USF | Muma Case Review
A publication of the Muma College of Business | University of South Florida

Volume 4 Number 1 25 FEB 2019

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HABITAT FOR HUMANITY: FLORIDA'S PROCUREMENT PROCESSES[1]

"*Everyone is a customer for somebody, or a supplier to somebody.*" ~ William Edwards Deming

Barbara Inman Beck, CEO of Habitat for Humanity (HfH) Florida, knew it was going to be a busy week. October marked the end of the organization's 2017 fiscal year, meaning it was time to aggregate the year's financial reports to submit them in to HfH headquarters. Every few minutes, Barbara received a new email with more financial information to consider and consolidate. After the final reports were done at the end of the week, Barbara would have a meeting with her fellow HfH CEOs from other states to discuss the year's operations and outcomes. One important topic the board wanted to discuss was procurement methodology.

Barbara had worked with HfH Florida for 24 years and loved her role in making the world a better place for families in need of housing. Despite HfH Florida building hundreds of homes annually, Barbara wondered if there was a way to increase overall efficiency in their procurement methods. These efficiencies could lead to either building more homes or making homes even more affordable for families. A potential area worth exploring was changing from their currently decentralized strategy to a centralized way of buying materials. Was there room to improve efficiency by switching, or was change too risky for them?

Barbara wanted the idea researched. Thinking outside the box, she picked up the phone and called the University of South Florida (USF) Office for Community Engagement. She was then led to Professor Kerry Walsh, who was the faculty advisor for the USF Council of Supply Chain Management Professionals (CSCMP) Student Roundtable. USF CSCMP, specializing in the education of supply chain management principles, volunteered to provide an analysis and recommendation regarding their procurement methodology. Not only was USF CSCMP excited to analyze a new supply chain, but supporting the operations of an organization like HfH Florida created a source of intrinsic motivation for the team.

Was it time to make a change to a more centralized way of procuring materials? Did HfH Florida have the time and resources to make an effective switch? What costs could have been saved from buying in bulk? Would these savings had outweigh the costs of implementing such a plan (expertise, management, software)? Was the risk worth changing anything at all? These questions and more raced through Barbara's mind, knowing that she needed to decide which path was best for her organization.

Editor: T. Grandon Gill

Background: Habitat for Humanity

HfH was a concept introduced on Koinonia Farm, a community farm located outside Americus, Georgia, in 1965. The founder, a farmer and biblical scholar named Clarence Jordan, focused on people in need of sufficient shelter. The organization's first houses were built as not-for-profit and new houses were paid for on interest-free loans provided by HfH supporters and fundraising events.

Through hard work and dedication for helping financially challenged families, HfH was established internationally in 1976. Although the organization was founded on Christian values, they help families regardless of creed. HfH's mission statement reads, "Seeking to put God's love into action, Habitat for Humanity brings people together to build homes, communities, and hope" (HfH, 2018). As of 2018, HfH operated in over 1,400 communities throughout the U.S. and had spread to over 70 countries around the world. In addition to building new homes, HfH helped communities in many other ways (Exhibit 1).

HfH Florida

HfH Florida was incorporated in June 2009 as an active branch of the parent organization HfH International Inc., overseeing home-building in Florida. HfH Florida's programs and services were designed and developed to meet the expressed needs of HfH Florida regional offices, known as "affiliates". HfH Florida facilitated support through fundraising for private donations and governmental funding, and even advocated for legislative change. Procurement operations were not centrally managed by HfH Florida, but rather left to the affiliates' discretion based on their immediate need as homes were built.

HfH Florida Affiliates

HfH Florida encompassed 57 county-linked affiliates in Florida (Exhibit 2). Each affiliate executed the purchasing of materials independently, and served the community in areas of housing construction, fundraising and mortgage services.

