1. Report Objective

A Risk Assessment for Pampered Pets.

Pampered pets is within the scope of GDPR. If GDPR is breached, then pampered pets could face financial penalties and damages to its reputation.

2. Current Business Review

2.1 Selection of a Risk Methodology

The Factor Analysis of Information Risk (FAIR) Methodology was selected for the risk assessment due to the following (Reciprocity, 2020):

- The framework has a defined taxonomy and is compatible with other risk management frameworks.
- It is suited to small organizations where historical data information is lacking.
- It shows risk in terms of the potential financial impact.
- It is widely used, easy to understand, has no-cost and is scalable.
- A qualitative risk method was chosen, because historical data is not available.

2.2 Identified Risks

Below is a summary of the current high-risk threats (for detailed breakdown, see appendix A):

- Shared infrastructure.
- Data breach/leakage.
- Inability to determine or investigate malicious attack(s).
- No personal data categorization.
- Inability to identify employees' log-in credentials.
- Unauthorized access
- No regular patching.
- · Lack of policies like: security policy
- Denial-of-service attack
- Man-in-the-middle attack
- Non-standard network architecture
- Physical injury

• Virus/Malware exposure

2.2 Risk Analysis Summary

- 73% of risks were categorized as high.
- Pampered pets is currently exposed to a high amount of regulatory risk.
- A detailed risk breakdown is in Appendix A.

Financial Loss Analysis

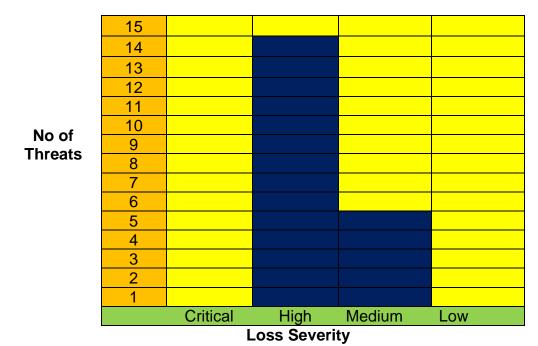
Rating	Likely Annualiz	ed Loss Exposure Range	Number of threats
Critical	\$1M	Or More	0
High	\$500K	\$1M	14
Medium	\$250K	\$500K	5
Low	\$0	\$250K	0

Threats by Loss Category



Loss Category

Threats by Risk Severity



2.4 Proposed Mitigations for High-Risk Threats

- Implement VLAN segregation and prioritize network traffic.
- Daily data back-up.
- Implement a detailed audit trail, which is backed-up off line and analysed.
- Categorise customer data (GDPR).
- Restrict use of USB/CD-ROM.
- Remove generic log-in credentials
- Segregate employee roles
- Enforce logout of computer sessions
- Enforce strict password format, multi-factor authentication and regular passwords expiration.
- Enforce monthly patching
- Implement security, password and incident management policies.
- Cybersecurity Insurance.
- Encrypt data.
- Set-up wireless router with Personal/Pre-Shared Key encryption mode.
- Implement firewall, antivirus and antimalware in the system.

3. Proposed Digitalisation Risk Assessment

3.1 A selection of a risk methodology

To ensure consistency, the FAIR risk methodology was used for the digitalisation process.

3.2 Proposed changes

- Implementation of SaaS (Software as a Service) solution, which has the integration between an ERP and E-commerce platform, such as Oracle's NetSuite.
- An ERP system provides inventory management and financial forecasting, and not the user experience of e-commerce systems.
- The vendor solution needs to include a well-known payments engine.
- Below are the reasons for selecting a SaaS solution (McCue, 2020):
 - o Reduction in IT costs.
 - No need for in-house IT/Cybersecurity expertise.
 - o Enforces software upgrades.
 - Real-time reporting and analytics.
 - There is no need to invest in and support additional IT infrastructure.

- o Lower upfront cost, which reduces the risk if the company profits don't grow as expected.
- o Offers scalability.
- Upgrade of desktop computers.
- Implementation of a private network, firewall and separate wireless network for employee's.
- Cyber Security training.
- Social media presence and on-line marketing that gives a competitive advantage for Pampered pets.

