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Factors Affecting Packaging Innovation in SME Medium Enterprises (SMEs)

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ABSTRACT

This paper is intended to ascertain the factors influencing packaging innovation behaviour towards micro-entrepreneurs, including knowledge, attitude, awareness, financial, institutional network, and technology. The goal of this study is to assist individuals in establishing their businesses by examining all the elements that have an impact on their success. This will help to lower the risk of failure and enhance the likelihood that SMEs will succeed in beginning a business. Using a random selection method, a total of 40 food micro-entrepreneurs from the Parit Raja Johor area were chosen as the study sample. The questionnaire used in this study has four (4) Likert scales with items scored by experienced evaluators and a high-reliability value. The mean and percentage values were used to examine the data in this study. The data collected were analysed by using the SPSS program which provides relevant analysis such as reliability analysis, and frequency analysis. The data suggest that knowledge (3.46), attitude (3.39), awareness (3.41), financial (3.49), institutional network (3.48), and technology have a high average percentage and the total mean value for factors influencing packaging innovation in SMEs. The analysis results showed that the most significant factors affecting the packaging innovation of SMEs were financial and institutional networks. The study's findings are helpful for the country's entrepreneurs and policymakers.

Keywords:

Packaging innovation; Micro-entrepreneurs; Small and medium enterprise

1. Introduction

Small and Medium Enterprises (SMEs) have been recognized as engines for economic growth and help generate jobs. However, SMEs are also affected by challenges from the business environment that affect their performance [1]. Packaging is one of the keys of marketing in promotional activities to influence consumer emotions and perceptions [2]. Attractive packaging and complete product information can provide appeal to consumers [3]. This illustrates that packaging innovation is important in attracting consumers to repeat purchases. Micro

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entrepreneurs in Malaysia are a major contributor to SMEs. Typically, micro-entrepreneurs are considered tough to expand owing to capital limits that impact the look of the packaging. This may be apparent when using poor-quality packing materials, improper graphic design, and inadequate product information [4,5].

As a result, the government has established several human capital development programs, including various pieces of training, with a total budget of RM300 million, cognizant of the importance of packaging innovation and the role of micro-entrepreneurs in driving the national economy [6]. This aims to further enhance the level of knowledge of entrepreneurs on the importance of packaging and business innovation. Guidance agencies and others also play an active role in providing various services related to packaging to micro-entrepreneurs such as machinery and equipment, grants, advisory services, and packaging technology.

Meanwhile, because of the engagement of entrepreneurs from the ground up in the business who will act to manufacture creative packaging or not, the viewpoint of micro-entrepreneurs is extremely important. As a result, the perspectives of mentoring agency officials and micro-entrepreneurs are critical in understanding the difficulties in packaging innovation and identifying the causes that motivate such behaviour [7]. By focusing on research on food product operators in Malaysia, this study is likely to contribute to attempts to diversify academic work on the problem of micro-entrepreneur packaging innovation [8].

Typically, micro-entrepreneurs face various challenges to innovation such as financial resource constraints, unskilled human capital, lack of competitiveness in business, and limited infrastructure [9-11]. Micro entrepreneurs in Korea and Albania also face challenges to implement packaging innovations such as a lack of skills, low technological knowledge, ever-changing government policies, rising economic costs, and market instability [12,13]. Past packaging research has tended to focus on how customers make purchasing decisions rather than the difficulties and variables that drive packaging innovation practices among entrepreneurs [14-17]. Therefore, to increase the success of packaging innovation among micro-entrepreneurs, then, a more in-depth study needs to be done.

The question that arises is, what are the issues faced by micro-entrepreneurs in the context of packaging innovation? And what are the factors that motivate micro-entrepreneurs to do so? This research is necessary to understand the genuine challenges from the viewpoint of mentoring officers and micro-entrepreneurs who are directly involved in packaging innovation. Because the mentoring officers questioned are directly involved with the growth of micro-entrepreneurs in the field, their perspective is vital to observe. This research focuses on the innovation of packaging and its role in commercializing products. It provides valuable insights into future packaging-related marketing strategies and offers guidance to marketers on how to persuade customers to purchase their products. Specifically, it identifies the challenges micro-entrepreneurs face with packaging innovation and explores the factors that drive their packaging innovation behaviour.

