



LEVEL 5 ASSESSMENT SPECIFICATION

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Module:	Changemakers: Applying a Research Mindset		
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Lecturer:	Emma Roberts	Internal Verifier:	Vic Saunders
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Submission method:	All written assessments, where practical and possible, must be submitted via Turnitin unless otherwise instructed by the Lecturer. (Please DO NOT put this assessment specification into Turnitin or it will match many similarities with other students' submissions.) Alternative submission method (if applicable): Late submission of the assessment will result in a late penalty mark: Work which is submitted up to 1 week late will be capped at 40% for the first attempt and will be awarded a mark of 0% for re-assessment. Late submission penalties may be lifted only if there is an approved extenuating circumstances claim. Work submitted more than 1 week late will be considered as a non-submission and will not be marked. The work may be considered as a submission for reassessment if offered by an Examining Board or if there is an approved extenuating circumstances claim.		

Academic honesty / referencing:	Academic honesty is required. In the main body of your submission you must give credit to authors on whose research and ideas your work is based. Append to your submission a reference list that indicates the books, articles, etc. that you have used, cited or quoted in order to complete this assessment.
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Module Learning Outcomes (from module syllabus)
• Demonstrate knowledge and critical understanding of a research mindset, recognising the values and the contribution that research makes to addressing the problems of the contemporary world. • Apply a research mindset within a work-based or academic context to develop a novel research proposal.

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Video Presentation Link: <https://youtu.be/KgiNutFS-p8?si=S4jGH7CgoAn8U-OJ>

