



LEVEL 4 ASSESSMENT SPECIFICATION

Student name:	JOHN NIGEL JAMES	Student ID number:	1603327
Programme:	HNC/D IN Mechanical Engineering/Electrical/Electronic Engineering		
Module:	Management, Innovation and Sustainability		
Module code:	M5X01176	Contribution to Overall Module Assessment (%):	50%
Lecturer:	Coral Planas	Internal Verifier:	Dr. R. Kadhim.
Assignment Title:	Engineering Case study	Word count (or equivalent):	1200 min
Submission deadline:	02/05/2019	Return date of provisional marks & written feedback:	23/05/2019
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. Penalties for late submission: Up to one week late, maximum mark of 40%. Over one week late, 0%. Only the Extenuating Circumstances Panel may approve a change to submission dates.		
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.		

Module Learning Outcomes (from module syllabus)

- 1) Demonstrate the ability to apply appropriate theoretical and practical methods to the analysis and solution of structures and dynamics engineering problems.
- 2) Demonstrate key transferable skills in problem formulation and decision making, interpreting experimental results.

TASK DESCRIPTION

Assignment Brief

This module introduces the student to the social and commercial context of the engineering industry in terms of business environments including: management organisation and administration, regulation and legislation.

Assignment Scenario

You have been working as an Engineering Technician for a small to medium sized engineering company manufacturing parts for the aircraft industry. Your duties are to ensure the production process operates efficiently and that all aspects of installation and maintenance are carried out in accordance with recognised procedures and cost effectively.

In recent years the company has seen a steady decline in turnover and profit, mainly resulting from increased competition from within the UK and overseas along with a lack of investment in technologically advanced systems and machinery.

The company has advertised the position of 'Engineering Project Manager' with a good salary, private health insurance and a final salary pension. The position is being advertised internally and externally.

Applicants are required to (a) deliver a 10 minute PowerPoint presentation outlining the key factors that influence organisational success and to balance them against the key factors that could potentially lead to organisational failure and (b) write a structured report (minimum 3000 words) encompassing the factors outlined in (a) detailing how those factors can be utilised to address the following issues:

- Falling Sales
- Limited European and International customer base
- 10% reduction in production targets on previous year
- 5% increase in product rejection rates
- Escalating maintenance costs
- Unusually high turnover of staff
- 3 '7 day' + lost time accidents

Your research should result in a professional report and PowerPoint presentation with clear structure, aims, objectives and outcomes based on your research. This presentation and report can then be delivered and submitted as required as part of the job application process.

MARKING CRITERIA AND STUDENT FEEDBACK

This section details the assessment criteria. The *extent* to which these are demonstrated by you determines your mark. The marks available for each criterion are shown. Lecturers will use the space provided to comment on the achievement of the task(s), including those areas in which you have performed well and areas that would benefit from development/improvement.

Common Assessment Criteria Applied		Marks available	Marks awarded						
1. Research-informed Literature Extent of research and/or own reading, selection of credible sources, application of appropriate referencing conventions.									
You have included a lot of understanding of the knowledge relating to this unit, unfortunately you have not included referencing.		30	14						
2. Knowledge and Understanding of Subject Extent of knowledge and understanding of concepts and underlying principles associated with the discipline.									
a good understanding of the areas involved in this assignment. most reference to theorists' work would have enhanced your work.		25	15						
3. Analysis Analysis, evaluation and synthesis; logic, argument and judgement; analytical reflection; organisation of ideas and evidence									
A very good analysis made of the issues facing the company with some practical examples used.		15	11						
4. Practical Application and Deployment Deployment of methods, materials, tools and techniques; application of concepts; formulation of innovative and creative solutions to solve problems.									
You have demonstrated excellent use of skills involving analysing companies, and considered various solutions.		15	11						
5. Skills for Professional Practice Attributes in professional practice: individual and collaborative working; deployment of appropriate media; presentation and organisation.									
A basic presentation, which only focused on the scenario. You didn't look at a company as a whole.		15	7						
Assignment Mark Overall (Assessment marks are subject to ratification at the Exam Board. These comments and marks are to give feedback on module work and are for guidance only until they are confirmed.)		<table><tr><td colspan="2">Late Submission Penalties (tick if appropriate)</td></tr><tr><td>Up to one-week late</td><td></td></tr><tr><td>Over one week late</td><td></td></tr></table>		Late Submission Penalties (tick if appropriate)		Up to one-week late		Over one week late	
Late Submission Penalties (tick if appropriate)									
Up to one-week late									
Over one week late									
		58	%						

HND Electrical and Electronic Engineering

Management, Innovation and Sustainability

Module M5X01176

John Nigel James
1603327

Tim Clark
Coral Planas

An excellent
analysis of
the company,
but you
have not
referred to
any theories
or studies.