2. Methodology

This study was conducted as a survey. The questionnaire instrument is used for data collection which is divided into two (2) parts, namely Part A: demographics and Part B: measurement of aspects of knowledge, attitudes, and awareness. Measurements of the variables of knowledge level, attitude, awareness, finance, institutional network, and technology were done using a 4-point Likert scale consisting of (1) Strongly Disagree to (4) Strongly Agree. The statement items consisted of a modified questionnaire based on past studies in line with the objectives of the study. The instrument was validated by four (4) evaluator experts in the field of entrepreneurship and business,

food packaging technology, and human resource development, 2 agency officers in the mentoring agency, and 2 entrepreneurs in the field of food enterprise. The collected data were then analysed to provide insights into the current trends and challenges faced by micro-entrepreneurs in packaging innovation. This thorough validation and methodological approach ensured the reliability and accuracy of the findings, contributing valuable information to the field. Cronbach's Alpha reliability values are as in Table 1. According to [18] Cronbach's Alpha values of more than 0.7 were categorized as items that have good reliability.

Table 1
Instrument item

Variables	Cronbach's Alpha	Number of items
Knowledge	0.915	8
Attitude	0.924	8
Awareness	0.823	7
Financial	0.904	7
Institutional Network	0.845	9
Technology	0.911	6

This study was conducted in the state of Johor and the study sample involved 40 micro-food entrepreneurs who have received packaging guidance from agencies. The selection of the agency is justified by the agency's active engagement in improving the packaging of micro entrepreneurs' food products. The sampling method uses a systematic random sampling technique to avoid bias. The study's data was gathered via handing out questionnaires to entrepreneurs during physical meetings, through the mail, and by virtual filling out of Google Docs. Entrepreneurs who supplied feedback were regularly called and given pleasant reminders, as well as e-books relevant to marketing, to improve feedback.

In this study, descriptive analysis was used to answer the objectives of the study. The level of knowledge, attitude, and awareness studied is using percentage, frequency, and mean then the analysis of the level of interpretation is considered from the value of six points. Table 2 shows the mean interpretations used in the study findings. In conclusion, the descriptive analysis provided a detailed understanding of the participants' knowledge, attitudes, and awareness levels. By using percentage, frequency, and mean values, the study was able to interpret these variables effectively based on a six-point scale, as shown in Table 2. This approach ensured a comprehensive analysis aligned with the research objectives.

Table 2
Interpretation Mean

Variables	Cronbach's Alpha
1.00 – 2.33	Low
2.34 – 3.67	Moderate
3.68 – 5.00	High

3. Results and Discussion

3.1 Knowledge of Packaging Innovation

Table 3 shows the knowledge level analysis for each entrepreneurial packaging innovation knowledge item.

Table 3
Knowledge of Packaging Innovation

No.	Item	SD (%)	D (%)	A (%)	SA (%)	Mean
1.	The innovation of packaging is to improve the method of packaging.	0.0	0.0	47.5	52.5	3.53
2.	Packaging innovation is improving packaging design.	0.0	2.5	37.5	60.0	3.58
3.	The innovation of packaging is to improve the information on the packaging.	0.0	2.5	45.0	52.5	3.50
4.	Packaging innovations can increase product durability.	0.0	5.0	50.0	45.0	3.40
5.	Packaging innovation describes the unique identity of a product.	0.0	5.0	45.0	50.0	3.45
6.	Packaging innovations help products stay in the market.	0.0	0.0	57.5	42.5	3.43
7.	The innovation of packaging is to improve the use of this type of packaging material	0.0	15.0	45.0	40.0	3.25
8.	The innovation of packaging is to improve the method of packaging.	0.0	0.0	42.5	57.5	3.58
Overall						3.46

The results of the study showed that all eight (8) items had a high mean score. The item with the highest score is item 2 and item 8 (mean = 3.58) Item 2 states "Packaging innovation is improving packaging design" with a total percentage of respondents who strongly agree 52.5% and 47.5%. The 8th item also states "The innovation of packaging is to improve the method of packaging" where the percentage of respondents who strongly agree is 57.5% and 42.5% for agree responses.