1.0 Problem Definition

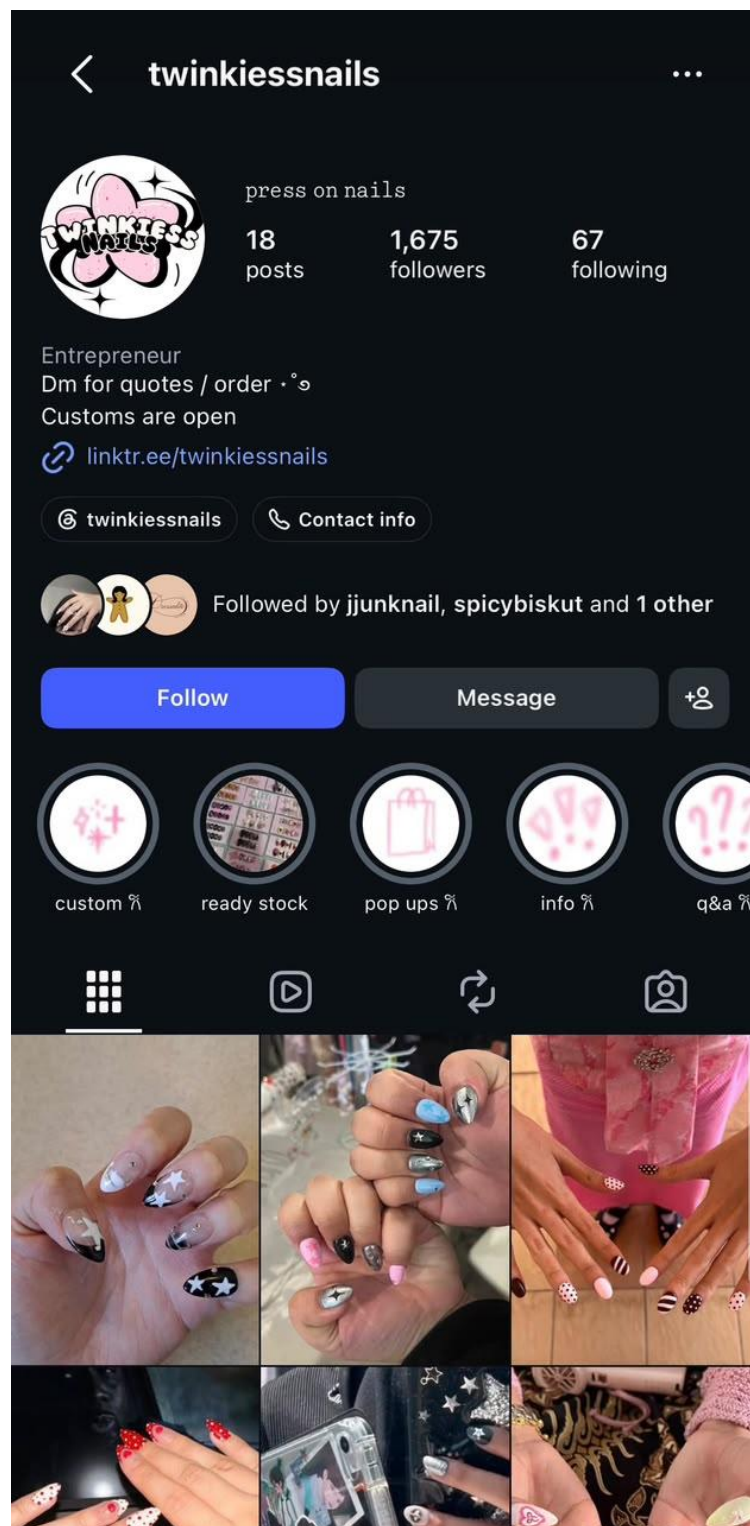


Figure 1 shows a screenshot of Twinkiess Nails' social media page

Twinkieess Nails is an online sole-proprietorship based in Taman Tun Dr Ismail (TTDI), Kuala Lumpur that specialises in custom hand-painted nails, selling mainly on Instagram and TikTok. The founder, Maretha, has a few nail sets on hand that are pre-designed and ready-made, which she uses as supplementary to the time-consuming custom orders. However, the business has a serious operational and financial issue: the revenue streams are unpredictable and cash flow is unstable, due to the mismatch of inventory forecasting needs and the inability to produce more than one at a time.

Press-on nails are also subject to rapid changing fashions, and there are several different sizes specified for each (XS, S, M, L), making it very difficult to predict the demand for pre-made nails. Therefore, there might be ready-made stock that is not sold and thereby tied up in working capital or labour hours. On the other hand, custom orders that have regular demand are constrained by the owner's physical ability. Direct revenue declines rapidly once physical fatigue sets in or custom slots are at their top, and starts declining.