Barbara wanted to gather as much data from the affiliates as possible for USF CSCMP to analyze. This was a challenge because each affiliate filed hard copies of their purchase orders, and there was no digital database from which the information could easily be collected. Having no centralized database for aggregating costs or volumes, Barbara sent an email request to the 57 Florida Affiliates for their purchase orders of the most recent home they had completed. Of the 57 affiliates, 11 were able to gather the requested data in time. The participating affiliate counties were:

1. Hillsborough
2. Pensacola
3. West Pasco
4. Sarasota
5. Alachua
6. Collier
7. Miami
8. Volusia
9. Beaches
10. Charlotte
11. Lee

Volunteering

HfH depended heavily on volunteer labor. About 90% of the labor that goes into a HfH home was done by volunteers of the local community. In 2017, more than 2 million people worldwide volunteered for HfH. There were various ways to volunteer at HfH Florida, to include:

- Building houses as individuals or teams
- Working at local HfH second-hand building supply and donation centers (AKA "Restores")
- Traveling to build sites internationally
- Coordinating events with corporations or other non-profit organizations

The average cost of $110,000 homes was about $90,000 for HfH to build due to reduced labor and material costs. The benefiting families saved about $20,000 off the price of a home, and did so interest-free. In order for a family to qualify they needed to:

- Prove hardship and a need for affordable housing.
- Be able to pay the mortgage (Usually between 20-30% of a homeowner's monthly income).
- Prepay a $3,000 down payment towards the principal.
- Donate their time to work with other volunteers to build their own home and work on other local homes. This "sweat equity" averaged between 300 to 500 hours.

HfH Partnerships

HfH Florida partnered with various organizations for in-kind donations, financial support, and community volunteering hours. The following organizations were key corporate partners of HfH Florida:

- ❖ Thrivent Financial for Lutherans
- ❖ Dow Chemical Company
- ❖ Schneider Electric
- ❖ Lowe's
- ❖ Home Depot Foundation
- ❖ Bank of America
- ❖ Valspar
- ❖ Ethan Allen
- ❖ Whirlpool
- ❖ Yale Locks & Hardware
- ❖ Nissan
- ❖ Delta Faucet

Many partners also donated materials directly to HfH Florida to help the community-building efforts. Some examples of donated items included furniture, building materials, appliances, and more.

Exploring Procurement Methods

Each of Florida's 57 affiliates throughout Florida made material purchasing decisions independently. They chose different suppliers and contractors without knowing the prices or volumes accumulated by other affiliates. The records of material purchases were nearly always hard copies instead of digitized, so there was no quick way of consolidating information for comparison or quick referencing. The inability to easily bring this information together for analysis made it difficult for any decisions or recommendations to be backed by hard data. Barbara knew it would take too much time and resources to tabulate the millions of products ordered within the thousands of photocopied receipts across the hundreds of homes built over the tens of years HfH had been operating.

HfH Florida built an average of 500 new homes annually. Buying in larger volumes typically led to lower prices but it also created a need for a central procurement office or officer for oversight, and a computerized infrastructure to support communication between affiliates and the main office or officer. Without accurate figures to back up a recommendation, Barbara couldn't justify making big changes to their current methods. She didn't have the time to do it all herself, and her team was busy already with their main goal of getting homes built. Nonetheless, Barbara wanted the topic of procurement explored more.

Background: USF CSCMP

USF CSCMP was a student organization founded by 11 students in 2014 for young professionals interested in the Supply Chain Management field. Through maximizing the benefits of a membership, the organization grew from 11 to over 75 members by 2017 - a growth of 581%. USF CSCMP was a subset branch of the globally recognized CSCMP international organization, which was established to connect a huge network of professionals in areas like procurement, warehousing, logistics, demand planning, and inventory management. Professional CSCMP members paid an annual fee, but student memberships were deeply discounted to make them more affordable for young professionals.

USF CSCMP held weekly meetings on campus to network, learn, and develop. Local supply chain professionals came to these meetings to share their experiences and expertise. Company tours were hosted regularly as well, exposing members to hands-on learning experiences from real supply chain operations.

The goal of USF CSCMP was to professionally develop its members in the field of supply chain management, and Barbara was recommended to contact the group for an analysis of HfH's procurement operations. Upon receiving the request, USF CSCMP happily embraced the opportunity to help and learn.