The first item shows the second highest mean score (mean = 3.50) which states "The innovation of packaging is to improve the method of packaging" with the number of respondents who strongly agree 52.5% and 47.5%. In addition, the third highest mean score is on the 3rd item which states "The innovation of packaging is to improve the information on the packaging".

Micro entrepreneurs need to understand the importance of packaging innovations that can reflect their own identity, increase product durability, and help products stay in the market. [19,20] stated that knowledge can be enhanced because of the courses and training followed, and experience. Thus, the success of the packaging innovations undertaken is driven by the understanding of the knowledge and ability of micro-entrepreneurs to mobilize all the resources they possess well.

However, the findings of the study also show that micro-entrepreneurs lack an understanding of the need to improve information, improve packaging methods, and improve the use of different types of packaging materials. Improvements in information, methods, and types of packaging materials are also part of the innovations that can be made in packaging. Having a better understanding of packaging innovation, therefore, the behaviour of packaging innovation among micro-entrepreneurs can also be improved. Incorporating advancements in science and technology is vital for shaping these innovations. Integrating cutting-edge technological solutions can streamline packaging processes, improve material sustainability, and cater to evolving consumer preferences. Moreover, leveraging scientific insights can facilitate the development of packaging solutions that are not only functional but also environmentally sustainable, aligning with global trends towards eco-friendly practices.

By emphasizing the integration of scientific knowledge and technological advancements, micro-entrepreneurs can harness these resources to innovate their packaging strategies effectively. This approach not only enhances product appeal and market competitiveness but also contributes to sustainable business practices in the long term.

3.2 Knowledge of Packaging Innovation

Table 4 shows there are 8 items for the level of packaging innovation attitude.

Table 4
The Attitude of Packaging Innovation

No.	Item	SD (%)	D (%)	A (%)	SA (%)	Mean
1.	I am positively innovating on product packaging.	0.0	15.0	50.0	35.0	3.20
2.	I want to produce packaging innovations that are different from everyone else.	0.0	2.5	57.5	40.0	3.38
3.	I am willing to take risks to ensure that packaging innovations are feasible.	0.0	0.0	52.5	47.5	3.48
4.	I was trying to find opportunities to innovate in packaging.	0.0	2.5	57.5	40.0	3.38
5.	I imagined producing interesting packaging.	0.0	2.5	50.0	47.5	3.45
6.	I am a flexible person in packaging innovations.	0.0	2.5	45.0	52.5	3.50
7.	I am highly motivated to do packaging innovations.	0.0	12.5	47.5	40.0	3.28
8.	I think packaging innovation will pay off.	0.0	0.0	50.0	50.0	3.50
Overall						3.39

The results showed that the overall mean score for the level of packaging innovation attitude was 3.39. The item with the highest score is the 6th and 8th item. The 6th item states "I am a flexible person in doing packaging innovations" with a percentage of respondents strongly agree of 52.5% and agree 45.0%. Next, the 8th item states "I think packaging innovation will pay off" with respondents answering 50.0% on strongly agree and agree. Meanwhile, the second highest mean score for this level is on the 3rd item (mean = 3.48) which states "I am willing to take risks to ensure that packaging innovations are feasible" with a total percentage of respondents strongly agree 47.5% and agree 52.5%. The third highest mean score is on the 5th item (mean = 3.45) which states "I imagined producing interesting packaging" with a total percentage of respondents strongly agree 47.5%, agree 50.0%and disagree 2.5%.