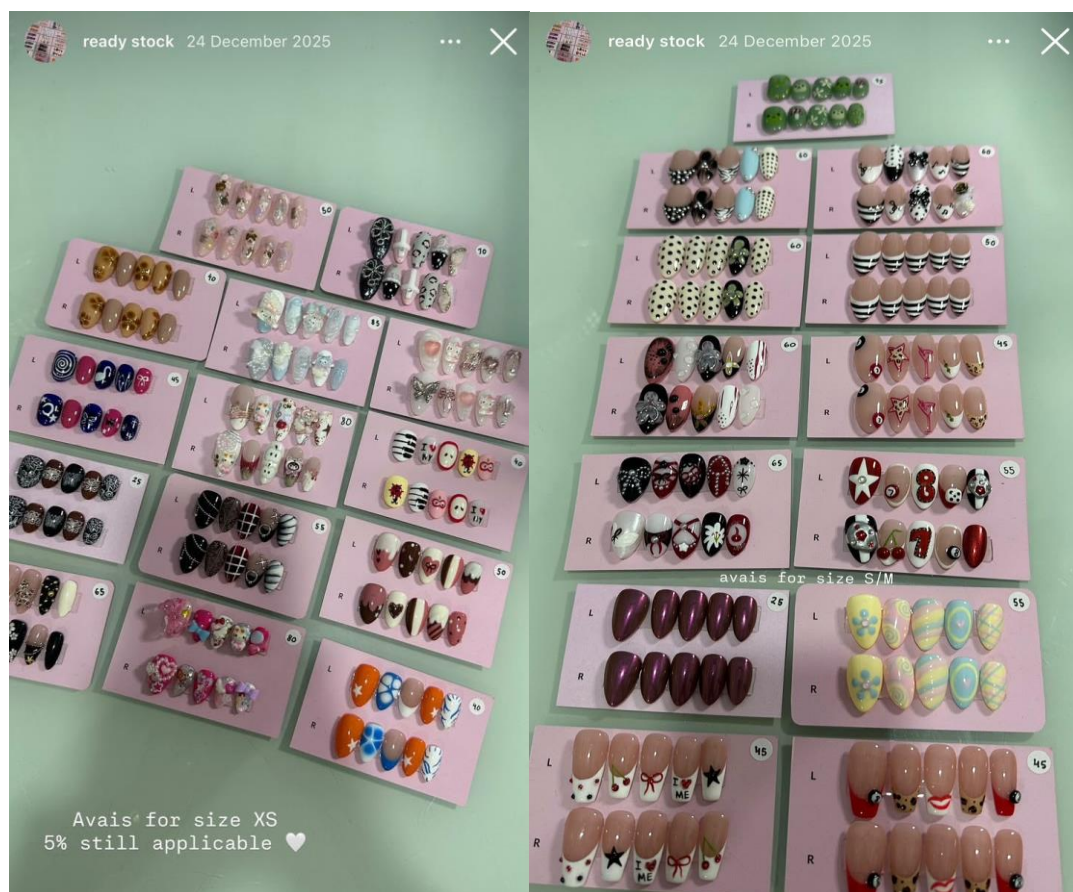


Figure 2 and 3 shows the ready-made press-on nails that are available

The two restrictions lead to significant business finance and operations problems. Firstly, the monthly sales fluctuate in between main festive seasons, e.g. during Eid or Chinese New Year without any consistent income. Apart from that, the cost of raw gel material, tip stock, and packaging of slow-moving ready-made sets which are incurred in a lump sum cannot be recovered in a short time and thus can hinder the cash flow required for marketing and for purchasing of new materials. In addition, Maretha must discount her ready-made stock at a considerable amount in order to clear out dead inventory and to be able to recoup the basic cost of the materials they used to produce the ready-made products.

Therefore, if Twinkie's Nails were to implement a data-driven inventory management system as well as a structured design-tiering approach and a scalable pricing system, it will be easier to stabilise revenue and have a sustainable financial growth.

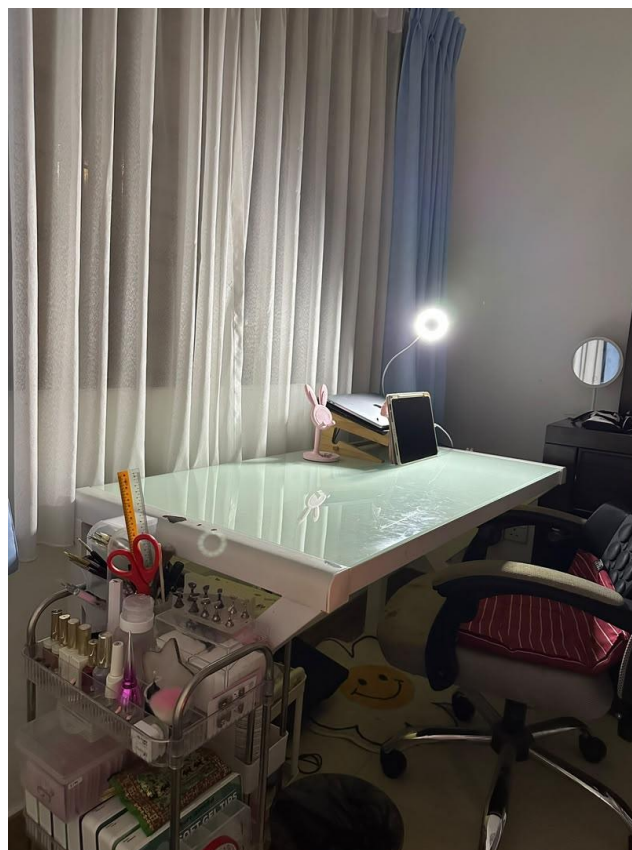


Figure 4 shows Twinkie's Nails' current work setup

2.0 Literature Exploration via Generative AI

2.1 Prompt

I utilised Google Gemini as my Generative AI provider. The specific prompt I used is as follows:

"My friend runs an independent, single-artisan press-on nail small business called Twinkiess Nails based in Malaysia. Her business struggles with revenue volatility and cash flow instability caused by two main issues: (1) inventory forecasting mismatches when pre-making ready-made stock across different nail sizes/designs, which locks up working capital, and (2) single-artisan physical production constraints that limit peak sales. Can you provide 3 key academic concepts, theoretical frameworks, or business terms from operations and financial management literature to help precisely define this problem, along with a concise 2-sentence Problem Definition? Cite academic literature concepts."

