

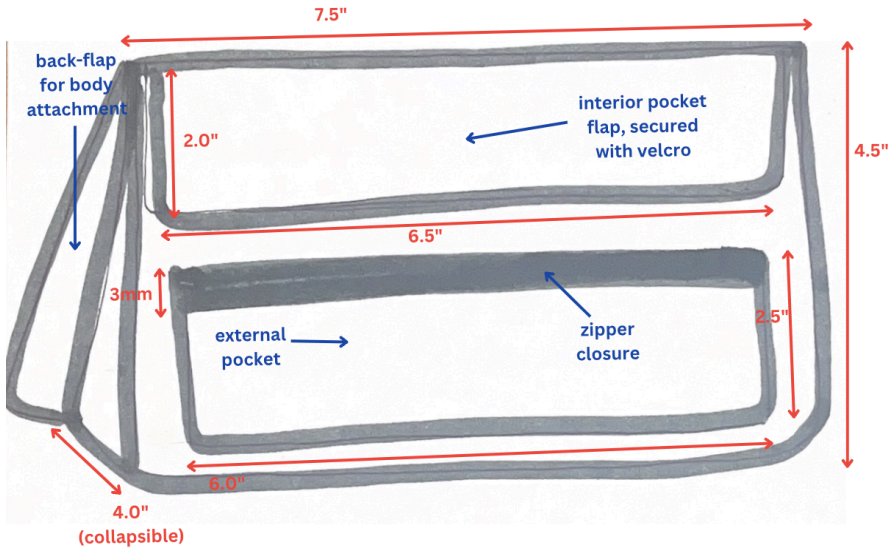
Final Project Report

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EK, CL, NM of Textiles Co.

*Present:*



The Port-A-Pocket

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## I. Introduction or Use Scenario

### A. Product Description

The Port-A-Pocket utilizes an envelope snap design with an exterior pocket, where the consumer can comfortably access their items from the exterior of the garment. Two pieces of fabric are bonded together to form a main pocket, where a top flap is attached. This top flap has a magnet strongly secured into place on the backside. The back flap is tucked into the waistband of the consumer's garment, and fastened into place as the magnet attaches to the backside of the pocket. On the exterior of the waistband, there are two pockets- one main, large pocket which has a velcro closure, and another smaller, exterior pocket with a zipper closure feature. The exterior and interior lining of the pocket is crafted with TENCEL™ lyocell, a highly sustainable, durable, and highly moisture-wicking fabric. The pocket is then coated with a polyurethane coating to ensure water resistance. This product comes in sizes XS-XL.

### B. Target Market

The primary target market that the group developed is people who exercise outdoors. Within this market, the brand is targeting specifically men and women ages 25-45, who are more likely to have families for whom they will purchase more of the product. Hikers are a main focus for the brand, as well. Backpacks can be uncomfortable to carry and the brand intends to emphasize the benefits of the Port-A-Pocket as a replacement for backpacks. Bicyclists were also a market that was analyzed and developed. The group believes that targeting outdoor athletes and explorers is the best way to generate profit.

The secondary target market includes young women, roughly between the ages of 18-28, who need to carry around personal items, but don't want to carry a bag. This market was developed through personal observations of young women lacking sufficient pocket space, especially on a night out. The smaller Port-A-Pockets are likely sufficient for the needs of young women for a night out and are also cheaper than larger models, which also fits the needs of this demographic, as they usually have a lower income than their older counterparts.

Originally when the product was being developed, these two markets were flipped, with young women being the primary focus and people who exercise being the secondary market. As the group developed their company values and the product grew more costly, it was important to shift focus to those who would appreciate and pay more for a more durable, sustainable product.

### C. Competitive Advantage

Throughout the process of developing the Port-A-Pocket, the group analyzed many competing products in the market. This helped to identify what worked and what could be improvised, specifically through looking at customer reviews and feedback. The main aspects of the Port-A-Pocket that other competitors lack are its sustainable properties and durability. Whereas other, similar products last a few wears, the Port-A-Pocket is built to withstand the test of time. It is also made with sustainable materials and through ethical production, which was not a factor in other products. It was also important for the group to incorporate different size and pattern options to the customers to give a sense of individuality and customization. This also gives the Port-A-Pocket an advantage over competing products.

## II. Mission Statement

Originally, the group developed the mission statement, “We strive to provide convenience and safety to our customers with a dedication to quality, sustainability, and service.” After undergoing significant concept testing and reevaluation, the group adapted the mission statement to incorporate more of the customer needs and established company values. The new mission statement is more thorough. “Port-a-Pocket strives to provide ease, security, and comfort for life’s adventures, so you can enjoy the journey and all its wonders.”

## III. Customer Needs

The group conducted four types of internal and external research to develop the customer needs statements and determine their importance. After creating and analyzing interviews, observations, content analysis, and surveys, the group established 12 customer needs statements. Each expression of a customer's need was thoughtfully viewed and written down in a shared document. These needs expressions were then organized into different categories to better understand the data. Each statement was examined for frequency and intensity, two factors that contributed to importance ratings. The chart below shows the final results and ratings. Needs 1-3 were determined primary, 4-7 secondary, and 8-12 latent.

Ranking, Need #	Need	Importance Rating (1-10)
1	The Port-a-Pocket can easily and comfortably hold several personal items for you.	10/10
2	The Port-a-Pocket is secure and safe, utilizing strong closures.	9/10
3	The Port-a-Pocket is durable and made to last.	9/10
4	The Port-a-Pocket is affordable and ranges in pricing from \$20-\$40 depending on size.	8/10
5	The Port-A-Pocket is compact and lightweight.	8/10
6	The Port-A-Pocket is comfortable and allows for both stationary and athletic use	8/10

7	The Port-a-Pocket attaches to your clothing with closures and eliminates the need for straps.	7/10
8	The Port-a-Pocket is sleekly designed and aesthetically pleasing	7/10
9	The Port-a-Pocket comes in a variety of sizes and shapes.	7/10
10	The Port-a-Pocket offers a variety of colors and designs.	7/10
11	The Port-a-Pocket is strongly reinforced.	6/10
12	The Port-a-Pocket is water resistant.	5/10

#### IV. Internal/External Searching

Be specific about what sources you searched and what you learned from each source. External sources can include existing products, patents, literature, experts, etc. Internal sources can include brainstorming, analogies, SCAMPER, etc. Competitive benchmarking is part of this section as well.