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The Assignment Brief

You have been working as an engineering technician for a small to medium sized engineering company manufacturing parts for the aircraft industry. Your duties are to ensure the production process operates efficiently and that all aspects of installation and maintenance are carried out in accordance with recognised procedures and cost effectively.

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Applicants are required to:

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- b) Write a structured report (minimum 3000 words) encompassing the factors outlined in (a), detailing how those factors can be utilised to address the following issues:
 - i. Falling Sales
 - ii. Limited European and international customer base
 - iii. 10% reduction in production targets on previous year#
 - iv. 5% increase in rejection rates
 - v. Escalating maintenance costs
 - vi. Unusually high turnover of staff
 - vii. 3 “7-day” + lost time accidents

Your research should result in a professional report and PowerPoint presentation with clear structure, aims, objectives and outcomes based on your research. This presentation and report can then be delivered and submitted as required as part of the job application process.

Introduction

The purpose of this report is to provide feedback on a business analysis carried out on HotAir Aerospace Ltd. The analysis will be conducted to identify the causes behind issues which have been identified internally and to recommend improvements to address those issues and hence facilitate the growth and future success of HotAir. The report is primarily aimed at senior management but involves all stakeholders within the company.

The process begins with a SWOT and PESTLE analysis of HotAir. This identified the strengths and weaknesses within the company as well as any external threats. It also provides an opportunity to analyse the climate that HotAir is trading in and to identify changing trends which could influence the future operation of the company.

The results of the SWOT and PESTLE will be analysed and the key factors that influence success or could potentially lead to failure identified. These will then be applied to address the issues identified in the individual business areas (See table A).

The outcome of the report is a summary and recommendations to address the issues within the company and to provide a robust and clear pathway to securing a continual growth to future success of HotAir.

Table A – Issues identified internally

- Falling sales
- Limited European and international customer base
- 10% reduction in production targets on previous year
- 5% increase in product rejection rates
- Escalating maintenance costs
- Unusually high staff turnover
- 3 x “7 day plus” lost time accidents

✓ a good introduction.

The Analysis

SWOT analysis

HotAir Aerospace Ltd - SWOT Analysis

STRENGTHS	WEAKNESSES
• Trained workforce • Existing customers • Established suppliers • Knowledge of existing products • Simplified and focused structure	• Falling sales • Outdated technology and equipment • Struggling to meet deadlines • High maintenance costs
OPPORTUNITIES	THREATS
• Aviation industry in positive growth • Change in industry focus (Long haul to short haul) • Brexit	• Increase in competition • Increase in the rate of advances in technology • Brexit

Strengths

Trained workforce and knowledge of existing products – HotAir's existing workforce is familiar with the product specification, equipment, materials and required standards of the production process and so will not require initial training in order to carry out their tasks.

Existing Customers – An established base of existing customers ensures a ready market for completed products, reducing overall marketing costs.

Established suppliers – Reliable and timely supply of base materials and components ensures a more cost-effective production process. HotAir's good credit profile and prompt settlement of invoices has led to a build-up of trust resulting in priority of supply and the less likelihood of major price increases should shortages occur.

Weaknesses

High maintenance costs, outdated technology and falling sales – HotAir's lack of internal investment in new technology and equipment has led to an increase in maintenance costs and in turn an increase in machinery downtime. This has resulted in missed production targets and higher rejection rates, all culminating in falling sales. ✓

High staff turnover - Outdated equipment and machinery makes production tasks more difficult contributing to a poor working environment. This coupled with the perceived sense of failure due to missed production targets and falling sales results in low morale and a disillusioned work force with a distinct lack of motivation. Staff leaving HotAir need to be replaced resulting in increased costs for HR, training and a slow-down in production. ✓ good.

Opportunities

Aviation industry growth – A positive global forecast in the growth of the aviation industry in the next 20 years provides an opportunity for HotAir to consolidate its existing position and plan for future expansion. Investment now will ensure the availability of a high-quality product to an expanding market. ✓

Change in industry focus – The focus of the travelling public has shifted from traditional long haul to multiple short haul flights resulting in an increase in the requirement to manufacture more (smaller) aircraft. This will increase demand for high quality parts that HotAir can supply to the industry. ✓

Brexit – The possibility of a hard Brexit resulting in the UK trading under the World Trade Organisation rules will potentially to open up new markets for Hotair. Preparation now will ensure the readiness of the company to offer its products to an expanded global market. An orderly Brexit with new trade agreements in place would allow the industry an opportunity to look in upon itself and to refresh existing contracts and agreements. ✓

Threats

Increased competition – From both the UK and overseas has seen a decline in sales. This is due to HotAir's lack of internal investment in sales and marketing. ✓

Increase in the rate of advances in technology – HotAir's failure to invest in new technology has resulted in the company falling "behind the curve" in terms of modernisation to its manufacturing process. ✓

Brexit – International trade has left Hotair exposed to the fluctuations in the exchange rate brought about by the uncertainty of Brexit. ✓

A good analysis of the company.

