondent C pointed out that the materials and making process of each of the pastry is totally different. Therefore, it may require more than ten equipment or machine in order to implementing automation system in his manufacturing

system. This will directly bring to a huge initial investment capital to him. In his opinion, the flexibility of his worker is much more than using automation system. This is true because in [32] also believed that lack of flexibility could be considered as a challenge to automation. They argued that the flexibility of a manufacturing system can be defined and determined by its sensitivity to change and can also be seen as a capacity of a certain manufacturing system can handle with how many different product variants in once time.

Respondent E also pointed out that the flexibility of the automation is very important in the business. It can become a challenge to the company if there are lack of flexibility. He mentioned that the brand new fully automation packaging machine that will arrive in near future is provide only pillow type packaging. Although his business only using pillow type packaging in this moment, but not sure in the future. It might be another cost needed such as software update cost, spare part change cost and so on to change to the other type packaging. As mentioned by [33], automation may not be a good idea for product creation that requires flexibility and dexterity. Hence, he said he will only innovate and launce new product by use the limited resources that he had to avoid increase the cost.

The researcher had the same opinion with the Respondent C and Respondent E, the automation system that lack with the flexibility will become a challenge for the company. However, company Respondent A and Respondent B did not face this problem as they are mass production in their manufacturing process. In result, the researcher believed that the flexibility of the automation system is not affect to the mass production company but bring a bigger challenge to the more variety product and customized product.

3. Training

Furthermore, the third challenge that faced by selected respondent in food manufacturing industry to implement automation is training. Training is important as employees will require training for programming and interacting with the new automation equipment. A recent study by [22], new technologies tend to have short life cycles. The retraining process then need to be carry out frequently such as every few year. The workers have to adapt and adjust themselves with the current technological. Therefore, the researcher analyzed the important of the training on the automation towards the selected respondent in the food manufacturing industry.

According to the Respondent A, she agreed that a training should be carry out for employees to more understanding the automation system. This is because, skill and basic knowledge about the automation system is important to avoid any accident like cut by blade. Although it is simple to control the automation machine, just like to push the on-off button. However, it will become a major accident if there are any uncertainly incident. Therefore, enough knowledge about the process of automation system is important in order to stop the machine immediately when something happen. It can be seen how important training in the case study of [3], the training was carried out for the operators to control and handle new machines, even for the operators sometimes were quite old and had a rather short time to retirement.

Respondent E also said that training regarding the use of the automation system and equipment for the employee is much more important in order to run the machine more efficient and maximize the productivity. He said that he will giving the training for the new worker or employee on how to handle all the automation machine in the factory. Other than that, it will having a Standard Operating Procedure (SOP) attached at the machine in order to remind the worker about the right procedure. Apple Bakery also implemented 5S which are sort, set in order, shine, standardize and sustain in the factory. Respondent E believed that quality training for worker can assures a good functionality for the machine. This is true because machines workers are required to go through intense training and should learn how to properly use the machine for high quality results [31].

The researcher also agreed with training is a challenge for company to implement automation. It is very important as mentioned by Respondent A by providing an enough knowledge on handle automation system can avoid from major accident. On the other hand, Respondent E also points out that a training on how to use the machine wisely can maximizing the productivity and functionality of the machine.

D. Innovative suggestion

This part is to explain some suggestion to SMEs in food manufacturing industry that intent to implement automation system in their organization to conquer the challenges that will be faced.

According to the Respondent A, most SMEs are being afraid of invest a larger capital investment in the brand new automation system in the organization due to the limited cash flow. They tend to focus their attention on the survival of the company on daily routine. Therefore, buying a second hand automation machine is the best option which can using the minimum capital to get the largest return in near future. She pointed out that Chop Lucky Bakery brought the second hand machine and sent it to modification and customize which according to their need. A set of brand new automation equipment might cost them more than 10 million but the second hand machine together with the maintenance fee only cost them around 400 thousand. Even though it is a second hand machine, but the productivity also met their expected and the market demand.

Respondent B claimed that demanding for the expert technician is important things when throughout the implementing automation system. He stated that employee with the experienced technical skill are a major contributor to handle and control the automation system equipment. It can maximize the machine efficiency, productivity and the life of the machine use. For example, Y&L Trading needs an expert technician who experience with using the slicing machine. It can make sure the thicknesses of each pieces of Tongkat Ali are the same and quality. It is true because SMEs if their finances allow, hire external parties which help them in optimization of their manufacturing facilities [10].