The Plan

To understand the data, the USF CSCMP team (the "team") created an Excel document using the relevant information from the invoices they received. After the data was tabulated and cleaned, it could be analyzed by USF CSCMP to find insightful information like trends in prices and volumes. This step was the hardest part, as there was no quick way to tabulate photocopied invoices. Some affiliates had more information available than others about purchase orders, suppliers, and transportation costs.

In addition to data about the past, USF CSCMP also wanted to understand potential savings in the future if relationships were built and volume discounts recognized. To do so, the team created a request for information (RFI) document which asked current and potential suppliers for information regarding volume discount pricing on 18 of HfH's most commonly used products (Exhibit 8).

Procurement

Procurement is the process of strategically selecting vendors, establishing payment terms, researching suppliers, negotiating contracts, establishing quality standards, and evaluating final outcomes (LINCS, 2016). Done right, this process creates a mutually beneficial relationship between a business and its suppliers to satisfy customer demand.

Purchasing is a function of procurement, which refers to the transactional execution of buying goods or services. Purchasing professionals, also called buyers, play a vital role in supply chain operations, as they oversee purchase orders, payments, receiving, and record-keeping. While procurement is the management of selecting how and where to buy goods and services, purchasing handles the actual orders.

Centralized

Centralization of a supply chain refers to an organization designating an authority for decision making (Exhibit 3). In regard to procurement, decisions would be made by a single person, office, or team at a regional level. Reserving critical decisions to a central authority that focuses on procurement can foster more effective and robust procurement operations for large organizations (Kokemuller, 2018). Some benefits of aggregating procurement operations can include:

- Increased volume discounts
- Sharing resources, both products and information
- Better organization via standardizing processes, record-keeping, and supplier relationship management

Decentralized

A decentralized approach takes away control from a central authority, allowing local branches to make independent decisions (Joseph, 2018). No single office or manager oversees decisions (Exhibit 4). This autonomy can work well for organizations that need flexibility in choosing suppliers based on things like geographic locations and price fluctuations. Decentralized systems are harder to control and tend to have more variability, as there is more than one decision maker across several different projects. Benefits of decentralized procurement can include:

- Quicker response and adaptability
- Greater flexibility
- Empowering affiliate leadership

HfH's Established Method: Decentralization

The method HfH Florida used was the decentralized method, where each of the 57 affiliates purchased supplies independently of the rest. The affiliates did not communicate about purchases and as a result, product costs varied considerably among the affiliates. This prevailing method did not have HfH Florida or its affiliates take advantage of any major volume discount pricing either. Although being decentralized had its advantages, it came at a cost.

Decentralized Procurement Strengths

There were several benefits to HfH Florida's decentralized model. One such benefit was the ability for affiliates to respond to issues quickly. With each affiliate leader granted the power to make key decisions, no problems must wait to be solved by a central authority. Affiliate leaders knew their regions best and could adapt more easily to local markets, customers, and stakeholders.

The decentralized approach also empowered the leaders of affiliate locations with autonomy. In addition to greater flexibility and convenience, giving leaders the ability to make choices can influence their satisfaction and motivation on the job. "Decentralization can improve morale throughout the company as managers and leaders at all levels believe they have strong involvement in the success or failure of the company" (Kokemuller, 2018).

Each affiliate had relationships with suppliers that had already been built and established. Current suppliers had been tested in terms of quality, dependability, and overall service provided. Affiliate locations did not mind paying slightly higher prices if it meant reliable products and services.

Decentralized Procurement Weaknesses

Each affiliate purchased materials only as each home was approved to be built, and only purchased enough to build that home. Savings are usually attained when larger volumes are ordered, a principal known as *economies of scale*. Higher order quantities can allow for lower prices (Odhiambo and Odari, 2016). Decentralization often undermined the ability to utilize economies of scale because materials were ordered in smaller incremental volumes. There might have been some suppliers that offered materials with lower prices if ordered in bigger volumes, thus lowering the overall cost of building the house.

Another weakness of the current decentralized procurement method was that there was no standard process for collecting information about purchases such as price, quantity, and delivery specifications. Affiliate locations would execute a purchase and file away the hard copy. This made finding information from past purchases tedious and difficult.

