

Risk Identification Report for “The Pampered Pets”

This risk assessment and threat modeling utilized the OCTAVE-S framework because it focuses both on “operational risk and security practices” and is suitable for small businesses willing to take over their organization's security duty, as stated by Alberts et al. (2005). The same framework was used for the risk assessment of the current business status and the proposed changes. Although the OCTAVE-S framework was followed, the qualitative risk analysis was performed using a simple risk assessment matrix to calculate the total PI Scores (Probability x Impact) (P. M. Training, 2022).

Risk Assessment at the Current Status

Phase 1: Asset-Based Threat Profiles

The critical assets identified were:

- Computers and network:
 - a. Warehouse computer with a spreadsheet package.
 - b. Front desk computer.
 - c. Wireless gateway and a hub.
- Employees
- Store equipment and items:
 - a. Food preparation equipment.
 - b. Shelf/warehouse items.

c. Inventory asset (local market ingredients).

- Customers

Current protection strategies were not mentioned, but probably nonexistent. Based on the analysis of the critical assets, different threat profiles were generated (figure 1).

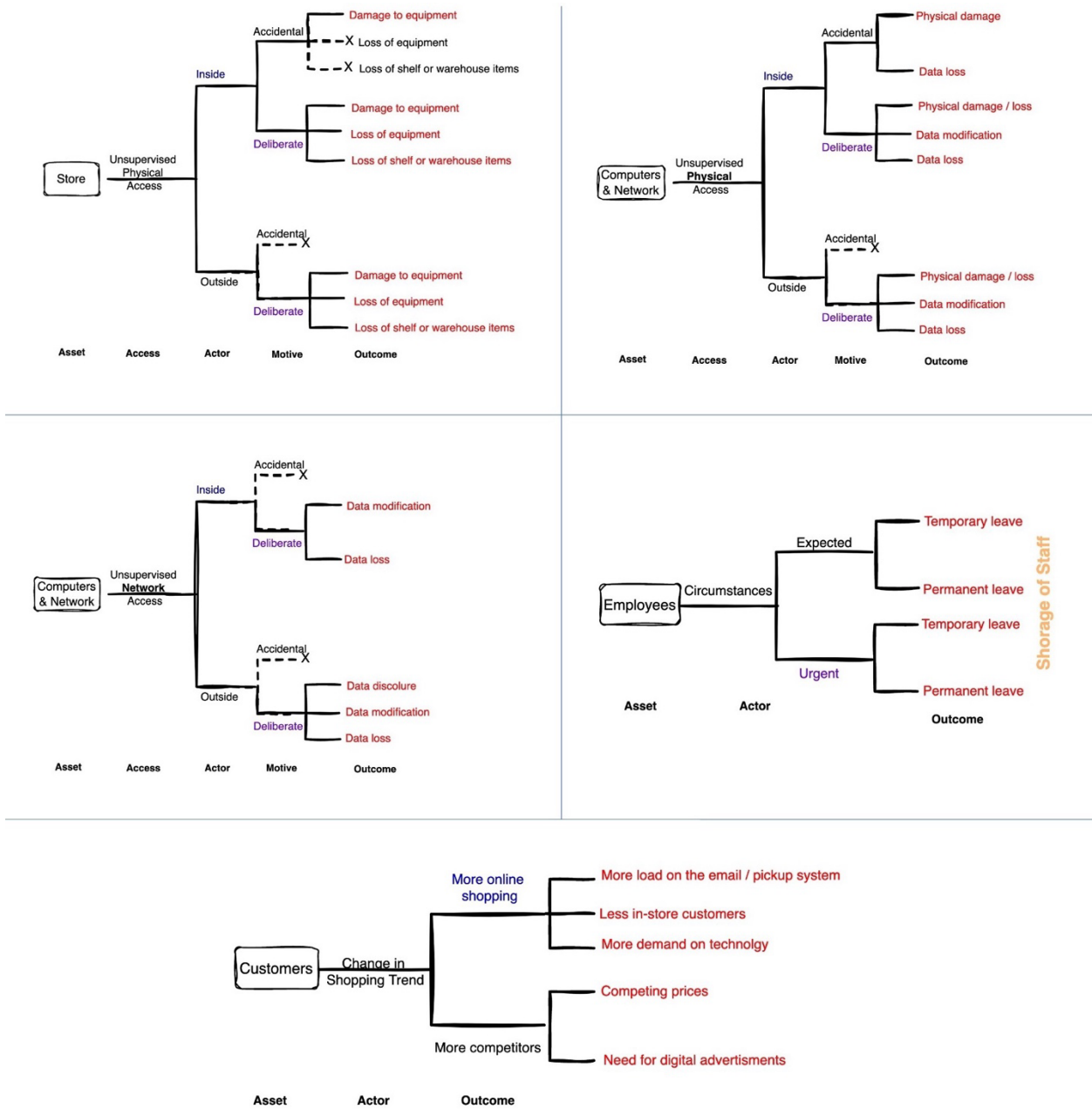


Figure 1 Threat Profiles of Critical Assets. "---X" means the possibility is nonexistent.

Phase 2: Infrastructure Vulnerabilities

In this phase, weaknesses in the infrastructure of the critical assets were identified. Weaknesses are listed in the purple boxes in figure 2.