After conducting initial research through observations, interviews, content analyses, and surveys to establish the target market and identify product opportunities, the group was then able to determine three main needs prevalent in the consumer base. The main problems required to meet customer expectations are ease and comfortability in holding several items, safety and security, and durability. The group focused on these three problems and researched sub-problems, as well as solutions for each. Through internal and external research, the group developed different routes to an attractive product by highlighting common concerns about the Port-A-Pocket and finding ways to overcome these anxieties. In doing so, the group developed various concept designs to establish the best version of the product to meet at least the majority of common concerns.

##### A. External Search

First, the group conducted an external search for the problem of ease and comfortability in holding several items. Through analyzing this need, three sub-problems arose: material selection and weight capacity, ergonomics, and size variations. The team researched fabric



material options, exploring TENCEL lyocell, nylon, polyester, and linen as options and weighed the durability, sustainability, and comfort of the material. Conducting content analysis, the team found TENCEL lyocell to fit the needs for the qualities outlined. The team also conducted content analysis for secure closure attachments, exploring button snaps, velcro, magnets, pins, and clips. Deducing those strong neodymium magnets provided the level of security and safety needed for the consumer to attach important items to their person. The team then explored competitors, existing patents, and content analysis ranging from Amazon to Pocket Plus to determine possible concepts that emphasized comfort and ergonomics. To gauge the existing market of size ranges offered in the current market, the team conducted benchmarking comparisons with existing brands such as Runbuddy, and PocketPlus. The team utilized external sources such as the company website for Runbuddy and PocketPlus, Textiles by Sara Kadolph and Sara Marcketti, Google Patent search, and general content analysis performed on fabric manufacturing websites.

Next, the group researched the second problem of safety and security. This research consisted of ensuring the contents of the portable pocket were maintained with their wearer, which yielded the sub-problems of closure options, attachments to the body, and tracking opportunities. Various closure options were explored, including zippered, tailored buttons and holes, hooks and eyes, and bar and toggles. Each closure was extensively researched through previously patented products and overall general public opinions and uses of each product. Due to its lack of security in previous uses, the bar and toggle were excluded from the closure options for the prototypes. The contents of the pocket would be neglected hence allowing for loss of

important pieces. Different options for attachment of the pocket to the wearer included velcro, glue, magnets, sewing, and fusible glue. Each option allowed for security, however, some of them allowed for permanent damage to the pocket and the wearer's choice of location to attach the pocket. Eventually, the team excluded glue and fusible tape from the options because the residue left by both damages the textile fabrics. The different tracking opportunities were explored in the pocket but they do get lost. Different examples included near-field communication, radio tracking, radio frequency identification, geofencing, and global positioning systems. Some of these systems required a bulky addition to carrying the pocket, such as a radio with an antenna that tracks the tracker. Other options allowed for searching purposes come from the convenience of a smartphone or smartwatch. However, after further research, the team decided to completely exclude tracking purposes due to more expensive production, especially considering users already have tracking devices in their smartphones and watches that will allow the user to find the pocket's contents if near the smartphone.

Lastly, they researched durability. Through examination of competing products, primarily the RunBuddy, it was clear they needed to be more durable to compete with the longevity of the Port-A-Pocket. The brand also plans to market the pocket as a product that a consumer could find in stores like R.E.I., so researching other products and interpreting customer perceptions of the durability of related outdoor equipment brought up three prevalent sub-problems within durability: heavy-duty fabric options, water resistance, and longevity. The identification of these issues was important for the generation of different concepts for the product. In further search, different heavy-duty fabrics were considered for use in different concepts of the product. The

group developed a list of cotton, polyester, linen, and fabric blends as potential options for the concepts. Each option was then researched further, through blog posts, product websites, and fiber organizations to determine different attributes of each fabric to make the most informed decisions when developing concepts. Next, research was conducted on water resistance methods. The group examined naturally water-resistant fibers, including polyester, nylon, vinyl, extra-long-staple cotton, and tightly-woven fabric blends, as well as coatings and treatments, including durable water-repellent, polyurethane coating, and silicone coating. Each of these options was then investigated through multiple product websites and technological textile corporations to highlight which options would work best with other potential options. Finally, the sustainability and longevity of fabrics were considered. The group generated a list of sustainable fibers and cross-referenced their durability and longevity to establish an overarching view of the potential concept designs. These fabrics were alpaca, linen, organic cotton, organic hemp, and TENCEL™ Lyocell. Again, each fabric was analyzed through various blogs and sustainability-focused organizations to determine the best options for the product.

## B. Internal Search

The group took time out of their schedule to get together in a study room to brainstorm different solutions for each of the concepts. After their first presentation, a few questions arose on the safety and sustainability of the pocket. During the meeting, the trio talked about how to ensure the pocket provided its users with a convenient spot to keep essentials without losing anything. They drew mind maps to find correlations among different words for the pocket's safety. Such words were "button", "zipper", "loss", "clutch", "find", and "maintain". They

reached several possible outcomes, some being through the use of tracking devices, updating closures, and utilizing heavier-duty textiles. In terms of sustainability, the team took a minute in silence to write down different ways to ensure the Port-A-Pocket was a sustainable product. They passed around the papers and took another minute to add another detail to enhance its sustainability requirement. They did this once more and then conversed about the most realistic options they had. They talked about utilizing a naturally-made textile such as hemp, linen, or more popularly, lyocell. Another method was to make the product biodegradable. The main problem that arose from that option would be the magnet, to ensure biodegradability, the magnet would need to be taken out of the pocket firsthand.

## V. Concept Generation

### A. Specifications

The group derived the specifications from the concepts from the three main categories of consumer needs identified. Each concept consists of different options that were analyzed and highlighted through external and internal searches while researching the main problems and subproblems for the product. The following charts convey each problem, sub-problem, and

Comfort & Ease of Storage

Sub-Problem	Weight of Materials	Ergonomic Closures	Ergonomic Design	Size Variations
Possible Solutions	TENCEL Lyocell	Magnets	Interior Envelope Snap	Extra Small
	Nylon	Clips	Exterior Envelope Snap	Small
	Polyester	Pins	Magnet Attachment	Medium
	Linen	Velcro	Earphone Hole	Large
		Button Snaps	Credit Card Slots	Extra Large

Safety & Security

Sub-Problem	Closure Options	Attachment Options	Tracking Opportunities
Possible Solutions	Zipper	Velcro	RFID
	Tailored Buttons	Magnet	Radio Tracking
	Bar & Ring (Toggle)	Glue	NFC
	Hook & Eye	Sewn	Geofencing
		Fusible Tape	GPS

Durability

Sub-Problem	Heavy Duty Fabrics	Water Resistance	Sustainability & Longevity
Possible Solutions	Cotton	Polyester	Alpaca
	Polyester	Nylon	Linen
	Linen	Vinyl	Organic Cotton
	Polyester Blends	Extra-Long Staple Cotton	Organic Hemp
	Cotton Blends	Fabric Blends/Tight Weaves	TENCEL Lyocell
	Tri-Blends	Durable Water Repellent	
		Polyurethane Coating	
		Silicone Coating	

proposed solution. Each concept utilized aspects from each chart, cross-referenced between categories to determine the best option overall for the concepts.