For example, if a southern affiliate like Dade County wanted to compare the average prices affiliates paid for windows across the rest of Florida, they would have to send a request to other affiliates for their input. Those locations would then have to scour through old files, scan them, and email them to Dade County. This process was complicated and took a considerable amount of time away from already busy affiliates.

This inability to access enough data efficiently also posed complications for any analysis to be completed. No user-friendly software was in place to capture enough detailed data, making the gathering of data prone to challenges. It was this data that could ultimately help leaders make key procurement decisions backed by quantifiable numbers. As Hewlett Packard's first woman CEO, Carly Fiorina, once said, "The goal is to transform data into information and information into insight" (Fiorina, 2004).

Centralization as an Option

Barbara often heard mention of the potential benefits of introducing a centralized procurement structure. Yet it had not been proven to be a viable alternative to HfH Florida's current method. It was hard to consider changing a process that had worked well for so long.

Centralized Procurement Strengths

A primary benefit to a centralized procurement method is lower overall prices since demand could be aggregated, which would allow for economies of scale, or bulk pricing (Exhibit 5). Examples of bulk discounting could be found every day at the grocery store. Milk can be purchased as a gallon or half-gallon. Although a half-gallon of milk costs less overall than a whole-gallon, the whole-gallon of milk is cheaper per ounce. One gallon of milk is rarely as expensive as two half-gallons because suppliers benefit by selling more volume.

If HfH were to centralize their procurement and aggregate demand, it would also gain stronger relationships with selected suppliers. Purchasing materials and services from single sources could strengthen HfH's negotiation power which could lead to long-term contracts with better discounts, customer service, and/or delivery terms (Hoang, n.d.). For HfH Florida, a central procurement office could be responsible for:

- Determining policy, standards, procedures, and group specifications
- Communicating with potential suppliers and maintaining records
- Contract negotiation
- Tracking of affiliates' pooled inventory
- Specialization of personnel regarding procurement topics

In addition to possibility benefiting from volume discounts and stronger supplier relationships, a centralized procurement method could facilitate a standard process for gathering, storing, and analyzing data.

A central method would also make ordering easier for affiliates, which could save on costs in terms of labor, time, and office supplies. As opposed to each location spending time selecting from a wide range of suppliers, one designated procurement department could be responsible for vetting suppliers based on location, price, and service. This would free up time for affiliate locations to focus on responsibilities like purchasing and home-building. It was also possible that a centralized procurement method would allow HfH to take advantage of seasonal price fluctuations of building materials.

Centralized Procurement Weaknesses

Switching to a new way of doing anything is inherently risky. New processes must be well planned, which often took a great deal of time and careful consideration to implement successfully. One major reason HfH had stuck to their decentralized method was because they did not keep any of the savings made from buying in bulk. HfH's business model was so that the home owner paid for the house's total costs, regardless of how much or how little was actually spent in building the home. HfH had a system that worked. Was changing their established procurement processes worth the risk?

If a centralized procurement method led to bulk pricing discounts, HfH Florida may need to consider storage and inventory costs. When it comes to buying bulk, there is a trade-off relationship between price and storage (Kraljic, Sept. 1983). Although higher volumes can be cheaper per unit, HfH Florida may need storage capabilities if the materials were not used immediately. Storage space and inventory management were hefty investments. Since HfH worked largely on volunteer labor, it might be too challenging to coordinate logistics, storage, and inventory oversight.

Price fluctuations of materials can pose a challenge too. Materials like lumber and concrete could change significantly and rapidly. It is hard for companies to find a fair, fixed price that is not too risky for either party when prices of materials and commodities go up and down.

A centralized method would also grant less variety in supplier selection. Not every supplier had the fulfillment capacity to meet the needs of HfH Florida. Some products, for example rebar, had many local suppliers providing great prices and services, but not many had the distribution capabilities to supply all 57 affiliates. In this case, having a centralized system could limit suppliers based on their distribution ability, reducing flexibility in supplier selection.