PESTLE Analysis

HotAir Aerospace Ltd – PESTLE Analysis

Political – The aviation industry is highly regulated by government. The requirement for high standards of materials and manufacture increases the cost of components, materials, labour and high-level quality assurance. ✓

Economical – The uncertainty surrounding the UK's impending withdrawal from the European Union is causing the exchange rates to fluctuate. The Pound has dropped significantly against the Euro which pushes up the cost of exporting parts into the EU. The potential for trade tariffs to be applied to imports into the EU will also raise costs within UK manufacture. ✓

Social – The social trend towards single journey long-haul flying is declining as can be seen by the recent cancellation of the Airbus A380 program. The preference now is for multiple short-haul journeys instead. This will lead to an increase in the requirement for new, smaller aircraft which will in turn provide a greater demand for high quality aircraft component parts. *evidence? reference?*

Technological – Advances in materials, machinery and production processes drive the need for inward investment to enable HotAir to produce the highest quality components at a competitive cost. This goes hand in hand with the need to invest heavily in research and development to keep up with the fast-changing pace of technology. ✓

Legal – External legislation (Governmental and Industrial) dictate the standards to which HotAir's products must be manufactured. The inherent cost of quality materials and component parts for the aviation industry and the assurances sought of such from suppliers, increases overheads to a level over and above that of standard manufacturing.

Internally, health and safety regulation and legislation, minimum wage levels and specialist training to industry standard must be adhered to in order to be permitted to trade. ✓

Environmental – The consumable materials and by-products of the manufacturing process present a risk to health and the environment. To this end HotAir work closely within H&S and COSHH legislation and consult regularly with local government environmental departments.

Great emphasis is put onto suppliers as to the source of their materials. They must be traceable to source and come from ethically sound producers. ✓

*A good
PESTLE
analysis*

Key Factors

In recent years HotAir has seen a steady decline in turnover and profit. The reasons for this have been identified as an increase in competition from both within the UK and overseas, along with a lack of investment in technologically advanced systems and machinery.

From the SWOT and PESTLE analysis it can be seen that there are key factors arising that can influence the success or failure of HotAir

Falling Sales: - One of the key factors identified as a weakness in the SWOT analysis was the outdated technology and equipment in use in the production process. This is a direct result of complacency on the part of the management as they have failed to keep up with advances in technology through lack of investment. This has led to an increase in maintenance costs in the rectification of faults, leading to lost production hours due to machinery downtime. This also leads to staff frustration and lowers morale as the workforce aren't able to do their jobs properly. A cost analysis should be carried out to establish the cost effectiveness of investing in new more modern equipment and processes backed up by a robust preventative maintenance regime, against long term lease of the equipment. The leasing option must include a maintenance and repair package to negate duplication of costs from an internal maintenance team. Market research will need to be invested in to assess if the company products are still in demand. Scrutiny of current marketing and advertising structures will ensure the correct products are promoted to the correct market at competitive prices. Competitors pricing must be considered, and the company supply chain examined for cost effectiveness and if necessary, new suppliers/prices negotiated. This would ensure the best quality components are sourced at the best price to enable the end product to be competitive. Existing and potential customers/markets must have visibility of the product. Targeted marketing to potential new customers within industry press and online advertising would reach more customers, with introductory discounts and loyalty bonus schemes to existing customers considered.

Limited European and International Customer Base – This has been identified as being due to the narrow focus of the business. Short sightedness and failure to look outward has led to HotAir being behind the drag curve when it comes to competition. Market research must be carried out to identify potential gaps in the market with respect to diversifying production. The global trend towards more frequent short haul travel and the subsequent increase in demand for smaller aircraft types must be taken advantage of. Targeted marketing will then lead to new customer engagement both at home and overseas with expansion into Europe or even globally under the World Trade Organisation rules, should the Brexit process ultimately take that direction.

10% Reduction in production targets on previous year – As a result of falling sales, and to a degree a lack of foresight by the company leadership in terms of ambition and investment the production targets have been reduced year on year. This has resulted in a downward trend with respect to overall production and must be checked and reversed if HotAir is to compete.