As mentioned by Respondent E, Lean principles is a good framework for people to discover inefficiencies in their organization and encourage creating better flow in work processes. He said that it is an important framework that should be apply in SMEs like Apple Bakery because SMEs have to maximize utilize their limited resources. Other than that, Respondent E also stated that it is how important to get an expert guidance to avoid from mistake. This is because, expert will always have many experiences that can sharing with us can give us precious opinions. So that, we can avoid from the mistake and head to successful in the shortest period.

In conclusion, the researcher agreed with the opinion of Respondent A that using a second hand automation equipment can solve the larger initial investment challenge faced by most SMEs while implementing automation. Moreover, the researcher also agreed with the Respondent B and Respondent E that hired an expert technician who had an experience can maximize the profitability. Last but not least, the researcher also agreed with the Respondent E that applying Lean principle in the organization can achieving zero waste and maximizing the use of limited resources.

V. CONCLUSION AND RECOMMENDATIONS

A. Opportunities in implementing automation that benefit to SMEs in the food manufacturing industry

In [7], the implementation of automation relies on the assumption that automation will reduce the operator's cognitive demand and improve performance. As been highlighted in Chapter one, SMEs act as an integral part of the economy in terms of production, employment generation and facilitating equitable distribution of income. However, the researcher only focused on the implementing automation that benefit to SMEs in the food manufacturing industry due to time constrains. From the result analyzed in Chapter four, the researcher found that the three major opportunities given by implementing automation that benefits to SMEs in food manufacturing industry are to increase the productivity, to improve the product quality and to increase the manufacturing process efficiency.

1. To Increase the productivity

As an organization's market demand grow, productivity becomes a bigger concern of the organization in order to fulfill the market demand for the consumers. The researcher believed that implementing automation can help SMEs in food manufacturing industry to increase their productivity and increase the sales volume in their company. The researcher also believed that increasing the productivity to fulfill the market demand always is the main objective for organization to implement automation in their manufacturing process. Automation able to cover up 45 percent of repetitive work, it gives workers time for higher value tasks such as problem-solving, finding solutions and developing new ideas. Therefore, automation system is a good option for the company which want to expand their business and to increase their productivity.

2. To Improve the product quality

According to [34], company can build up a good quality reputation by gaining accreditation with a recognized quality standard. It also mentioned that quality products can help to improve customer satisfaction and loyalty. The researcher agreed with the implementing automation can help organization to improve the product quality especially in the food packaging process. This is because the automated packaging machine not only can shorten the packaging time but also provide the hygiene situation by sterilized function. Besides, automated vacuum packaging machine can improve the product quality by keeping the product in the vacuum state and prevent from humidity. As a consumer perspective, the researcher also consented with the product quality can enhance the buying behaviour and loyalty to the product. Therefore, automation can help SMEs in food manufacturing industry to improve the product quality follow by increasing the reputation and market value of the company. On top of that, to maintain the automotive and machineries performance, SMEs should look into lean manufacturing, overall equipment efficiency and total productive maintenance practice as discussed in [35], [36].

3. To Increase the manufacturing process efficiency

As mentioned by [37], manufacturing more efficiently can help to cut costs, improve throughput and reduce environmental impact. Therefore, it is how important of an efficiency of the manufacturing process. From the data analysis in chapter four, the researcher found that implementing automation in the organization can increase the manufacturing process efficiency. This is because automation system can cover the repetitive daily task and non-value added task in the manufacturing process. After that, human labor can put more effort on the value added task such as problem solving and marketing area. In a long term goal of the organization, implementing automation is the best strategy instead of hiring more human labor to do the repetitive task and non-value added task. As a SMEs company, they should always use their limited resources wisely in order to maximize the profitability.

In conclusion, the researcher affirmed that implementing automation in the manufacturing process do contribute benefits to SMEs in the food manufacturing industry. Besides, the researcher believed that the main opportunities given by implementing automation that benefits to SMEs in food manufacturing industry is to increase the productivity. This is because an automation system is costly and need a long period to get back the return on investment. Therefore, a larger productivity can reduce the price per item and enhance a good cash flow of the organization.

B. Challenges faced by SMEs in the food manufacturing industry to implement automation

As mentioned in the section 2.3, the researcher had been identifying the challenges of implementing automation are cost, training, choosing the right automation technology and process, physical and psychological stress and flexibility. However, the researcher found that there are only three critical challenges faced by the most of the selected respondents that the researcher had interviewed. The three critical challenges are cost, flexibility and training.