## B. Alternative Concepts

The alternative concepts were derived from the varying options produced by the analysis of the problems and subproblems. Each concept utilizes an aspect of the external and internal searches to determine which options work best together to produce the best product possible.

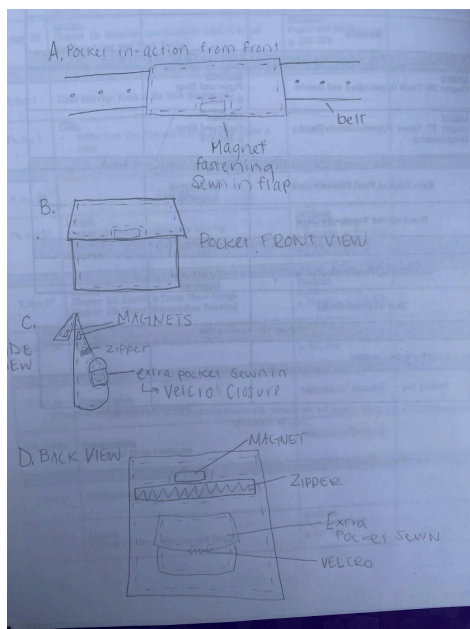
### 1. Concept #1: Interior Pocket

- Structure: Interior envelope snap, Magnetic fastening
- Closure: Velcro, Zipper
- Materials: Linen
- Finishing: DWR
- Tracking: Geofencing
- Size Options: XS-XL

This portable pocket includes an interior pocket, ensuring attachment to the wearer by the waistband. The interior pocket is inside the wearer's pants, with an exterior flap attached through the pants by a magnet. This concept is more secure because the contents of the pocket are inside the wearer's pants. Unfortunately, this product is not necessarily comfortable. The pocket is stuffed within the wearer's pants, causing irritation and scratching on the skin due to the textile and velcro. Linen is a sustainable textile to use, for the process of manufacturing linen involves

using the entire flax plant, leaving nothing of the plant to waste. Additionally, linen is a strong textile fiber, therefore the pocket's fabric will last. A DWR film is finished on the product, allowing for a moisture-wicking product. The contents of the pocket will stay dry and the pocket will prevent mold growth. With geofencing, the wearer will be notified that the pocket is away from the wearer's bounds of the tracker. Several downsides of this concept is its limited fastening options, the tracking device needing a separate tracking device, and its high cost.

*Figure 1*



## 2. Concept #2: Exterior Pocket

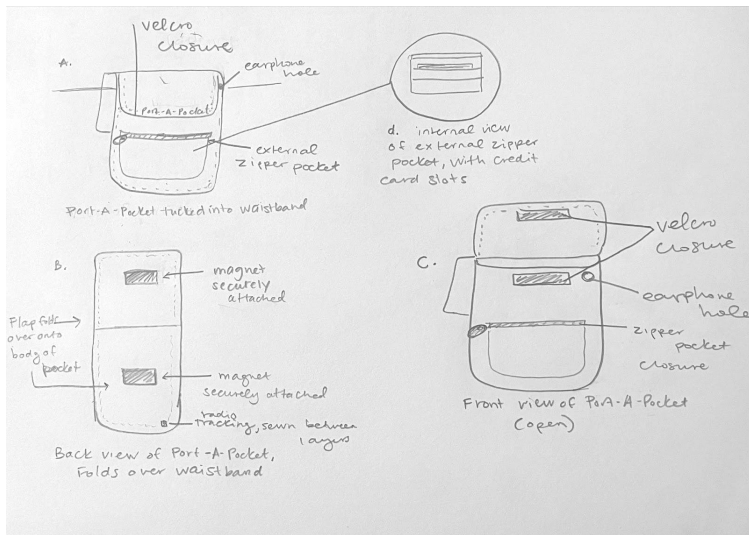
- Structure: Exterior envelope snap, Magnetic fastening
- Closure: Velcro/Hook & Loop, Zipper

- Materials: TENCEL Lyocell
- Finishing: Polyurethane coating
- Tracking: Radio Tracking
- Size Options: XS-L

Concept #2 utilizes the envelope snap design with an exterior pocket, where the consumer can comfortably access their items from the exterior of the garment. Two pieces of fabric are bonded together to form a main pocket, where a top flap is attached. This top flap has a magnet strongly secured into place on the backside. The back flap is tucked into the waistband of the consumer's garment, and fastened into place as the magnet attaches to the backside of the pocket. On the exterior of the waistband, there are two pockets- one main, large pocket which has a velcro closure, and another smaller, exterior pocket with a zipper closure feature. The exterior and interior lining of the pocket is crafted with TENCEL™ lyocell, a highly sustainable, durable, and highly moisture-wicking fabric. The pocket is then coated with a polyurethane coating to ensure water resistance. Radio tracking is installed within this pocket, securely placed between the two pieces of fabric of the pocket, and comes in sizes XS-L.