5% Increase in product rejection rates – Although HotAir has a trained workforce in place there is still a requirement for ongoing training to keep staff current and also to bring new staff up to standard. Failure to invest in new technology and to maintain standards through training has resulted in this increase. Quality control is a major factor in the maintenance of standards in the aerospace industry and the implementation of and investment into a new department would ensure these standards are met. The effect of this would be to ensure a well-trained, motivated workforce through continued self-improvement, achieving high standards of workmanship and pride in the product thus reducing rejection rates thus achieving production targets.

✓ excellent content but SD referencing -

Escalating Maintenance Costs – Outdated machinery and processes undoubtedly increase maintenance costs exponentially over time. The recent lack of investment in machinery and processes has manifested itself in an increase in maintenance costs. Timely investment in new technology, machinery and processes although costly, must be weighed against the cost saving through reduction in maintenance costs and production down time. Long term leasing of equipment together with a support package may be more cost effective in the long term than buying new. In the short term, a robust preventative maintenance program must be implemented and maintained in order to reduce breakdowns.

✓ good.

Unusually high turnover of staff/3 x "7 day plus" lost time accidents – Falling sales, missed deadlines, machinery breakdowns and workplace accidents are all having an effect on staff morale. The workforce is unable to carry their tasks efficiently and to their own high standards due to poor working conditions and outdated machinery. This leads to a perceived sense of failure on their behalf, having a negative effect on morale. The high accident rate is also giving staff cause for concern as to their own workplace safety and so is leading to absenteeism and resignations. This high rate of staff turnover is costly due to the requirement to train new workers and also indirectly a slowing down of production rates. Good leadership is called for to motivate the workforce and restore their sense of self-worth and thus satisfying their social and esteem needs. This could be achieved by offering a higher rate of pay to those achieving higher production. This in turn would increase production and so increase profits and allow bonus payments to be made to those hitting the targets. A disadvantage of this is that it may penalise those workers unable or unwilling to work harder and thus demotivate them. Including the workforce in decision making as to how the company could make improvements is essential as is making them aware of their value to the company. Periodically introduce subtle changes to the working routine and environment like longer/staggered rest periods, offering different refreshments or even changing the layout of the workstations. This would have the effect of refreshing the workers and removing staleness and complacency and motivating the staff as a whole, but without the disruption of major change.

✓ This is very good and relates to various theorists studies,

but you have not referenced.

Summary

On overall assessment of the case study and considering the outcomes of the SWOT and PESTLE analysis the following conclusions and recommendations can be drawn:

The current leadership style of the company is not suited to the mission of HotAir. It can be seen from the issues identified that the leaders of HotAir are somewhat Laisses Faire in their style, in that the middle management and staff have been left to their own decision making with respect to routines and working practices. This has led to complacency in the working routines and a decline in working ethos within the work force as well as the material condition of essential machinery, premises and assets. This is evident by the high number of sick days, high staff turnover and machinery breakdowns as identified. *good*

HotAir can succeed. The company can be turned around by the board initially adopting a more manager-centred leadership style. Identify the shortcomings from the business analysis and act upon them by putting into place a robust business case. Initially the board must make the crucial decisions and disseminate them to the workforce as changes that must happen if the company is to turn the corner. The changes must be communicated in an open and honest fashion, however unpalatable they may seem, but be demonstrated as to why the changes are required and the intended outcome for HotAir. A period of consultation may then be entered into with the intent being to discover the state of the company as viewed from the workforce perspective. Ideas for change for improvement may be invited at this stage but only once the initial "change for good" period has been actioned. *good!*

Inward investment in both people and assets is essential.

- Conducting market research will identify the need for the product as well as the position of HotAir within the industry with respect to profile and competitiveness.
- Current clients must be shown evidence of commitment to quality and future production levels as well as new clients being identified and actively targeted.
- Investment in new machinery and infrastructure including research and development to remain current. This will lead to more efficient working practices generating higher production rate. Reduction in rejection rates and a decrease in machinery down time will lead to achieved production targets.
- Investment in people – training on new machinery and production methods. New working practices, shifts, flexi-working coupled with engagement in any proposed change at an early stage – will lead to a more content, motivated workforce. A direct result of this would be a decrease in sick days taken, increased loyalty and a happier more productive workforce.
- The opportunity afforded by the impending departure of the UK from the EU should be capitalised upon. The potential new markets becoming available under WTO trading rules should the UK leave with

Excellent practical ideas.

no trade agreement with the EU should be taken advantage of by having in place a policy for trade and advertising to these new markets.