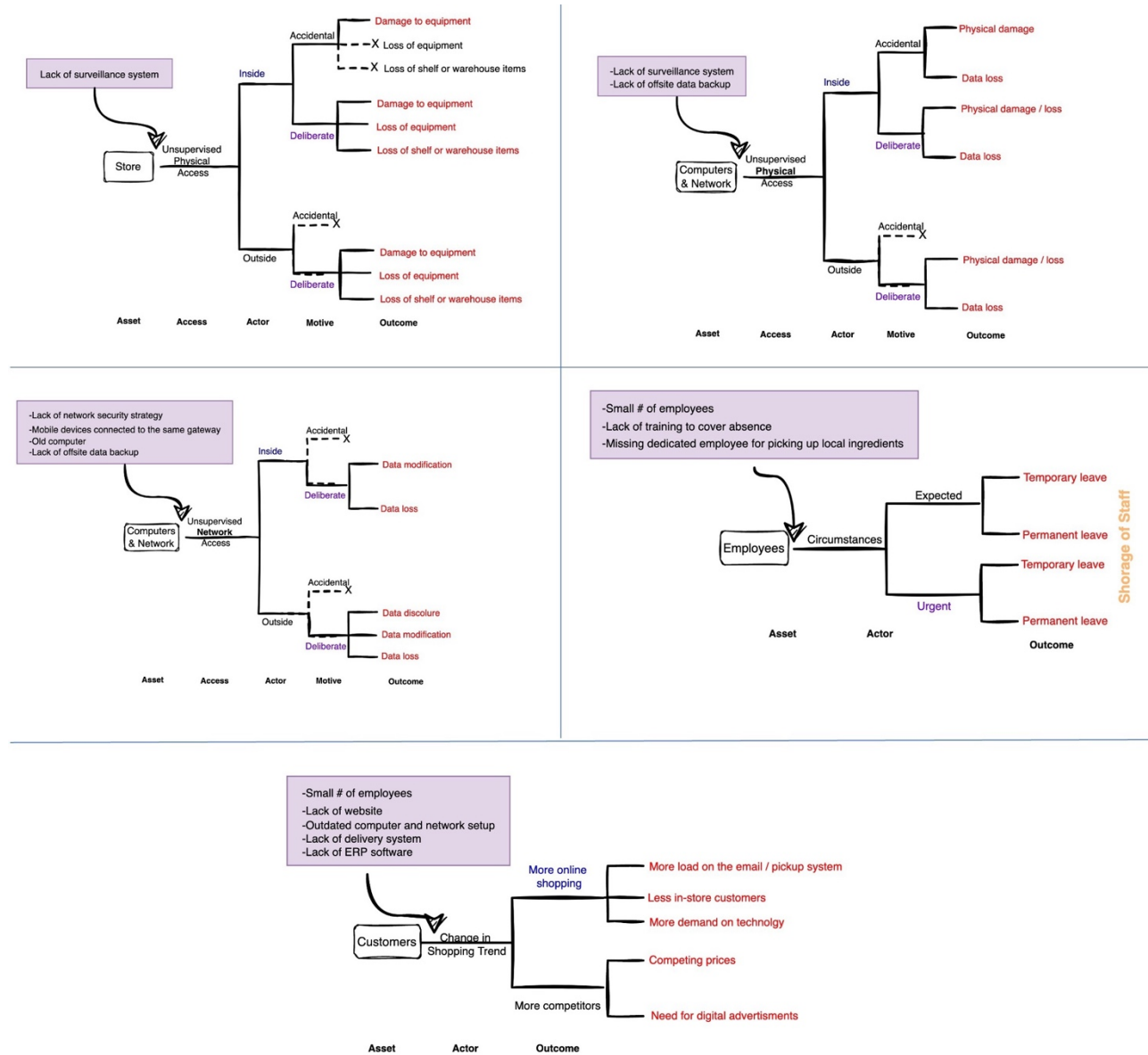


Figure 2 Weaknesses identified in phase 2 of the OCTAVE.

Phase 3: Security Strategy and Plans

The identified threat profiles were analyzed, and PI scores and total were calculated (Figure 3).

Asset	Actor	Threat	PROBABILITY 1 – 5	IMPACT 1 – 5	PI SCORE Prob x Impact
Store - Physical Access	Inside	Accidental damage to equipment	3	3	9
	Inside	Deliberate damage to equipment	2	3	6
	Inside	Deliberate loss of equipment	2	4	8
	Inside	Deliberate loss of shelf / warehouse items	2	4	8
	Outside	Deliberate damage to equipment	4	4	16
	Outside	Deliberate loss of equipment	4	5	20
	Outside	Deliberate loss of shelf / warehouse items	4	5	20
Computers & Network - Physical Access	Inside	Accidental physical damage	3	5	15
	Inside	Accidental data loss	3	5	15
	Inside	Deliberate physical damage / loss	4	4	16
	Inside	Deliberate data modification	4	5	20
	Inside	Deliberate data loss	4	5	20
	Outside	Deliberate physical damage / loss	2	5	10
	Outside	Deliberate data modification	2	5	10
Computers & Network - Network Access	Outside	Deliberate data loss	2	5	10
	Inside	Deliberate data modification	3	5	15
	Inside	Deliberate data loss	3	5	15
	Outside	Deliberate data disclosure	2	5	10
Employees	Outside	Deliberate data modification	2	5	10
	Outside	Deliberate data loss	2	5	10
	Circumstances	Expected temporary leave	3	2	6
	Circumstances	Expected permanent leave	2	4	8
	Circumstances	Urgent temporary leave	2	3	6
Customers	Circumstances	Urgent permanent leave	2	5	10
	Online shopping trend	More load on the email/pickup system	3	5	15
	Online shopping trend	Less in-store cutomers	2	5	10
	Online shopping trend	More demand on technology	2	5	10
	Online shopping trend	Competing prices	2	4	8
Online shopping trend	Need for digital advertisments	2	3	6	
Total					342

Figure 3 PI score for the current status of the business