*Figure 2*





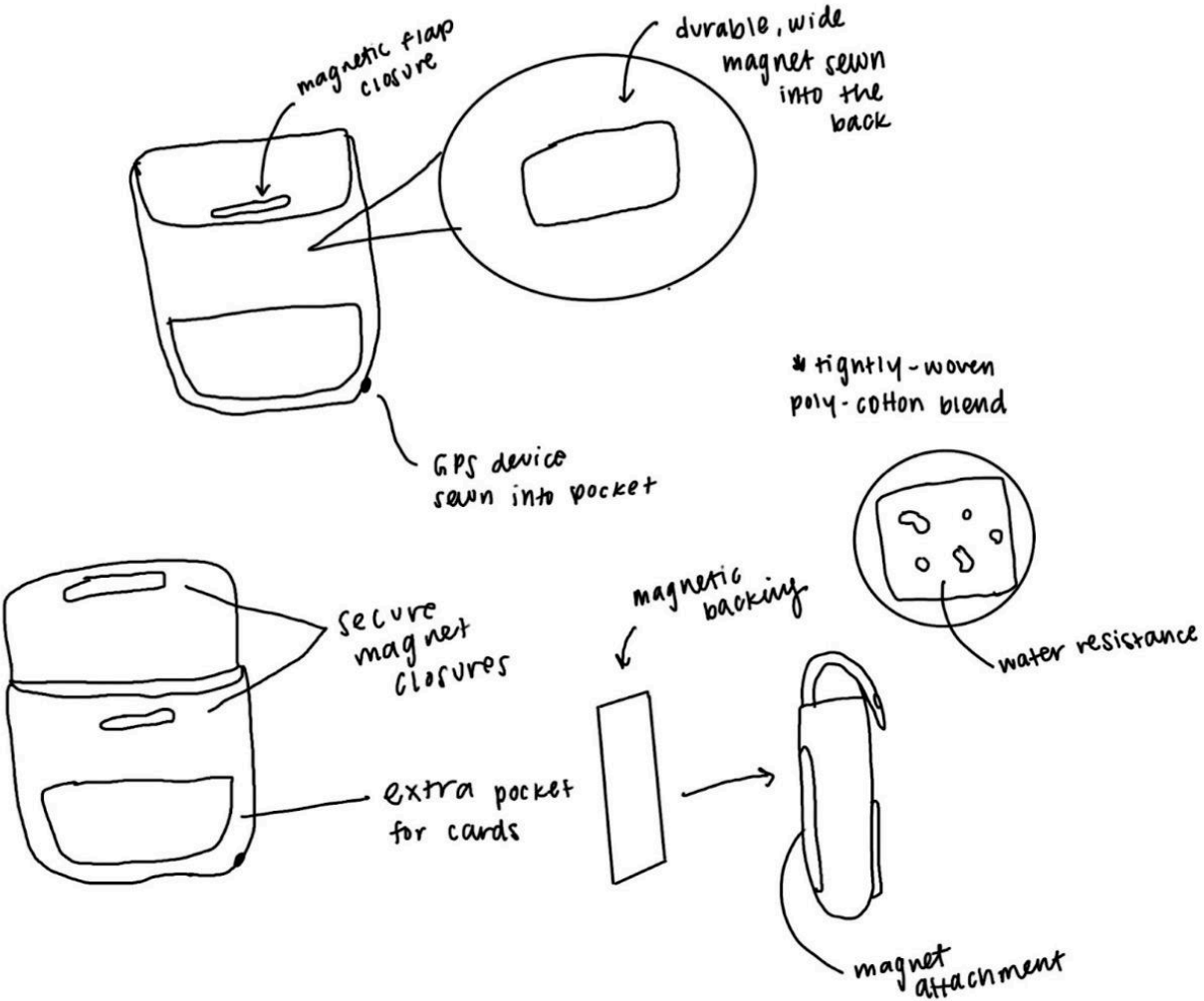
### 3. Concept #3: Magnetic Attachment

- Structure: Magnetic attachment
- Closure: Magnetic closure
- Materials: Cotton/Polyester Blend
- Finishing: N/A, tightly woven blend
- Tracking: GPS
- Size Options: XS-XL

This concept utilizes a magnetic attachment to secure the pocket to the outside of clothing. Similar to a magnetic name tag, the pocket will be lined with a secure magnet that connects to the magnetic backing when placed inside the wearer's clothing. This option allows

the wearer to place the pocket in their preferred position, ensuring the best comfortability and ease of wearing. The pocket's flap also utilizes a similar magnet to stay shut, which ensures that the wearer's personal items stay secure and safe while maintaining ease of opening for the wearer. This, however, contributes to some potential security risks, as it could be pickpocketed somewhat easily. The fabric for this option would be a tightly woven cotton/polyester blend, which would provide durability, water resistance, and a lightweight structure to the product. This option is, however, less sustainable than the alternative options. The tracking option for this concept is a GPS, which would target the device with accuracy and can then be connected to an app that lets the wearer and trusted loved ones know their whereabouts to maintain safety. Lastly, this concept will be available in sizes XS-XL, as it can be easily manufactured in a wide variety of sizes due to the simplicity of the design. The materials and findings are relatively easy to acquire for the seamless production of the Port-A-Pocket.

*Figure 3*



C. Concept Screening & Scoring

1. Concept Screening

To narrow down the concept alternatives, the team assembled a concept screening table based on selection criteria from the most important consumer needs identified throughout the product development process. The team included selection criteria from the top three problems

and their sub-problems identified in Stage Gate 4, as well as referring back to Stage Gate 3 for the Metrics and Units chart.

From these resources, the team imported the most critical selection criteria:

- Comfort
- Aesthetics
- Secure Attachment to user
- Durability
- Sustainability
- Security of closures
- Tracking
- Ease of manufacturing
- Range of sizes

The team used competitor RunBuddy as a reference guide, utilizing the company website, product information, and customer reviews to establish appropriate ratings for each selection criterion. For each selection criterion, the concept received a (-) if it was worse than the reference, (+) if it was better, and (0) if it was the same.

Selection Criteria	Interior Pocket	Exterior Pocket	Magnetic Attachment	RunBuddy (Reference)
Comfort	-	0	-	0

Aesthetics	-	+	0	0
Secure attachment to user	0	0	-	0
Durability	+	+	+	0
Sustainability	+	+	0	0
Security of closures	0	0	0	0
Tracking	+	+	+	0
Ease of Manufacturing	-	-	-	0

Range of Sizes	+	+	+	0
Sum +'s	4	4	3	0
Sum -'s	3	1	3	0
Sum 0's	2	4	3	9
Net Score	1	3	0	0
Rank	3	1	2	
Continue?	No	Develop	No	

## 2. Concept Scoring

To ensure consistency across charts, the team used the same selection criteria as the concept screening:

- Comfort
- Aesthetics
- Secure Attachment to user
- Durability
- Sustainability
- Security of closures
- Tracking
- Ease of manufacturing
- Range of sizes

The group rated each concept by quality from 1-5 in relation to the reference. A rating of 1 is much worse than the reference. A rating of 2 is slightly worse than the reference. A rating of 3 is equal to the reference. A rating of 4 is slightly better than the reference. And a rating of 5 is much better than the reference. Each criterion was given a weighting based on perceived importance to customer needs and company values. Comfort and Durability were assigned importance weightings of 20% as they were the top most important customer needs. Aesthetics was assigned an importance weighting of 5% as it was on the lower end of importance for customer needs. Secure Attachments were assigned an importance weighting of 15% because it was one of the top 3 most important customer needs. Sustainability was assigned an importance weighting of 5%, as it was on the lower end of the customer needs, despite the company's commitment to it. Security of Closures and Range of Sizes were assigned importance weightings

of 10% because they were relatively important customer needs, but not as necessary as other factors. Tracking was assigned an importance weighting of 5% because it was more of an added bonus for customers, rather than a need. Lastly, Ease of Manufacturing was assigned an importance weighting of 10% because it is relatively important among the qualities of the product in terms of production.