After obtaining agency advice, micro-entrepreneurs have a strong imagination and endeavour to uncover chances to develop packaging. Micro entrepreneurs are eager to create packaging innovations that are unique from others if these packaging innovations would generate revenues. Positive attitudes encourage micro-entrepreneurs to act, support, and implement packaging innovations [21]. Furthermore, Micro Entrepreneurs must have an open mind to change and be prepared to always take chances. This obviously demonstrates that the attributes of a successful entrepreneur are still lacking, as [22] remarked, claiming that most micro-entrepreneurs lack the willingness to take risks.

In the realm of science and technology, advancements offer micro-entrepreneurs' numerous tools and strategies to enhance their packaging innovations. For instance, technologies such as 3D printing can facilitate rapid prototyping of packaging designs, allowing for faster iteration and customization. Additionally, advancements in material science enable the development of eco-friendly packaging solutions that meet consumer demand for sustainability. Furthermore, leveraging data analytics and digital marketing technologies can help micro-entrepreneurs understand consumer preferences and market trends more accurately. This insight enables them to tailor their packaging innovations to better meet market demands and enhance product appeal. By embracing these scientific and technological advancements, micro-entrepreneurs can not only differentiate their products in the market but also improve operational efficiency and sustainability

practices. This holistic approach fosters innovation and competitiveness, positioning micro-entrepreneurs for long-term success in the evolving marketplace.

3.3 Knowledge of Packaging Innovation

Table 5 shows the awareness level analysis for each awareness item on the importance of packaging innovation.

Table 5
The Attitude of Packaging Innovation

No.	Item	SD (%)	D (%)	A (%)	SA (%)	Mean
1.	The packaging of my products needs to be improved if I want to enter the supermarket.	0.0	10.0	50.0	40.0	3.30
2.	The packaging of my products needs to be improved if I want to enter the international market.	0.0	7.5	40.0	52.5	3.45
3.	Packaging innovation can increase competitiveness.	0.0	5.0	50.0	45.0	3.40
4.	Packaging innovations can improve business performance.	0.0	0.0	45.0	55.0	3.55
5.	Packaging innovation is a marketing strategy.	0.0	12.5	60.0	27.5	3.15
6.	Consumers buy because of the innovative packaging.	0.0	0.0	55.0	45.0	3.45
7.	I need to innovate in the packaging when faced with competition.	0.0	2.5	37.5	60.0	3.58
Overall						3.41

The overall mean for the table above is 3.41. The highest mean score for awareness of the importance of packaging innovation was on the 7th item (mean = 3.58) which stated, "I need to innovate in the packaging when faced with competition." The total percentage of respondents answering strongly agree 60.0%, agree 37.5% and disagree 2.5%. The second highest mean score is on the 4th item (mean = 3.55) which states "Packaging innovations can improve business performance" with the total percentage of respondents answering strongly agree 55.0% and agree 45.0%. Next, the third highest mean score (mean = 3.45) is in items 2 and 6. The 2nd item states, "The packaging of my products needs to be improved if I want to enter the international market" with the total percentage of respondents answering strongly agree 52.5%, agree 40.0%and disagree 7.5%, while the 6th item states "Consumers buy because of the innovative packaging" with respondents answering strongly agree 45.0%and agree 55.0%.

The necessity of packaging innovation as a marketing strategy for foreign markets and supermarkets is recognized by micro-enterprises. These findings support [23] claim that products with novel packaging can enter new markets. Furthermore, micro-entrepreneurs are aware that packaging innovations may increase business performance and market competitiveness, particularly when competing with larger businesses. The look of packaging that can distinguish it from competitive items has an impact on consumer purchase behaviour [24]. As a result, the new packaging style, as well as the marketing plan, must be unique and tailored to the present scenario. From a consumer standpoint, micro-businesses must raise customer awareness of the necessity of package innovation. This is because several studies have shown that package innovation may draw purchasing behaviour as well as emotions among people [25]. Thus, if simply awareness of the goal is present, entrepreneurial behaviour will be difficult to modify [26] but packaging innovative behaviour may be achieved with the knowledge and positive attitude of micro-entrepreneurs.