3.3 Identified Risks

High category threats are summarized below (for detailed breakdown, see Appendix B):

No	Threat Summary	Proposed Mitigation
1	Cyber-attacks/data leakages	Data encryption.
	compromises Customers' data.	
2	Software release impacting the system.	Change management process.
3	SaaS is based on web delivery (internet	Implement VLAN segregation and QOS to prioritise network
	failure results in unavailability of the	traffic.
	system).	
4	Lack of transparency.	The SaaS vendor should be externally audited regularly.
5	An incident occurs which is not managed	Vendor Incident Response plan.
	and reported correctly	
6	Unauthorized access to data	Implement Multi-Factor Authentication, Authorizations and
		strong password policy

3.4 Risk Analysis Summary

The high category risk has been reduced to 7% from 73% of the total number of threats.

When adopting a SaaS model, the regulatory risk is significantly reduced because a well-known cloud provider such as Oracle has multiple existing controls.

Comparison of the below graphs, for the current state and post digitalisation shows the shift in risk.

Appendix B contains a detailed risk breakdown.

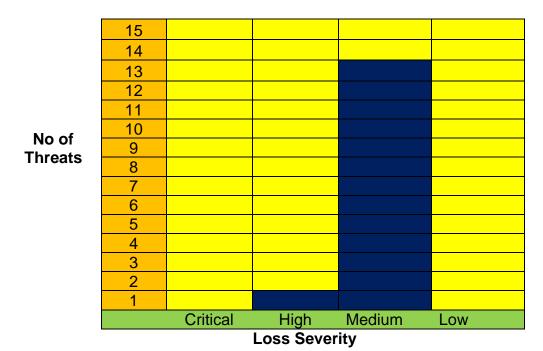
Financial Loss Analysis

Rating	Likely Annualize	ed Loss Exposure Range	Number of threats
Critical	\$1M	Or More	0
High	\$500K	\$1M	1
Medium	\$250K	\$500K	13
Low	\$0	\$250K	0

Threats by Loss Category



Threats by Risk Severity



3.5 Proposed Timeline

Phase 1 – Vendor due-diligence (4 weeks)

Phase 2 – Vendor pilot (4 weeks)

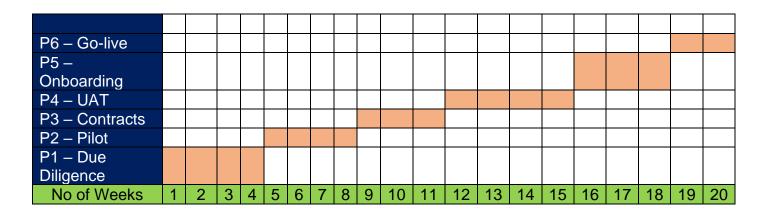
Phase 3 – Contractual Negotiations (3 weeks)

Phase 4 – User acceptance testing (4 weeks)

Phase 5 – Data Onboarding (3 weeks)

Phase 6 - Phased go-live (2 weeks)

Total duration - 20 weeks



4. Summary and Recommendations

- 1) The recommendation is to have an on-line presence because:
 - The business could grow by 50%
 - o In 2020, 93% of consumers used the internet to find a local business (Murphy, 2020), so it is realistic to expect that the business would grow by 50% with an on-line presence and without an on-line presence, pampered pets could lose up to 33% of its current client base.
- 2) Changing to an international supply chain will reduce costs by up to 24%
 - The advantage of an international supply chain is that there are lower operating and labour costs during manufacturing which will reduce costs (Anon, N.D.)
- 3) The recommendation is to digitalize the current business due to:
 - The growth potential (i.e. the business can grow by 50%).
 - Pampered pets will lose customers and market share without digitalization
 - The current infrastructure cannot support the required growth.

 If the status quo is maintained then pampered pets is subject to significant regulatory risk, (resulting to significant fines and reputational damage).

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Appendix A – Current Threats and Mitigations Analysis

Evaluation of current threats and risks, and proposed mitigations

Below is a summary of the analysis which was carried out for the present state of risk for pampered pets, and uses the FAIR risk methodology. Proposed risk mitigations are also included.