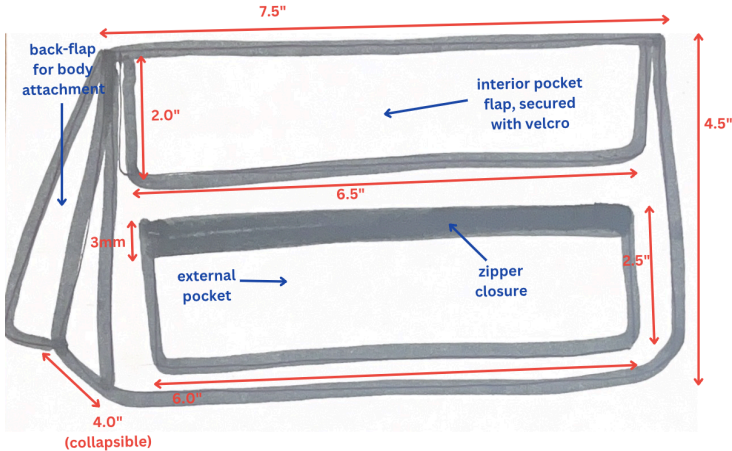
		<b>Concepts</b>							
		<b>A</b>		<b>B</b>		<b>C</b>		<b>D</b>	
		<b>Interior Pocket</b>		<b>Exterior Pocket</b>		<b>Magnetic Attachment</b>		<b>RunBuddy</b>	
<b>Selection Criteria</b>	<b>Weight</b>	<b>Rating</b>	<b>Weighted Score</b>	<b>Rating</b>	<b>Weighted Score</b>	<b>Rating</b>	<b>Weighted Score</b>	<b>Rating</b>	<b>Weighted Score</b>
Comfort	20%	2	0.4	3	0.6	2	0.4	3	0.6
Aesthetics	5%	2	0.1	4	0.2	3	0.15	3	0.15
Secure attachment to user	15%	3	0.45	3	0.45	2	0.3	3	0.45
Durability	20%	4	0.8	4	0.8	4	0.8	3	0.6
Sustainability	5%	4	0.2	5	0.25	3	0.15	3	0.15
Security of closures	10%	3	0.3	3	0.3	3	0.3	3	0.3
Tracking	5%	5	0.25	4	0.2	5	0.25	3	0.15
Ease of Manufacturing	10%	2	0.2	2	0.2	2	0.2	3	0.3
Range of Sizes	10%	4	0.4	4	0.4	5	0.5	3	0.3
			0		0		0		0
Total Score		3.10		3.40		3.05		3.00	
Rank		2		1		3		4	
Continue?		no		develop		no		n/a	

## VI. Detailed Drawings and Specifications

Due to its superior attributes in many categories, the group is continuing production with Concept #2: The Exterior Pocket. The design and dimensions in the image are based on the size medium Port-A-Pocket, which will be marketed as the standard size for users. The analysis of this size specifically allows the group to estimate the dimensions and costs of the surrounding

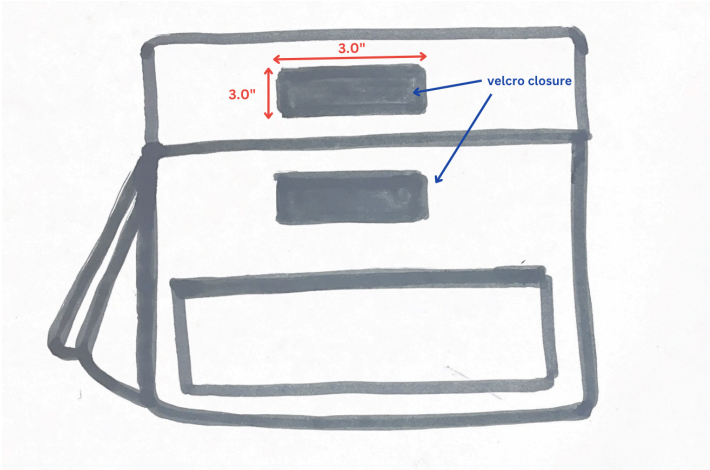


sizes, from extra-small to extra-large. The dimensions for the medium size of the Port-a-Pocket are 7.5" x 4" x 4.5". The volume of the product is approximately 135"<sup>3</sup>, with the weight at 1.3 lbs.

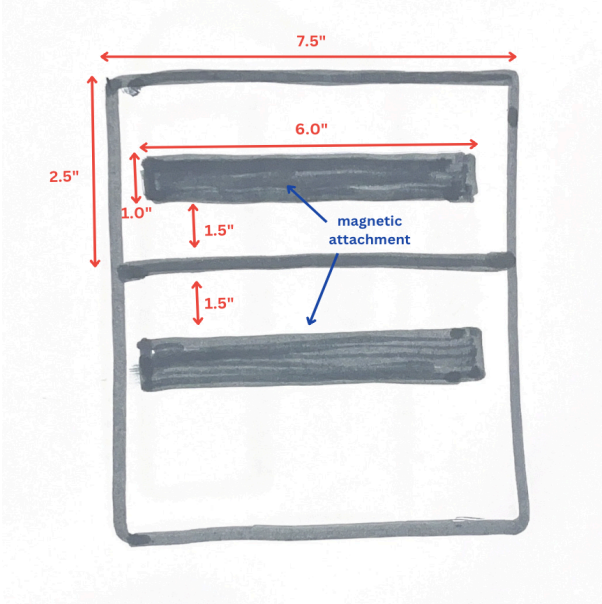


*Front View of the Port-A-Pocket*

*Front View, Open Flap*



*Back View, Attachment Flap to Body*



## VII. Assembly Information

1. Gather textile fabrics, closures, attachments to the body, sewing thread, flatbed sewing machine, magnets, patterns, scissors, and pins.
2. Pin pattern on the folded textile fabric, tracing the pattern on the fabric.
3. Cut the pattern out.
4. Pin pieces of fabric to the correct panels for sewing.
5. Sew folded and pressed fabric to create a double layer for the panels.
6. Sew side seams, leaving the top hem unsewn.
7. Put a magnet into the opening on the front pane, then sew a seam around the magnet to prevent migration.
8. Sew the top hem.
9. Sew the bottom panel of the pocket onto the front and back panel.
10. Utilizing the pattern for the flap panels, add a magnet into the flap, sew seams around the magnet through the fabric, sew seams around the double-layer flap, then sew onto the top hem of the back panel securely.
11. Sew velcro closure on the flap and on the top portion of the front of the pocket.
12. Utilizing the pattern for the exterior pocket, sew the side seams of the pocket to attach the sides and front, then sew the pocket onto the front panel of the pocket.
13. Sew the zipper onto the exterior pocket attached to the front panel of the pocket.
14. Utilizing the pattern for the attachment panel for the back on the pocket inside the waistband, sew the side seam allowances on the double-layered fabric, then flip inside out to create a clean edge finish.