Incorporating advancements in science and technology can further amplify the impact of packaging innovations. For example, developments in augmented reality (AR) and virtual reality (VR) can transform packaging into interactive experiences, engaging consumers on a deeper level and providing additional product information. Additionally, biodegradable materials and sustainable

packaging solutions developed through advancements in material science align with growing consumer preferences for eco-friendly products. Moreover, leveraging big data analytics and artificial intelligence (AI) can enable micro-entrepreneurs to analyse consumer behaviour patterns and optimize packaging designs accordingly. This data-driven approach enhances the effectiveness of packaging innovations by aligning them closely with market demands and consumer preferences. By integrating these scientific and technological advancements into their packaging strategies, micro-entrepreneurs can not only enhance market penetration and competitiveness but also foster sustainable growth. This holistic approach not only meets consumer expectations but also positions micro-enterprises as innovators in their respective markets.

3.4 Financial Importance in Packaging Innovation

Table 6 shows the financial level analysis for each item of financial importance in packaging innovation.

Table 6
Financial Importance in Packaging Innovation

No.	Item	SD (%)	D (%)	A (%)	SA (%)	Mean
1.	Finance influences packaging innovation.	0.0	0.0	42.5	57.5	3.58
2.	Financial aid is essential for packaging.	0.0	0.0	45.0	55.0	3.55
3.	Adequate financial allocation is necessary for packaging innovation activities	0.0	0.0	47.5	52.5	3.53
4.	I'm always trying to get info on funding assistance for packaging innovations.	0.0	2.5	47.5	50.0	3.48
5.	I was able to obtain financial resources to enable packaging innovation activities to be carried out.	0.0	0.0	45.0	55.0	3.55
6.	I provide financial allocation for packaging innovation.	0.0	7.5	52.5	40.0	3.33
7.	With financial constraints, I can't do packaging innovation	0.0	2.5	55.0	42.5	3.40
Overall						3.49

The results of the above study show that the overall mean is 3.49. The item with the highest mean score for the level of financial importance in packaging innovation was the first item (mean = 3.58). The first item states "Finance influences packaging innovation" with the total percentage of respondents answering strongly agree 57.5% and agreeing 42.5%. for the second highest mean score (mean = 3.55) is in the 2nd and 5th items. The 2nd item "Financial aid is essential for packaging" and the 5th item "I was able to obtain financial resources to enable packaging innovation activities to be carried out" with a percentage of respondents answering strongly agree 55.0% and agree 45.0%. While the third highest mean score (mean = 3.58) stated "Financial aid is essential for packaging" with the total percentage of respondents answering strongly agree 57.5% and agreeing 42.5%.

Financial issues are issues that are often faced by micro-entrepreneurs. Thus, financial help offered by government agencies to Malaysian entrepreneurs is a motivator for people to start their own businesses [27]. In the context of this study, finance refers to the financial distribution assigned for packaging innovation as well as the source of financial funding. Success is difficult to accomplish if entrepreneurs do not understand the need for effective financial management. Discipline in handling corporate finances will help the company stay competitive in the market. If entrepreneurs have high-quality items but lack financial management abilities, they will experience difficulties, especially when producing products for global markets.

Incorporating advancements in science and technology can aid micro-entrepreneurs in overcoming financial challenges and enhancing business viability. For instance, financial

technologies (FinTech) offer innovative solutions for managing cash flow, accessing capital through crowdfunding platforms, and automating financial processes. Additionally, blockchain technology can enhance transparency and security in financial transactions, thereby fostering trust and efficiency in business operations. Furthermore, advancements in data analytics and AI-driven financial tools enable micro-entrepreneurs to make informed financial decisions based on real-time market insights and predictive analytics. These tools help optimize budget allocation, identify cost-saving opportunities, and forecast financial trends more accurately. By leveraging these scientific and technological advancements, micro-entrepreneurs can effectively manage financial resources, enhance competitiveness, and sustain growth in dynamic and competitive markets. This strategic integration not only mitigates financial risks but also empowers entrepreneurs to capitalize on opportunities for innovation and expansion.