The below table structure is taken from the Open Group Guide Risk Analysis Process for FAIR:

Valuation of Loss Key:

	Most Likely Annualiz	Most Likely Annualized Loss Exposure (ALE) Falls							
Rating	E	Between							
Critical	\$1M	Or More							
High	\$500K	\$1M							
Medium	\$250K	\$250K \$500K							
Low	\$ 0	\$250K							

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Community	Туре		of Loss	
4					5 1 6 6	1.12.1	
1	Computers	Shared	Employees	Human	Productivity	High	Implement VLAN
		Infrastructure.		Error			segregation and QOS
							(Quality of Service) to tag
							and prioritize network
							traffic based on business
							needs.
2	Customer	Data Loss -	Employees	Error	Fine	High	Backup data on a daily
	data	Losing or failing to			Judgements		basis
		back up data					
3	Customer	Not able to	Cyber	Malicious	Fine	High	Implement a detailed
	data	determine or	Criminals		Judgements		audit trail, which is
							backed-up off line and

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Community	Туре		of Loss	
		investigate a					analyzed for maliciaus
		investigate a					analysed for malicious
		malicious attack					activity on a regular basis
4	Customer	Data Categorization	Cyber	Malicious	Fine	High	Categorise customer data
	data		Criminals		Judgements		which is personal data
							under GDPR
5	Customer	Data breach - data	Cyber	Malicious	Fine	High	Encrypt customer data in
	data	leaked or	Criminals		Judgements		transit and while
		unintentionally					persisted.
		exposed					Use of USB/CD-ROM on
							network devices can be
							restricted.
							Encrypt passwords

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Community	Туре		of Loss	
6	Data and	Generic privileges	Cyber	Malicious	Fine	High	Remove generic login id's
	stock	and so the user	Criminals		Judgements		and enforce individual
		cannot be identified	Employees				login id's
7	Data	Unauthorized	Cyber	Malicious	Fine	High	Segregate roles so that
		access -	Criminals		Judgements		not every employee has
		There is no standard	Employees				access to required
		password format					inventory and client data
		Passwords do not					Enforce logout of
		expire					computer sessions
		No multi-factor					Enforce strict password
		authentication					format
							Enforce passwords to
							expire on a regular basis

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Community	Туре		of Loss	
							Implement multi factor
							authentication
8	Customer	There is no regular	Cyber	Malicious	Fine	High	Enforce monthly patching
	Data	patching of the two	Criminals		Judgements		
		computers or the					
		wireless hub					
9	Stock	Loss Prevention - no	Cyber	Malicious	Replacement	Medium	Reconcile stock regularly
		active monitoring for	Criminals		(stolen assets)		to identify any 'missing
		malicious behaviour	Employees				stock'

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Community	Туре		of Loss	
10	Customer	Regulatory fine	Cyber	Malicious	Fine	High	Implement a security
	Data	because there is no	Criminals		Judgements		policy, password policy,
		security policy, no					incident management
		password policy, no					policy
		incident					
		management policy					
11	Computers	Denial of service	Cyber	Malicious	Productivity	High	Implement Security
		attack	Criminals				solutions like WAF,
							Network Firewalls.
							Update and patch
							firewalls and network
							security programs.

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Community	Туре		of Loss	
12	Computer	Man-in-the-Middle	Cyber	Malicious	Replacement	High	Encrypt data, implement
		(MIM) Attack	Criminals				TLS (Transport Layer
							security)
13	Wireless	Non-standard	Cyber	Malicious	Fines	High	Set wireless router with
	router	network architecture	Criminals		Judgements		PSK (Personal/Pre-
							shared key) mode of
							WPA or WPA2 encryption
14	Stock	Theft /	Thieves	Malicious	Replacement	Medium	Install a monitored alarm
		Loss/Property					for the warehouse and
		Damage					CCTV. Buy insurance for
							stock damage
15	Employee	Physical Injury	Thieves	Natural	Fines	High	Ensure health and safety
					Judgements		checks are carried out

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Community	Туре		of Loss	
							and documented on
							regular basis. Have
							adequate insurance
							coverage in place
16	Pampered	Competitive rivalries	Competitor	Human	Competitive	Medium	Monitor competitors
	Pets				Advantage		Have a strategy of growth
							for the company
17	Pampered	Negative Reputation	Competitor	Human	Reputation	Medium	Monitor social media
	Pets		Customers				closely, have a social
							media presence and
							strategy, respond to
							comments left by
							customers

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Community	Туре		of Loss	
18	Employees	Key staff are off sick	N/A	Human	Productivity	Medium	Have a contingency plan if more than one member of staff is off sick
19	Data	Viruses & Worms	Cyber Criminals	Malicious	Fine Judgements	High	Install and maintain antivirus and antimalware software on user's systems and networked devices.