15. Sew the top portion of the attachment panel on the back panel of the pocket.

#### VIII. Costs

The team developed cost estimates for each component based on vendor pricing, reputation, ethical labor practice values, and marketing analytics. The costs for materials such as the fabric, zipper, and velcro closure, magnetic attachments, thread, packaging, etc. all come from the prices the vendors set, reflected in costs per unit. The unit cost has been approximated based on a single unit of a standard-size medium Port-a-Pocket. For the sake of this project, the labor pricing is developed from an estimated time and salary per hour per employee, as well as the costs of facilities and machinery needed for production. As for the indirect costs, these were identified through research of similar products and their marketing and distribution strategies or those of companies the group admires.

The specific price per unit cost is provided in Figure 6 below. Most of our components are sourced out of China, due to the quality assurance and reliability of the nation's manufacturing industry, at a competitive price. Textiles Co. is looking forward to building long-lasting relationships with these vendors as they produce the Port-a-Pocket product.

Considering most of the components are being sourced from China, the team has decided to manufacture there as well. The country also boasts incredible technology and factory production that would promote a fast and successful production of the Port-a-Pocket product. The labor cost of \$6.5/hr was determined based on median wages across manufacturing plants in the textiles and apparel industry in China. Deyao Textiles is the identified factory for production.

Based upon the company's site information, including the fact they have over 1k employees and have been operating since 1989, the team approximated that 65 Port-a-Pockets could be sewn and assembled per hour among roughly 10 workers. The unit cost of \$1 was determined for manufacturing. In terms of packaging, the team identified a potential vendor providing customizable plastic packaging bags from Four Star Packaging in Illinois at a cost of \$73.69; the unit cost per packaging is \$.07. The duty rate, 7.3%, was determined by looking at the Harmonized Tariff System (HTS), in the U.S.A. Customs webpage. The current freight cost for a standard 20ft size shipping container from China to the port of Savannah, Georgia is \$3,600. The team estimated based on the dimensions and weight of the Port-a-Pocket, an approximately 300,000 Port-a-Pockets could fit into a single 20ft shipping container. Taking this average of \$3,600 and dividing this number by the number of Port-a-Pockets within the container, the estimated unit cost of shipping is \$.012.

As mentioned before, these costs are an approximation based on external research and are subject to change as the sourcing team moves forward in securing information from approved vendors.

*Figure 6. Estimated Costing Sheet*

Description	Vendor	Material	Min. Order	Cost	Unit Qty.	Unit Cost
Fabric	Shanghai CEDL Co.	TENCEL™ Lyocell dtm	1m	\$7.50	1.35m	\$10.125
Thread	Jinjiang Jiaxing Home Co.,Ltd.	TENCEL™ Lyocell thread dtm	1000yds	\$3.80	0.5yd	\$0.002
Velcro	FASTENation	VELCRO® Brand Nylon Sew-On Tape Hook & Loop 1"	25 yds (1 roll)	\$43.00	.05 yds	\$0.086
Magnet	Neopro Technology Materials Co. Ltd	N35 to N52 Block Neodymium Magnet	1000 pcs	\$0.30	2 pcs	\$ .60
Zipper	Jinjiang Jiaxing Home Co.,Ltd.	Nylon invisible zipper	1000pcs	\$8.00	1 pc	\$0.008
Packaging	Four Star Plastics	Flat Poly Bags customizable 5" x 8" (W x L)	1000pcs	\$73.69	1 pc	\$0.073
Manufacturing (labor cost)	Deyaoou Textiles	Avg Wages (per hour)	1hr/10 workers/65 units	\$65	1 unit	\$1
Shipping			300,000	\$3,600	\$.012	\$.012
Total Direct Costs				\$201.29		\$11.906
MOH at 10% of direct costs						\$1.2
MOH at 80% of DL costs						\$.80

Description	Vendor	Material	Min. Order	Cost	Unit Qty.	Unit Cost
Fabric	Shanghai CEDL Co.	TENCEL™ Lyocell dtm	1m	\$7.50	1.35m	\$10.125
Thread	Jinjiang Jiaxing Home Co.,Ltd.	TENCEL™ Lyocell thread dtm	1000yds	\$3.80	0.5yd	\$0.002
Velcro	FASTENation	VELCRO® Brand Nylon Sew-On Tape Hook & Loop 1"	25 yds (1 roll)	\$43.00	.05 yds	\$0.086
Magnet	Neopro Technology Materials Co. Ltd	N35 to N52 Block Neodymium Magnet	1000 pcs	\$0.30	2 pcs	\$ .60
Zipper	Jinjiang Jiaxing Home Co.,Ltd.	Nylon invisible zipper	1000pcs	\$8.00	1 pc	\$0.008
Category		Description				Total Cost
Marketing		5% of anticipated sales for first year				\$5,000
Distribution		Competitive yet attainable distribution				\$18,000
Duty (7.3%)		Import Costs from Production Center, shipment of 100,000 units				\$86,913.80
Total Indirect Costs						\$109,913.80
Total Unit Cost						\$11.906

## IX. Prototypes

The group developed a prototype early in the development process to form a better idea of the concept from the beginning. Since then, the design has changed slightly, switching the attachment to the body from magnetic insert to an external magnetic flap. Additionally, in the final Port-A-Pocket design, there is an extra exterior pocket, closed with a zipper, and the main pocket flap has a velcro closure, rather than a button. However, the essence of the product and its intention remain the same, reflecting those of the prototype.