From this prompt, I was given three key academic concepts generated by the AI providers, which were:

1. *Working Capital Lock-Up & Bullwhip Effect in Craft Inventory*
2. *Single-Resource Capacity Bottleneck (Theory of Constraints)*
3. *Demand Volatility & Sales Seasonality in Discretionary Goods*

Furthermore, the problem definition was generated in this manner:

"Twinkiess Nails faces persistent revenue volatility and cash flow instability driven by working capital lock-up in misallocated ready-made inventory and an unscalable, single-artisan production bottleneck. This operational structure creates severe liquidity strain during off-peak periods and restricts the business's ability to capitalise fully on peak festive demand cycles."

2.2 Justification

The AI output chosen precisely embodies the operational reality of Twinkie's Nails, linking physical limitations and financial liquidity concerns. While the basic rules of small-business marketing may apply, applying the Theory of Constraints and principles of Working Capital Management as developed by Goldratt and Cox (2014) and Atrill (2021) directly addresses why mere social media outreach can cause cash flow problems when manual labour and inventory misallocation set structural limits. The capacity is the primary constraint in single artisan craft operations, which determines the maximum production capacity of an operation (Slack & Brandon-Jones, 2019; Jamaluddin & Nurwana, 2025). Moreover, unsold ready-made goods keep the cash locked in physical stock, and the small business is prone to harsh cash flow fluctuations during periods of slowdown in demand (Okeke et al., 2022; Christopher, 2016).

All theoretical ideas were critically assessed after the guidelines of research methodology provided by Saunders et al. (2019) and Adu and Miles (2024) in order to prevent the occurrence of fabricated information or generalizations by the AI. I verified the explanation of capacity bottlenecks by the AI against the basic operations research as provided by Slack and Brandon-Jones (2019). In addition, I made sure that the theoretical approach included the structural vulnerabilities of small firms as described by Storey (2016), especially in the local context of Malaysia where micro firms are low in cash buffer and high in demand uncertainty during the major festive cycles as described by Chapman & Ward (2011).

3.0 Research Question and Methodology via Generative AI

The specific prompt I submitted using Google Gemini was:

“I am conducting a Level 5 business research project on an independent, single-artisan press-on nail business in Malaysia called Twinkiess Nails. The business struggles with revenue volatility and cash flow instability due to single-artisan production bottlenecks and working capital lock-up in unsold ready-made inventory. Can you generate 2 suitable Research Questions (RQs) and suggest realistic, feasible qualitative and quantitative research approaches that an undergraduate student could actually conduct?”

From that, the AI came up with two potential research questions, which were:

Option A: *“How do production capacity constraints and inventory allocation strategies affect cash flow sustainability in single-artisan micro-enterprises?”*

Option B: *“How can a single-artisan online nail business balance its production of pre-made nails with custom orders to ensure cash flow stability and reduce working capital tied up in inventory?”*

The methodological framework proposed by Google Gemini was a mixed-method case study design, which included a quantitative component through sales and inventory log analysis (ready-made turnover and custom order revenue over six months) as well as a qualitative component by conducting semi-structured interviews with the business owner and a small group of recurring customers.

I chose Option A since it enables the thorough study of the direct impact of operating inefficiencies regarding the financial liquidity and sustainability of cash flows in micro-enterprises. Option A was presented in a broad manner, but I narrowed the text the AI generated down to a specific context within Twinkiess Nails specifically. The final polished up Research Question is: *“What effect do production capacity constraints and ready-made inventory allocation strategies have on the sustainability of cash flow at Twinkiess Nails?”*.

This wording directly links the Theory of Constraints and Goldratt and Cox (2014) theory of financial working capital and the scope of the empirical study is manageable for a single-business case study, as mentioned by Saunders et al. (2019).

As to the research methodology applied, I used a practical approach with a qualitative-dominant single case study design. The AI recommended a complicated mixed-methods design that included a lot of customer focus groups, and I honed this down into a much more realistic design. With this approach, the study can be directed towards real-world problem solving that is suitable when evaluating micro-enterprise operations (Saunders et al., 2019). The data collection will be carried out using a semi-structured interview with the founder of Twinkie's Nails for primary data collection about the production capacity and cash flows, as well as secondary data collection from the Direct Messages (DMs) between her and customers on Instagram. The small sample of 3 regular clients and purposive sampling assures that the data gathered will be valid, targeted and achievable within my personal geographic and time limitations, as recommended by Adu and Miles (2024).