Proposed Changes

A consumer survey showed that 19 % of online shoppers buy all their groceries online, and approximately 81% use both in-store and online shopping. 75% of the shoppers in the survey chose the home delivery option, 15% reported difficulties shopping at stores, and 70 % found online shopping more convenient and time-saving (Morganosky & Cude, 2000). However, some circumstances may significantly increase the rate of online shopping, like what happened during the COVID-19 pandemic. This change may persist after returning to the standard situation (Charm et al., 2020). Hence, one of the proposed changes for the “Pampered Pets” business is to provide an outstanding online shopping experience with home delivery.

Although an international supply chain may reduce the cost, being famous for its quality food and local ingredients, changing the suppliers of “Pampered pets” to an international supply chain is risky. The business might lose customers who have been loyal for years and committed to buying high-quality pet food prepared from trusted local market components.

Since the business is offering email orders and pick-up, it is not expected that a significant loss of customers would happen during the next few years. However, sticking to this option without expanding the online shopping experience, including payment and delivery options, will limit business growth.

The remaining proposed changes are as follows:

- Installation of a camera surveillance system.
- Upgrading the computers and network setup.
- Implementing secure network strategies and protocols, including the WIFI access of mobile devices.
- Set up an on-site and cloud-based (off-site) backup system.
- Purchase an ERP Software.
- Increase the number of employees and dedicate at least one of them to picking up local ingredients.