## X. Future Cash Flows and NPV



Krakovski, Lahr, Moreno 33

Value in \$ (denoted)	Year 1	Year 2	Year 3	Year 4
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	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Sales, pockets					140,000	177,800	215,600	253,400	225,000	307,500	344,400	348,750	270,000	311,850	353,700	395,550
Sales, pockets (unit, qtr)					5,000	6,350	7,700	9,050	9,000	10,650	12,300	13,950	12,000	13,860	15,720	17,580
Unit, wholesale revenue, pockets (\$/unit)					\$27.99	\$27.99	\$27.99	\$27.99	\$25	\$25	\$25	\$25	\$22.5	\$22.5	\$22.5	\$22.5
Total Revenue					140,000	177,800	215,600	253,400	225,000	307,500	344,400	348,750	270,000	311,850	353,700	395,550
Product Development	12,500	12,500	12,500	12,500												
Equipment			12,500	12,500												
Production Ramp-up				15,000												
Marketing				5,000	1,250	1,250	1,250	1,250	1,350	1,350	1,350	1,350	1,800	1,800	1,800	1,800
Production, pockets					59,500	75,565	91,630	107,100	107,100	126,735	146,370	166,005	142,800	164,934	187,078	209,202
Total Costs	12,500	12,500	25,000	32,500	60,750	76,815	92,880	108,350	108,450	128,085	147,720	167,805	144,600	166,734	188,878	211,002
Period Cash Flow	-12,500	-12,500	-25,000	-32,500	79,250	100,985	122,720	145,050	116,550	179,415	196,680	180,945	125,400	145,116	164,822	184,548
Period Present Value	-11,291	-11,29	-22,589	-29,400	71,559.25	91,062.18	110,565.11	130,737.82	105,122.26	161,848.08	177,569.24	163,4	113,186.08	131,124.74	148,862.79	166,642.34

		1										35.74				
Net Present Value	\$538,031															

In the chart above, Textiles Co. predicts the net present value and future cash flow for the next four years. The team predicted to sell on average 450 pockets a month during our second year, 550 a month during our third, and 620 a month for our fourth year. Using these predictions, the team calculated how many Port-a-Pockets would be sold each quarter. The team invested \$50,000 into product development over one year, \$25,000 into equipment over one year, \$15,000 into production ramp-up over one year, and 5% of sales for marketing (\$5,000 the first year). For the purposes of costing, a size medium was used for reference- selling at a retail price of \$27.99. This price was reduced by 10% per year, as noted in the chart.

To calculate the Period Present Value, the following formula was used:  $PV = FV / (1+r)^n$ , where  $r = 1.75\%$  per quarter and  $n = 6$  quarters. In the first year, the Port-a-Pocket team will be under-performing while focusing on product development and product refinement; however, the team expects to break even during Q1 of the second year. After year 4, we expect to have a Net Present Value of \$538, 031, where we will be producing 17,580 pockets by the end of the quarter.

## XI. Risks

Although Textiles Co. has done extensive research based on discovering the target market for their product, scope creep can occur, in which the project expectations or requirements change throughout the life cycle of the production. An example of this would be an evolving customer need, in which the current Port-A-Pocket product may eventually not satisfy the needs of the consumers. The team may need to do further research that explores the different methods that would attract more consumers after this shift in customer needs.

Another possible risk would be resource limitations, such as materials, equipment, time, budget, and space. Each of these factors can easily apply to the life cycle of the portable pocket, causing complications and distress to the production and manufacturing. If any of these factors become prevalent at some point, the team will have to reevaluate the resources and how to use them in sustainable methods that allow for them to utilize them to the fullest extent. The team may have to cut ties with different sourcing companies if the resources do not satisfy the production life cycle anymore, as well as cut budgets to satiate the customer needs faster.

## XII. Summary

Textiles Co. aims for a product of comfort, durability, and security, ensuring the wearer has no concern for the loss of his/her items. The Port-A-Pocket satisfies a customer's need for a convenient spot to contain all necessities within safe measures. These users come from all communities, however, those specific to the athletic and female groups will find the most

relevance in the portable pocket. With its intensive production life cycle, costing for the sample medium size retails for \$27.99. Though there may be future risks of scope creep and resource limitations, Textiles Co. foresees a successful future in protecting users' personal belongings in a world of adventure.

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#### XIV. Appendix

##### a. Survey Questions and Summary of Responses

#### Sample Questionnaire

##### Demographic

- 1) Please identify your age range.
  - a) Under 18
  - b) 18-25
  - c) 25-30
  - d) 30-40
  - e) 40-55
  - f) 60-70
  - g) 70+
- 2) Please identify your sex
  - a) Female
  - b) Male
  - c) Other (please specify)
- 3) Are you physically active?
  - a) Yes. (if so, please specify athletic participation)
  - b) No
- 4) How many nights a month do you go out with friends?
  - a) Never
  - b) 1-2 times a month
  - c) 3-5 times a month
  - d) 6-10 times a month
  - e) More than 10 times a month

##### Consumer Use

- 5) How often do you carry a bag/purse/backpack to carry your belongings?
  - a) Everyday
  - b) Almost every day
  - c) Every once in a while
  - d) Never
- 6) How many items do you usually carry around with you every day?
  - a) More than 10 items
  - b) More than 5 items, but less than 10 items
  - c) Less than 5 items
  - d) None

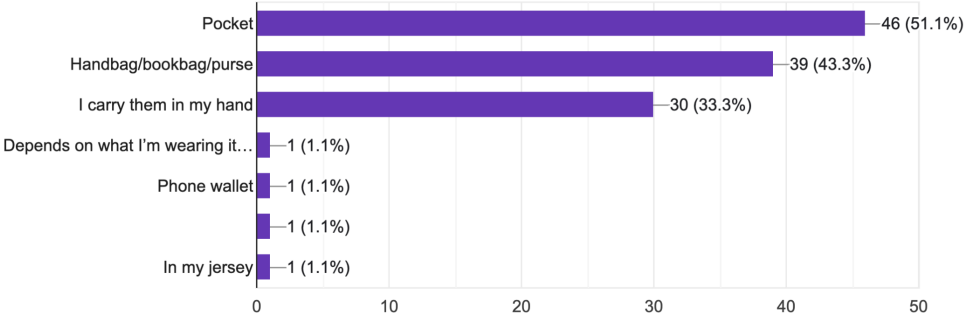
- 7) On days where the only thing you need to carry with you are a handful of items (wallet, keys, phone, etc.), where do you store these items?
  - a) Pocket
  - b) Handbag/bookbag/purse
  - c) I carry them in my hand
  - d) Other (please type)
- 8) How often do you experience frustration/discomfort when carrying all these items around?
  - a) Everytime
  - b) Sometimes
  - c) Never