1. Cost

According to [18], the automation system can be one of the most costly operating costs for a company. This is because a brand new automation system can be up to millions of dollars depends on the type and degree of the automation. Therefore, the researcher believed that the most critical challenges that faced by the SMEs to implement automation is larger investment cost. Besides, it still does not include with the maintenance fees, utility fees, hire an expert or technician on controlling the automation system and so on. Thus, an organization intent to implement automation should has a good planning on the financial budget and make sure a good cash flow in the upcoming years. This is because, automation system and automated equipment need to take a long period to get back the return on investment.

2. Lack of flexibility

The flexibility of a manufacturing system can be defined and determined by its sensitivity to change and can also be seen as a measurement for how many different product variants a certain manufacturing system can handle. Therefore, flexibility is an important factor that need take into consideration when implementing automation in the manufacturing process especially in the SMEs. This is because lack of the flexibility can be one of the challenges for SMEs to implement automation. Most of the SMEs products tend to have a short life cycle because they need make many adjustments to fulfill the market requirement. Other than that, some of the SMEs Company tend to provide customization product for their customer but not the product that can be in mass production. Therefore, an automation system or automated equipment that lack of flexibility cannot handle with the different product variant. Thus, the researcher agreed with an automation system that lack of flexibility will bring challenges in to the organization.

3. Training

An automation system or equipment should be operated and manipulated by a skilled labor in order to maximize the utilization of the automation system or equipment and to avoid from the accident. Therefore, a training for the worker or labor is necessary to ensure the operator can using the automation system or equipment correctly. The researcher believed that training is also a critical challenge that faced by SMEs in food manufacturing company. From the data analysis in the chapter four shown that an enough knowledge about the process of automation system is important in order to stop the machine immediately when something happen. Furthermore, a Standard Operating Procedure (SOP) attached at the machine in order to remind the worker about the right procedure also been mentioned in the chapter four to reinforce the operator to follow the step of using the automation system or equipment. The researcher believed that, training is important and essential for the SMEs that implementing automation.

In conclusion, the researcher believed that the advantages of implementing automation often offset the disadvantages of implementing automation. However, the researcher reminded that every case and decision needs to take a careful consideration in order to ensure a right decision is made.

C. Innovative suggestion to conquer the challenges faced by SMEs in the food manufacturing industry

This part is to explain some suggestion for SMEs in the food manufacturing industry that intent to implement automation to conquer the challenges which will be faced. Firstly, every company should have a good planning on the financial budget and to ensure a good cash flow within few years. An automation system requires a costly initial investment system and a set of installment fees. Therefore, buying a second hand automation system is the best option which can use the minimum capital to get the largest return in the near future. This is because a set of brand new automation equipment can be up to millions of dollars depends on the type and degree of the automation but the second hand automation system together with the maintenance fee only cost around 400 thousand depending on the type and degree of the automation. The researcher believed that acquire a second hand automation system is a best alternative way to implement automation in the SMEs.

Besides that, the researcher agreed with the idea of hiring an expert technician or experience technician is also one of the suggestion for SMEs in the food manufacturing industry that intent to implement automation to conquer the challenges which will be faced. This is because, an expert technician or experienced technician not only can share their experience but also can provide an alternative solution to help organization to solve the problem. Other than that, an expert technician or experienced technician can also be a guidance or leader for the new worker or operation on how to handle and control the automation system equipment. Thus, it can maximize the machine efficiency, productivity and the life of the machine use.

Last but not least, lean principles are good framework for SMEs in the food manufacturing industry that intent to implement automation to conquer the challenges which will be faced. This is because most of the SMEs have only with the limited resources unlike the larger company that having a lot of resources. Therefore, implementing zero waste, discover inefficiencies in the organization and encourage creating better flow in work processes as mentioned in the lean principles are very important for SMEs have to maximize utilize their limited resources. The researcher also believed that implementing lean principle in the organization can helps SMEs in the food manufacturing industry that intent to implement automation to conquer the challenges which will be faced.

The researcher concluded that there are a lot of solution to conquer the challenges that have been faced. Thus, the business owner or director should to take a careful consideration in order to ensure that a correct decision is taken.

D. Contribution of research

The contribution of this research as a supporting information for the existing knowledge. This research can be provided a guideline to the SMEs who intent to implement automation in their organization. The SMEs will more understanding the different of implementing automation and manually. Thus, SMEs can identify the opportunities by implementing automation that can brings benefits into the organization.