4.0 Summary Research Proposal

The broader goal of this proposed research project is to answer the main research question: What are the effects of production capacity constraints and ready-made inventory allocation strategies on cash flow sustainability at Twinkie's Nails?



Figure 5 shows the nail polish stock at Twinkie's Nails

4.1 Definition of Key Terms

In order to effectively test the research question, three fundamental concepts of operations need to be clearly defined. Firstly, production capacity constraints are physical and time limitations may exist on the production due to the fact that the business is dependent on the time and expertise of one person, using her own human energy (Slack & Brandon-Jones, 2019). Second, ready-made inventory allocation involves creating sets of press-on nails with standardised

designs, shapes and sizes in advance for immediate sale, as opposed to creating sets only with a custom order (Christopher, 2016). Thirdly, cash flow sustainability refers to the business' capacity to generate sufficient steady cash flow on a month-by-month basis to cover the cost of raw materials, short term costs, and owner's income both during busy and quiet months of sales (Atrill, 2021).

The language of this research question relates directly to operational issues and to financial outcomes. The amount of money that Maretha can earn at Twinkiess Nails is limited by the amount of time that she has to work on any day, directly related to Goldratt and Cox's Theorem of Constraints. Although the idea of pre-making nails appears to be a prudent solution to save time in the busy holiday season, if those pre-made nails do not sell in a timely fashion, then the capital invested in the product is locked in unsold physical stock (Vasanthi & Rajpal, 2021). The term 'cash flow sustainability' rather than 'profits' emphasises the actual challenge the business faces during the periods between the major holidays such as Hari Raya or Chinese New Year when the business is quieter (Storey, 2016). This guarantees that the project does not just concentrate on social media marketing but on a real-life problem.

4.2 Proposed Research Design

The research method used in this study is pragmatic and the type of research that is applied is the single case study method with a qualitative approach so that qualitative data can be obtained. A pragmatic approach is to seek solutions to real-world business problems (Saunders et al., 2019). A single case study approach enables an in-depth and detailed analysis of how the day-to-day decisions made in hand painting and stock control have a direct impact on the financial liquidity level of Twinkiess Nails (Costley et al., 2010).

4.3 Reliability and Validity

Specific research steps will be followed to ensure that the study is trustworthy, objective and accurate. Data triangulation and cross-checking qualitative responses in the interview with the secondary business data from past order logs and DMs history via Twinkiess Nails' Instagram account will be used to establish construct validity (Saunders et al., 2019). Additionally, member checking will take place by providing the business owner with text verbatim from the interviews to ensure that all information and operational details are accurately captured (Adu & Miles, 2024). Reliability will be aided by maintaining an audit trail, which will record all the questions used, notes and analysis processes in the interviews so future researchers can assess the transparency of the study (Saunders et al., 2019).

4.4 Proposed Research Methods and Data Collection Issues

Data collection uses two methods which are qualitative data from primary sources and operational data from secondary sources. Primary data will be obtained via a semi-structured interview with the founder, Twinkiess Nails, who will be asked about the average amount of nails she produces each week, hours worked, the ratio of unsold nails and the cash flow difficulties she experiences during periods of low production. The secondary data collection will be conducted by studying the sales and raw materials data from the previous three months. This is done to determine which pre-made designs were selling out fast and which were piling up on the shelves. The investigation will focus on written receipts and order logs instead of owner memory for the past months in order to mitigate potential recalling problems with data.

4.5 Data Access and Permission

Empirical data access to the site is easily secured since direct access rights have been granted by Maretha. Before the interview, an Informed Consent Form will be signed to ensure that the person takes part voluntarily, that the information remains completely confidential and that all information is anonymised. This is a practical scale and suitably adapted for an undergraduate Level 5 assignment. The study's narrow scope of one local micro-business in TTDI was also helpful in keeping the study realistic within the time span, financial resources available and the geographical boundary of the research localisation while generating useful and real-world business solutions (Adu & Miles, 2024).