In short there is a lot of potential for the company to succeed on condition that these recommendations are not cherry picked but implemented as a whole. A change of leadership is not required but a change in leadership style from *laisses faire* to tell and sell initially and once established on the course to continued improvement and success, to one of consult, is essential.

✓ well done!

References

Lineberger, R. 2019. The 2019 Global Aerospace and Defence Industry Outlook. Deloitte.
Management, Innovation and Sustainability. M5X01176 course material.
M5X01176 course classroom tutorials

An interesting and relevant powerpoint. Unfortunately you didn't keep it general, you made it specific to the scenario.



Management, Innovation and Sustainability

Assignment M5X01176

Coral Planas

Tim Clark



HotAir Aerospace Limited

- Ditch the Drag and increase LIFT

Contents

- Introduction
- SWOT analysis
- PESTLE analysis
- Key Factors
- Summary & Recommendations

INTRODUCTION

?

SWOT Analysis

STRENGTHS

- Trained Workforce
- Existing Customers
- Established Suppliers
- Product Knowledge
- Structure

WEAKNESSES

- Falling Sales
- Outdated Technology
- Missed Deadlines
- High Maintenance Costs

OPPORTUNITIES

- Industry Growth
- Change in Focus
- Brexit

THREATS

- Competition
- Technology
- Brexit

good

PESTLE Analysis

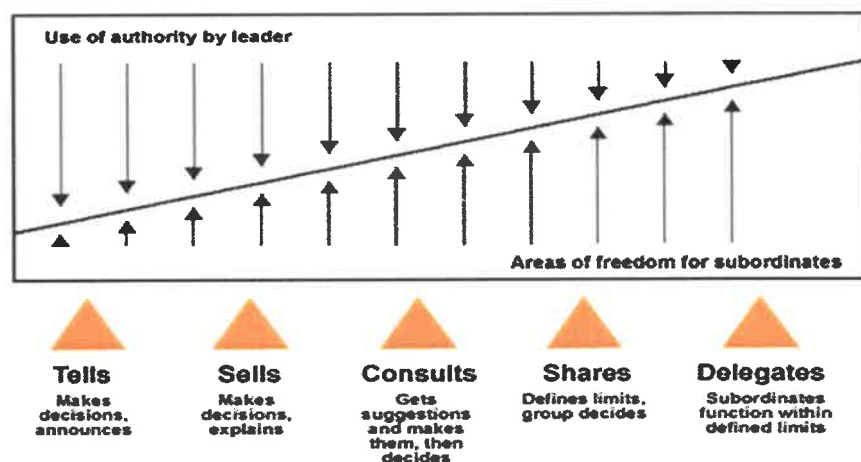
- Political
- Economical
- Social
- Technological
- Legal
- Environmental

Key Factors

- ▀ Falling Sales
- ▀ Limited European/International Customer Base
- ▀ 10% reduction in Production Targets
- ▀ Escalating Maintenance Costs
- ▀ Unusually High Staff Turnover



Tannerbaum & Schmidt Leadership Continuum





Recommendations

- Market Research
- Commitment to Current Clients
- Investment
- New Machinery/Processes/Infrastructure
- People
- Future opportunities





Any Questions?

Student Self Evaluation Form

Student name:	JOHN NIGEL JAMES	Student P number:	1603327
Programme:	HND	Year of programme	2018-19
Assignment Title:	MANAGEMENT INNOVATION & SUSTAINABILITY		

This section repeats in brief the common assessment criteria detailed on previous pages. The *extent* to which these are demonstrated by you determines your mark. Using these criteria, tick the box that best indicates the level of achievement you feel you have achieved with regard to each of them.

Common Assessment Criteria Applied	Level of Achievement						
	REFER		3 rd	2:2	2:1	1 st	1 st
	OUTRIGHT FAIL	UNSATISFACTORY	SATISFACTORY	GOOD	VERY GOOD	EXCELLENT	EXCEPTIONAL
1. Research-informed Literature	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☒	☐
2. Knowledge and Understanding of Subject	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☒	☐
3. Analysis	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☒	☐
4. Practical Application and Deployment	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☐	☒
5. Skills for Professional Practice	0-29%	30-39%	40-49%	50-59%	60-69%	70-79%	80-100%
	☐	☐	☐	☐	☐	☐	☒

PLEASE COMMENT ON AREAS IN WHICH YOU FEEL THAT YOU HAVE PERFORMED WELL	PLEASE COMMENT ON AREAS YOU FEEL THAT YOU NEED TO DEVELOP
PRESENTATION PREP + DELIVERY RESEARCH ESSAY WRITING	TIME MANAGEMENT

Student's Name	JOHN NIGEL JAMES	Date	2 nd MAY 2019
Student's Signature			