Consumer Habits and Needs Identification

- 9) If you answered yes to question #3, do you find your athleisure to be lacking in pockets/storage space?
  - a) Yes
  - b) No
  - c) I did not answer yes to #3
- 10) Do you feel there is appropriate pocket space in everyday clothing items for you to carry these belongings with you?
  - a) Yes
  - b) No
- 11) Out of all your clothing garments, please estimate how many have existing satisfiable pocket space available.
  - a) 100% of my clothing has satisfying pocket space.
  - b) 75% of my clothing has satisfying pocket space.
  - c) 50% of my clothing has satisfying pocket space.
  - d) 25% of my clothing has satisfying pocket space.
  - e) Less than 25% of my clothing has satisfying pocket space.
  - f) None of my clothing has satisfying pocket space.
- 12) Select the statement you agree best with.
  - a) The practicality of pocket space has a big impact on if I purchase a clothing item, and will make the decision for me.
  - b) The practicality of pocket space has somewhat of an impact on if I purchase a clothing item, but won't stop me completely.
  - c) I do not care how much pocket space a clothing item has and do not consider this when shopping.
- 13) Do you own a fanny pack/portable pocket?
  - a) I own a fanny pack.
  - b) I own a portable pocket.
  - c) Other (please type)
- 14) What qualities do you consider most important when purchasing a fanny pack/portable pocket/handbag? (Select all that apply)
  - a) Practicality
  - b) Comfort
  - c) Aesthetic
  - d) Storage space
  - e) Safety and security
- 15) How much would a secure portable pocket with a strong, adjustable attachment benefit you in your daily life?
  - a) Greatly benefit
  - b) Somewhat benefit
  - c) Not benefit at all

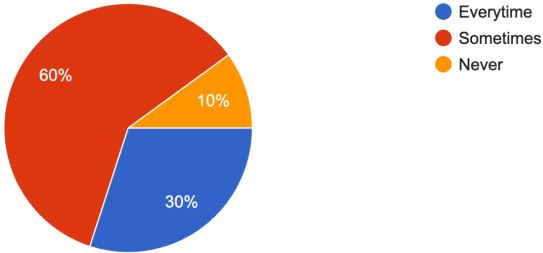
On days when the only thing you need to carry with you is a handful of items (wallet, keys, phone, etc.), where do you store these items?

90 responses



How often do you experience frustration/discomfort when carrying all these items around?

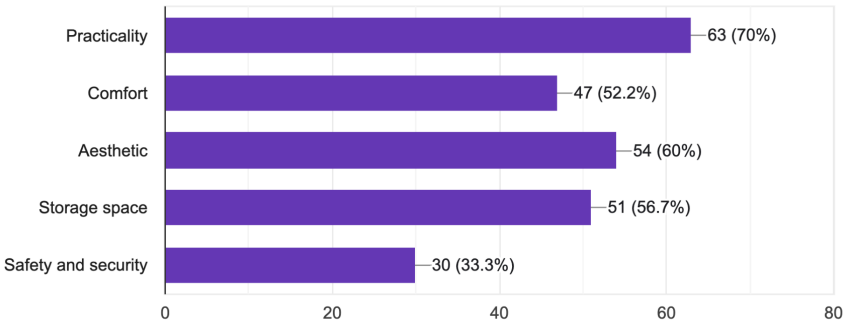
90 responses





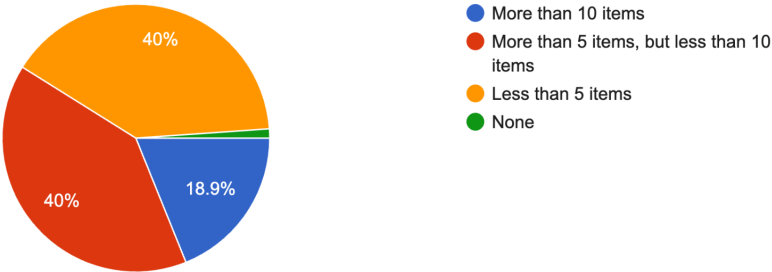
What qualities do you consider most important when purchasing a fanny pack/portable pocket/handbag? (Select all that apply)

90 responses



How many items do you usually carry around with you every day?

90 responses



B. Interview Questions

One-on-One Interview Questions
What items do you almost always have with you?

Do you feel the clothing in your closet has adequate storage/pocket space?
What is something about a handbag/fanny pack that you dislike, and how would you change that?
How would a portable pocket benefit your daily life?
What is something about the portable pocket that you dislike, and how would you change that?
How much would you pay for a handbag?
How much would you pay for a portable pocket?

C. Competitive Benchmarking

While developing the customer needs statements and identifying important attributes of the Port-A-Pocket, the group analyzed similar, competing products. These products were analyzed through customer reviews and product descriptions to determine how they suited customer’s needs and what could be improved. The group found that across all products, several customer needs failed to be met; this presents an opportunity for Port-a-Pocket to reach these unsatisfied customers and promote Port-a-Pocket. Each competing product was rated on how much it satisfied each perceived need.



*Figure 4.1 The Pocket Plus: XSmall Black Pocket (3 3/8 in. x 5 1/2 in.)*



*Figure 4.2 Running Buddy: Buddy Pouch*



*Figure 4.3 Slopehill Arm Band*



Figure 4.4 Namotu Phone Holder

#	Need	Imp.	The Pocket Plus	Running Buddy	Slopehill Arm Band	Namotu Phone Holder
1	The Port-a-Pocket can easily and comfortably hold several personal items for you.	10/10	***	*****	**	***
2	The Port-a-Pocket is secure and safe, utilizing strong closures.	9/10	****	*****	*	***
3	The Port-a-Pocket is durable and made to last.	9/10	**	*****	**	**
4	The Port-a-Pocket is affordable and ranges in pricing from \$20-\$40 depending on size.	8/10	****	****	*****	*****
5	The Port-A-Pocket is compact and lightweight.	8/10	***	***	****	****

6	The Port-A-Pocket is comfortable and allows for both stationary and athletic use	8/10	***	****	****	***
7	The Port-a-Pocket attaches to your clothing with closures and eliminates the need for straps.	7/10	****	***	*	**
8	The Port-a-Pocket is sleekly designed and aesthetically pleasing	7/10	**	**	*	**
9	The Port-a-Pocket comes in a variety of sizes and shapes.	7/10	*****	*****	****	***
10	The Port-a-Pocket offers a variety of colors and designs.	7/10	*****	**	***	****
11	The Port-a-Pocket is strongly reinforced.	6/10	****	*****	**	****
12	The Port-a-Pocket is water resistant.	5/10	****	*****	**	****

Key	
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***** (5 Stars)	Excellent: Exceeds consumer's needs
**** (4 Stars)	Very Good: Added a benefit to consumer's basic need
*** (3 Stars)	Good: Met consumer's most basic needs
** (2 stars)	Fair: Halfway meet consumer's basic needs
* (1 Star)	Poor: Did not meet consumer's basic need