Risk Assessment with the proposed changes

The same threat profiles were used again for qualitative risk assessment after the proposed changes but with modifications of the estimated probabilities and impacts. A significant drop in the PI from 342 to 157 was noticed (Figure 4).

Asset	Actor	Threat	Rank 1 – 5	IMPACT 1 – 5	PI SCORE Prob x Impact
Store - Physical Access	Inside	Accidental damage to equipment	2	3	6
	Inside	Deliberate damage to equipment	1	3	3
	Inside	Deliberate loss of equipment	1	4	4
	Inside	Deliberate loss of shelf / warehouse items	1	4	4
	Outside	Deliberate damage to equipment	1	4	4
	Outside	Deliberate loss of equipment	1	5	5
	Outside	Deliberate loss of shelf / warehouse items	1	5	5
	Computers & Network - Physical Access	Inside	Accidental physical damage	2	5
Inside		Accidental data loss	3	5	15
Inside		Deliberate physical damage / loss	1	4	4
Inside		Deliberate data modification	1	5	5
Inside		Deliberate data loss	1	5	5
Outside		Deliberate physical damage / loss	1	5	5
Outside		Deliberate data modification	1	5	5
Outside		Deliberate data loss	1	5	5
Computers & Network - Network Access	Inside	Deliberate data modification	1	5	5
	Inside	Deliberate data loss	1	5	5
	Outside	Deliberate data disclosure	1	5	5
	Outside	Deliberate data modification	1	5	5
	Outside	Deliberate data loss	1	5	5
Employees	Circumstances	Expected temporary leave	3	2	6
	Circumstances	Expected permanent leave	2	4	8
	Circumstances	Urgent temporary leave	2	3	6
	Circumstances	Urgent permanent leave	2	5	10
Customers	Online shopping trend	More load on the email/pickup system	1	1	1
	Online shopping trend	Less in-store customers	2	1	2
	Online shopping trend	More demand on technology	2	2	4
	Online shopping trend	Competing prices	2	3	6
	Online shopping trend	Need for digital advertisements	2	2	4
Total					157

Figure 4 PI Score if the business is digitalized

Recommendations & Timeline

Based on the risk assessment results, it is recommended that the “Pampered Pets” undergo the digitization process as proposed. This will improve the physical and network security of the business, grow the business and its customer base, prevent the loss of critical data, and increase employee satisfaction by better distributing the job roles. The suggested timeline is shown in Figure 5.

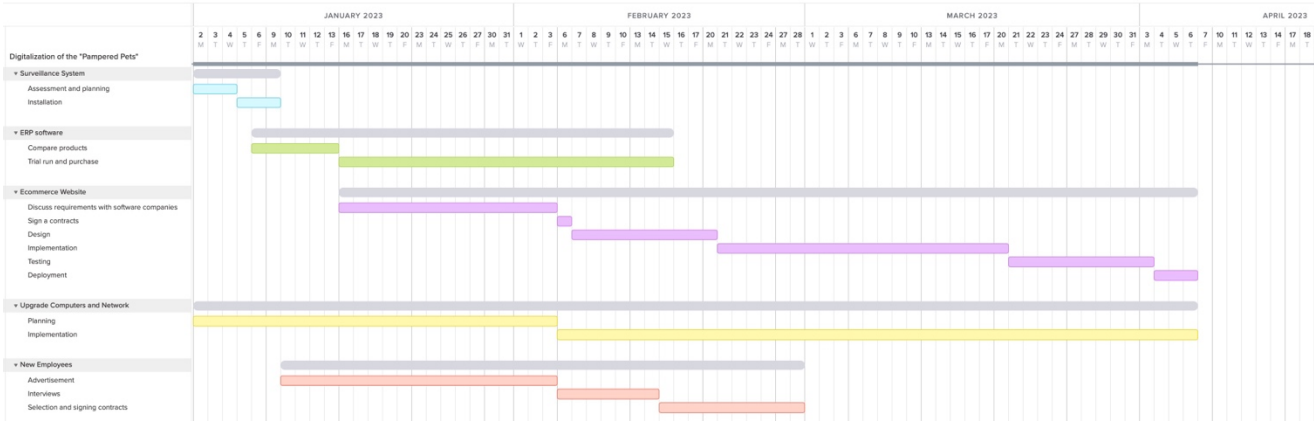


Figure 5 Gantt chart for the project timeline

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