Perhaps the most controversial issue associated with a centralized approach was its effect on the local and national economy. The current decentralized procurement method allowed affiliates to support the local economies through buying from local businesses. Buying locally was thought to help support the local economy, which had indirect effects on the communities HfH wanted to help. According to the U.S. Census Bureau, the number of small businesses nationwide had continued to plummet since the 1980's (Exhibit 6). This decrease was thought to be the result of an increase of large corporations pushing small businesses out of profitability. HfH might be paying more money for locally sourced goods, but those small businesses might also be supporting the kinds of families and communities that HfH aimed to help.

As an example, consider cabinets. As each of the 57 affiliates purchased cabinets from local businesses, those local economies were stimulated. But if a deal were struck between HfH Florida and a company like Home Depot to source all cabinet products and services, there could be an undesired effect on those communities at microeconomic and macroeconomic levels.

The Hybrid Model: A Centralized and Decentralized Approach

Barbara had a firm understanding of the benefits and drawbacks of both procurement methodologies. But it was not clear if a complete change was warranted or feasible. Centralizing procurement had benefits which could have potentially outweighed the benefits of the favored decentralized method. But many of Barbara's closest colleagues and peers at HfH worried that a big changeover would be too risky for the non-profit organization. Maybe a hybrid model of procurement could be a better fit.

The hybrid method could be described as combining aspects of both centralized and decentralized designs (Johnson and Leenders, 2001). The benefit of using a hybrid structure approach was that it provided the opportunity to combine the key features of centralized and decentralized structures (Exhibit 7).

Benefits of the Hybrid Model

The hybrid model takes advantage of utilizing both centralized and decentralized procurement methodologies, while minimizing the disadvantages of either (Karjalainen, 2011). Instead of changing the system completely, such that every product was purchased through a central office, HfH Florida could choose certain products to centralize. Selecting a few products to buy in bulk could reduce HfH Florida's costs, while still affording a great deal of flexibility and autonomy for affiliates to buy some materials locally. A hybrid system would allow HfH affiliates to maintain strong relationships with local suppliers, while also taking advantage of discounted prices for large volume items.

Drawbacks of the Hybrid Model

Using the hybrid structure is not always ideal. Implementing such a system would still require a considerable amount of coordination between affiliates and suppliers. Spending time and resources must have a clear return on investment. If an office were created to support centralized purchasing, it may not be worth its cost if only one or two products were centralized.

USF CSCMP's Data Analytics Results

With data available from the 11 affiliates, USF CSCMP was able to put together an excel dataset with information about suppliers, prices, quantities, and locations. After much cleaning and filtering of the data, the USF CSCMP team finally had a dataset to analyze.

Out of the list of consolidated products, USF CSCMP narrowed down their analysis to 18 products (Exhibit 8). These products were selected based on the available information within the purchase order invoices sent by the affiliates. From that dataset, the team constructed some statistical models and was ready to make some inferences about the organization's procurement. The team used a data visualization software tool called Tableau. Some highlights of the analysis were as follows:

- There was a large price variation on products between affiliates (Exhibit 9).
- Some suppliers were used significantly more than others, even across affiliates (Exhibit 10).
- Geographic location was not prohibitive of supplying materials, as most suppliers could ship their products all around Florida (Exhibit 11).
- Affiliates spent the most money on concrete mixing, but the product ordered in the highest quantities was floor tiles (Exhibit 12).

The Decisions

Upon entering her office from the day's last meeting, Barbara was exhausted. Working hard on other important tasks, she had not had much time to think about the procurement methods. She cleared her desk and prepared to spend the next hour considering the options for procurement. What should Barbara do?

1. **Do nothing and stay decentralized**. HfH Florida did not have a centralized headquarters to oversee procurement, and maybe it was the best system for them. The affiliates had successfully obtained their products from various suppliers across Florida since 2009. Decentralization allowed each affiliate to have autonomy in selecting suppliers, and it was up to them to manage those relationships. The relationships already established between affiliates and suppliers likely had discounts and helpful services included. Rather than changing processes and trying new things, HfH Florida might be better off sticking with what has always worked before.