Appendix B - Strategic Proposal - Risk Assessment and Proposed Risk Mitigations

The below risk assessment is for the digitalization changes proposed.

A SaaS implementation will generate third party risk. The risk mitigations are also included.

The below table structure is taken from the Open Group Guide Risk Analysis Process for FAIR:

Valuation of Loss Key:

	Most Likely Annualized Loss Exposure (ALE) Falls							
Rating	Between							
Critical	\$1M	\$1M Or More						
High	\$500K	\$1M						
Medium	\$250K	\$500K						
Low	\$0	\$250K						

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Communit	Туре		of Loss	
1	Client	The system is unavailable to process client orders due to a new version of software being released which was not tested sufficiently by pampered pets	Employees	Error	Productivity	Medium	Agree a testing schedule with the vendor Allow sufficient time for testing new releases plus contingency
2	Customer Data	Customer personal data is compromised, due to a cyber attack	Cyber	Malicious	Fines/Judgem ents	Medium	Ensure strong encryption is in place for data to transit and when persisted

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Communit	Туре		of Loss	
			у				
3	Customer	Customer personal	Employees	Error	Fines/Judgem	Medium	Ensure strong encryption
	Data	data is compromised			ent		is in place for data in
		due to a data leakage					transit and when
							persisted
4	Client	SaaS is based on web	Employees	Error	Fines/Judgem	High	Implement VLAN
	orders	delivery and if the			ent		segregation and QOS
		internet fails there is					(Quality of Service) to tag
		no access to the					and prioritize network
		system					traffic based on business
							needs
5	Client	SaaS may run at lower	N/A	Error	Productivity	Medium	Agree performance SLA's
	Orders	speeds than on-					with the vendor

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Communit	Туре		of Loss	
			у				
		premise client or					Ensure that the internet
		server					speed is sufficient
6	Client	Limited customization	N/A	Error	Productivity	Medium	Perform a pilot to assess
	Orders	of the system					the system functionality
							as an initial phase, before
							any contracts are signed
7	Payments	There could be an	Employees	Error	Fines/Judgem	Medium	Ensure that the SaaS
		error when processing			ent		vendor uses a well known
		payments					payments engine
							Include a review of
							payments processing in a
							regular vendor audit

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Communit	Туре		of Loss	
			у				
8	Customer	Customer data is	Cyber	Malicious	Fines/Judgem	Medium	Ensure that in transit data
	Data	compromised as it	criminals		ents		is encrypted
		transits over the					
		internet					
9	Data	Insufficient data to	Cyber	Malicious	Fines/Judgem	Medium	Ensure that the vendor
		respond to or	criminals	Error	ent		has an incident
		investigate an incident	Employees				management process
							Ensure that the vendor
							keeps detailed logs and
							has log analysis tools
10	Data	Legal implications	Employees	Error	Fines/Judgem	Medium	The vendor needs to
		because data is hosted			ent		confirm where the data is
		outside of the UK					physically stored

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Communit	Туре		of Loss	
			у				
							The location of data
							storage should be
							included in the vendor
							contract
11	Data	Pampered pets is	N/A	Error	Fines/Judgem	Medium	The vendor needs to be
		unable to prove that it			ent		audited on a regular basis
		meets the regulatory					and provide evidence that
		requirements such as					regulatory obligations are
		GDPR					being met
							Routine security
							questionnaires should
							also be completed by the
							vendor

Threat	Asset at	Threat	Threat	Threat	Forms of Loss	Valuation	Threat Action (Mitigation)
No	Risk		Communit	Туре		of Loss	
			у				
12	Data	An incident occurs	Employees	Multiple	Fines/Judgem	Medium	The vendor should have
		which is not managed	Cyber		ent		a detailed incident
		and reported correctly	criminals				response plan which
							covers multiple scenarios
13	Data	Data is not retained for	Employees	Error	Fines/Regulato	Medium	Within the contract the
		the period required by			ry		vendor needs to state
		regulators					what the cloud retention
							policy is and how it is
							enforced
14	Data	Unauthorized access	Cyber	Malicious	Fines/Regulato	Medium	Ensure that multi-factor
		to data	criminals		ry		authentication exists