3.5 The Importance of Institutional Networks in Packaging Innovation

Table 7 shows the importance of Institutional Networks in Packaging Innovation.

Table 7
The Importance of Institutional Networks in Packaging Innovation

No.	Item	SD (%)	D (%)	A (%)	SA (%)	Mean
1.	Institutional networks are important in supporting packaging innovation.	0.0	2.5	52.5	45.0	3.43
2.	The mentoring agency found me with a party that helped me do packaging innovation (Business Matching).	0.0	2.5	37.5	60.0	3.58
3.	The mentoring agency gave me practical ideas to improve packaging innovation	0.0	0.0	50.0	50.0	3.50
4.	The mentoring agency is my main reference centre for innovating in packaging.	0.0	7.5	50.0	42.5	3.35
5.	I get enough support from mentoring agencies to do packaging innovations.	0.0	0.0	47.5	47.5	3.53
6.	A good relationship with the mentoring agency is essential to reap the benefits related to packaging innovation.	0.0	0.0	42.5	57.5	3.58
7.	I can collaborate with other institutions to innovate in packaging.	0.0	2.5	45.0	52.5	3.50
8.	It is important to get involved in the activities of the association to reap the benefits related to packaging innovation	0.0	2.5	55.0	55.0	3.40
9.	I need a mentor to guide in packaging innovation	0.0	5.0	45.0	50.0	3.45
Overall						3.48

The overall mean for the level of importance of institutional networks in packaging innovation was 3.48. The highest mean scores were on items 2 and 6 (mean = 3.58). The 2nd item states "The mentoring agency found me with a party that helped me do packaging innovation (Business Matching)" with the total percentage of respondents answering strongly agree 60.0%, agree 37.5% and disagree 2.5%. While the 6th item states "A good relationship with the mentoring agency is essential to reap the benefits related to packaging innovation" with the total percentage of respondents answering strongly agree 57.5% and agree 42.5%. The second highest mean score is on the 5th item (mean = 3.53) which states "I get enough support from mentoring agencies to do packaging innovations" with a percentage of strongly agree 47.5% and agree 47.5%. The third highest mean score is the 7th item (mean = 3.50) which states "I can collaborate with other institutions to innovate in packaging" with the percentage of respondents answering strongly agree 52.5%, agree 45.0%, and disagree 2.5%.

Institutional networking is one of the most essential variables in a company's ability to achieve innovative success. There are possible links that imply SME entrepreneurs need to focus on attaining better innovation results, according to [28]. In fact, [29] stated that guidelines for

entrepreneurs to build innovation in business can be established based on creating culture or learning behaviour in the organization, developing proactive attitudes, developing business networks with the government and the private sector, and having the courage to take risks when opportunities arise. Moreover, advancements in artificial intelligence (AI) and machine learning (ML) algorithms can analyse vast amounts of data to identify strategic partnership opportunities and predict market trends. This data-driven approach enhances decision-making processes within entrepreneurial networks, enabling more informed and timely actions.

Additionally, blockchain technology offers decentralized and secure platforms for conducting transactions and establishing trust among network participants. This can streamline contractual agreements and transactions, reducing administrative burdens and enhancing transparency in collaborative efforts. By leveraging these technological advancements, micro-entrepreneurs can expand their institutional networks, strengthen collaborative partnerships, and access resources essential for driving innovation and business growth. This strategic integration not only enhances competitiveness but also cultivates a supportive ecosystem conducive to sustained entrepreneurial success in a rapidly evolving marketplace.

3.6 The Importance of Technology in Packaging Innovation

Table 8 shows the importance of technology in Packaging Innovation.