In additional, this research also can make the others company to be more alert with the challenges of implementing automation towards SMEs in food manufacturing industry. There are some of the SMEs did not aware with the challenges that will be faced by implementing automation. With the awareness and general knowledge, company able to handle and conquer with the challenges while implementing automation. This will encourage more SME to moving forward to automotive their production. Subsequently, this would be able to upgrade Malaysia SMEs socioeconomic. As highlighted by [38]-[42], Malaysia face clustered spatial socioeconomic inequality for decades. SMEs mostly are located in sub-urban and rural areas. By increasing those areas socioeconomic, directly the spatial socioeconomic gaps are narrowing down too. This research is a part of the sustainable economy for ASEAN Economic Community which has been discussed by [43].

E. Limitation

This research suffers from few limitations. Firstly, the research has been conduct this research over a short period of time. The time is given to complete this research is limited which was about 9 months from September 2018 to June 2019. Secondly, the limitation of this study was the limited coverage of the state which only covered the SMEs in the food manufacturing industry at Negeri Sembilan and Melaka. Therefore, the results of the study cannot be generalized to every single state in Malaysia.

F. Recommendation for future research

The researcher hoped that this research will benefit to all readers and decision maker of the SMEs. This study can be continuing in depth research for other researcher who are interested. The researcher would like to give some suggestion for them to continue this research with the opportunities and challenges of implementing artificial intelligence (AI) towards SMEs.

Artificial intelligence (AI) is the simulation of human intelligence processes by machines, especially computer systems. These processes include learning by the acquisition of information and rules for using the information, reasoning by using rules to reach approximate or definite conclusions and self-correction. AI is incorporated into a variety of different types of technology which including automation. For example, robotic process automation (RPA). It can be automatic to execute high-volume and repetitive tasks.

The researcher suggested that other universities in Malaysia should give the opportunities for their students to carry out the research to investigate the opportunities and challenges of implementing artificial intelligence towards SMEs. Big data is another important issue need to be taken care as mentioned by [44]. This is because, there are rare SMEs are adopting artificial intelligence and big data analytics in the production line in Malaysia.

APPENDIX

Table A1: Interview questions

Section A: Demographic Information	1. Name 2. Age 3. Gender 4. Race 5. Education Level 6. Working Company 7. Position in Company 8. Working Experience (year)
Section B: Background Knowledge	1. Do your company implement automation? 2. How long for your company implementing automation? 3. What are the differences after implementing automation and before implementing automation? 4. Do automation implementation really help in your business?
Section C: Research Objective 1	1. What are the opportunities of implementing automation that benefits to your company? 2. How you decided to grab the opportunities to implementing automation? 3. Why opportunities are important for implementing automation?
Section D: Research Objective 2	1. What are the challenges that your company faced when implementing automation? 2. What is the main challenges that your company faced when implementing automation?
Section E : Research Objective 3	1. How you or your company conquer with these challenges? 2. How will you or your company take action for the challenges can't be conquer? (If any) 3. What is your advices for others before implementing automation?
Section F: Conclusion	1. Before conclude the interview question, do you have any extra information to add?

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AUTHORS PROFILE

Albert Feisal Ismail, is a Lecturer in the Faculty of Technology Management and Technopreneurship, Universiti Teknikal Malaysia Melaka (UTeM). He has a Masters degree in Technology Management and Entrepreneurship. He is a Member of Institute Marketing Malaysia and the Association for Information System USA.

Soo-Fen Fam, hold B.SC. in Statistics with Management, M.Sc. in Quality and Productivity Improvement and Doctoral Degree in Statistics from Universiti Kebangsaan Malaysia (UKM). Currently, working as a senior lecturer in the Faculty of Technology Management and Technopreneurship (FPTT), Universiti Teknikal Malaysia Melaka (UTeM). For further information, please visit her blog, soofenfam.blogspot.com.

Fatin Najwa binti Mohd Nusa is a researcher and lecturer at Malaysia Institute of Transport (MITRANS), Universiti Teknologi MARA (UiTM), Shah Alam, Selangor.

Sentot Imam Wahjono, is the Associate Professor in the Management Department of the University of Muhammadiyah Surabaya, Indonesia. Doctorates were obtained from Malang State University, Indonesia and the University of Queensland, Brisbane, Australia. He teaches HR and Financial Management. He has been active in the office of Deloitte Touche International Management Consultant. The focus of his current research is in the field of Crowdfunding and Family Business.