Gibbs Reflective Cycle

By Khyra Binti Mohd Hazran

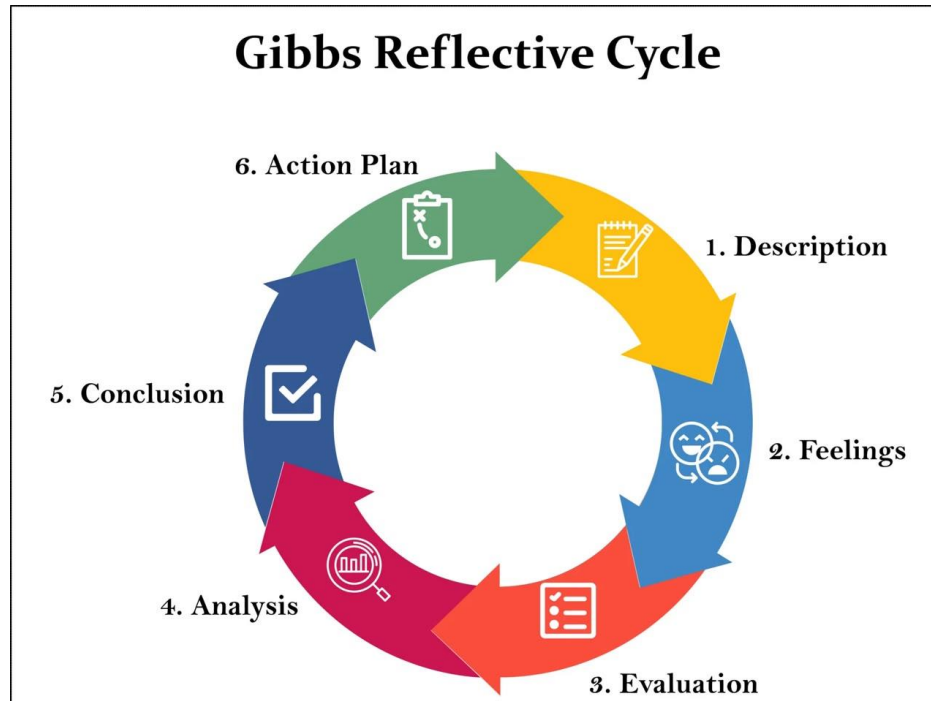


Figure 6 shows the Gibbs Reflective Process

1. Description

Throughout this module, I worked through a research design process to look into the operational and financial issues that Twinkie's Nails, a local online press-on nail business in TTDI, Kuala Lumpur is facing. Tasks 1 through 4 asked me to find a problem in a business that I know well. I used Google Gemini as a tool to help me make my problem statement and research questions better. I also created a Level 5 research proposal. After finishing my report, I made a 5-minute video presentation using Microsoft Teams to explain my research design.

2. Feelings

At first, I was not sure about using Generative AI for my work as I was worried that I might get incorrect information or fake academic sources. However, working with a business owner whom I personally know and am close to, gave me a reason to stay motivated. As I worked on

improving the results from the AI in Tasks 2 and 3, I became more sure about my skills to check tools properly instead of just believing what the AI says. Although making the final presentation was not easy, it still helped me understand the research design better.

3. Evaluation

Learning how to incorporate generative technology with actual local observation was the assignment's beneficial aspect. The AI utilised was particularly good at proposing frameworks, such as Goldratt's Theory of Constraints, which offered a strong scholarly basis for comprehending Twinkies Nails' limitations. However, the primary disadvantage was the AI's tendency to recommend difficult, wide-ranging research techniques (such as intricate multi-stage surveys) that were quite impractical for me, a student. In order to accommodate my local time and location constraints, I had to simplify my recommendations.

4. Analysis

This process demonstrates how crucial it is to adopt a proactive approach to using AI tools, rather than relying on predetermined responses. I found that although Generative AI can speed up ideation and terminology searching, there is still a need for human judgement to check the accuracy of the sources and to test the feasibility of a research design in a real-world scenario. The project's location in TTDI prompted me to take into account the practicalities of real life such as festive seasons (Hari Raya, Chinese New Year, etc.) and the availability of skilled artisans in the area.

5. Conclusion

In a nutshell, discovered that creating a research proposal requires striking a balance between practical viability and theoretical depth. Additionally, I found that checking AI-generated outputs against validated academic literature greatly enhanced my analytical abilities. If I had to go through this process again, I would take more time to create more precise AI instructions at first in order to minimise the amount of tweaking that would be required later.

6. Action Plan

As I progress to my final-year and future careers, I will continue using Generative AI as an initial brainstorming tool, while also having to develop good personal verification habits. I would like to enhance my main data collection methods such as semi-structured interviewing, which will enable me to undertake effective and efficient business research at a more localised level to support my academic development.

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Appendices