Table 8
The Importance of Technology in Packaging Innovation

No.	Item	SD (%)	D (%)	A (%)	SA (%)	Mean
1.	Packaging technology helps me to innovate packaging to improve the quality of product packaging.	0.0	5.0	50.0	45.0	3.40
2.	Packaging technology helps me to innovate packaging to improve the product market.	0.0	0.0	57.5	42.5	3.43
3.	Packaging technology helps me to innovate packaging to increase the shelf life of my products.	0.0	2.5	47.5	50.0	3.48
4.	Packaging technology helps me to innovate packaging to increase production productivity.	0.0	2.5	50.0	47.5	3.45
5.	Packaging technology support from agencies is essential for packaging innovation.	0.0	2.5	45.0	52.5	3.50
6.	Assistance of equipment and packaging machines from the agency is necessary.	0.0	7.5	47.5	45.0	3.38
Overall						3.44

Based on the table above, the overall mean for the level of importance of packaging technology and innovation is 3.44. The highest mean score is on the 5th item which states "Packaging technology support from agencies is essential for packaging innovation" with the percentage of respondents answering strongly 52.5%, agreeing 45.0%and disagreeing 2.5%. The second highest mean score is the 3rd item stating "Packaging technology helps me to innovate packaging to increase the shelf life of my products" with a percentage of strongly agree 50.0%, agree 47.55%, and disagree 2.55%. Meanwhile, the third highest mean score is the 4th item which is "Packaging technology helps me to innovate packaging to increase production productivity" with a percentage of 47.5% strongly agree, 50.0% agree and 2.5% disagree.

To remain competitive, the most significant technical issues that SMESs encounter are connected to processing technology and product quality improvement [30]. Discovered that innovation among small or medium-scale food processing enterprises is still in its early stages [31].

Packaging improvements that are more robust and in keeping with the nature of the food are badly needed, and they must be backed up by technological aid [32]. As a result of its strong relationship with finance and institutional networking, technology is a significant supporting aspect. In the context of this study, technology is defined as the employment of specific technologies in the production of packaging, such as the use of tools or machinery [33]. Moreover, digital technologies enable SMEs to leverage data analytics for optimizing packaging designs based on consumer behaviour and market trends. AI-powered algorithms can analyse large datasets to forecast demand patterns and personalize packaging solutions, enhancing customer satisfaction and brand loyalty. Furthermore, emerging technologies like augmented reality (AR) and Internet of Things (IoT) devices can transform packaging into interactive experiences, providing consumers with real-time product information and enhancing engagement.

By integrating these scientific and technological innovations into their operations, SMEs can strengthen their competitive position, improve product differentiation, and meet evolving market demands effectively. This strategic use of technology not only drives innovation but also fosters sustainable growth in the dynamic landscape of the food processing industry.

In general, micro-entrepreneurs employ technology in a restricted number of ways. They will require a large sum of money to purchase a suitable machine. Entrepreneurs must have product knowledge, the basics of packaging technology, and the basics of package graphics to be converted into a hired graphic designer to achieve the intended design and suit customer tastes to generate unique packaging.

4. Conclusions

In conclusion, packaging innovation is a key factor on which micro-entrepreneurs should concentrate if they want to extend their firm into new markets. Innovative packaging might add value to a product if it fulfils client preferences. If the challenges of knowledge, attitudes, and awareness of micro-entrepreneurs can be solved, the packaging innovation capability of micro-entrepreneurs may be achieved. Indeed, mentoring agencies assist in the development of packaging innovations by providing financial resources, institutional networks, and technological skills. These characteristics also encourage micro businesses to develop more inventive packaging. As a result, government institutions have made a significant contribution to the development of microentrepreneur products, particularly packaging innovation.

Overall, this paper is successful in identifying difficulties that inhibit micro-entrepreneurs from engaging in packaging innovation. Micro entrepreneurs can be more successful in promoting their products to the worldwide market if they can identify the elements that push them to create unique packaging. As a result, future research will be able to determine whether micro-entrepreneurs who got agency advice on packaging innovation have changed their practices or not.

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