2. **Centralize all procurement and purchasing operations.** One central location to oversee the selection, negotiation, purchasing, and tracking of all products may be the best way for HfH Florida to get the most value out of their home-building operations. With the savings from centralizing the purchasing process, HfH Florida could stretch their budget to build more homes annually and/or make homes less costly for the end-using family. A centralized method would also allow for easier management of data, as all financial documents could be recorded in a standard process through one location. With a simpler way to track and extract data, more accurate and powerful statistical modeling could lead to uncovering more hidden efficiencies.

3. **Try a hybrid procurement model.** Rather than a binary decision of all one way or another, HfH Florida could ease into change by using both methods. With a hybrid method, some critical purchasing could stay decentralized while other purchases would be managed through a central location or manager. Instead of changing the whole system, only a small handful of items could be centralized at first as a prototype, then the number of items could be expanded based on the value that was being realized.

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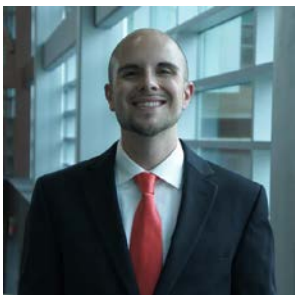
Biographies

Alicia Wang completed dual degrees of an MBA with a concentration in Supply Chain Management and Master of Science in Business Analytics & Information Systems at USF in May 2018. Alicia has long been involved with USF CSCMP holding roles as Treasurer in 2016, President in Spring 2017, and co-advisor in Spring 2017 and Spring 2018. Alicia now works for Citibank as an Analytics and Reporting Analyst. She is passionate about Supply Chain Management and looks forward to continuing this fulfilling career path.



Sam Mohammad has over eight years of experience managing supply chain and marketing operations throughout several leadership roles in college, military, and business. He managed supply chain operations for Heavy Marine Helicopter Squadron 302 for over four years and is certified through CSCMP as a supply chain operations management specialist. Sam holds a Bachelor of Science in Management with a specialization in Marketing from the University of Phoenix and is earning his MBA at USF with an expected graduation in May 2019. Sam is a Lean Six Sigma professional with a Yellow Belt certification.

Jewel Huang completed her dual degrees of an MBA with a concentration in Supply Chain Management and Master of Science in Business Analytics & Information Systems at USF in May 2018. She works at Bristol-Myers Squibb as an IT auditor and started as an intern there in January 2017. Jewel was born in Taiwan but grew up in Belize. Her passion to help develop the people around her inspired her to take on a leadership role as President of USF CSCMP in Fall 2017 and co-advisor in Spring 2018. During her leisure time, she enjoys watching movies, cooking, and traveling to different countries.

Nysa Bryan is a Planner at Safran Electrical & Power. Nysa completed her Bachelor of Science degree in Marketing, specializing in Supply Chain Management in May 2018. As a student, she was a Technician for the USF Operational Technology Department She was also involved in multiple student organizations where she led committees, organized events, and supported daily operations. Nysa has a passion for process improvement and is a Lean Six Sigma Yellow Belt.

Vishrant Rajnikant Panchal completed his Master of Science in Engineering Management in May of 2018. His Bachelor of Science in Mechanical Engineering from Gujarat Technological University in India started his supply chain passion for process improvement. He has a Six Sigma Green Belt Certification and is passionate about improving material management and process optimization. His knowledge and work experience has driven him to make supply chain processes more efficient and cost effective.

Dalia Herrera is working towards attaining her Bachelor of Science in Information System Management. She is a first-generation student and she is eager to be successful in all her academic responsibilities as well as her current employment. Through various community service, a full-time job, and full-time student, she is an active member of CSCMP. Being involved in organizations allows her to grow as an individual, and helping others grow as well. She is always willing to give her best to the team.

Hassaan Mujahid is pursuing an MBA with a concentration in Supply Chain Management. After completing his Bachelor of Science in Electrical Engineering from NUST School of Electrical Engineering and Computer Sciences, he was hired by Pak Elektron Limited (PEL) as a production engineer for power transformers. His achievements there include working on prototype transformers which cleared the short circuit testing and producing the highest output of power transformers in Pakistan by any company in the region. Hassan resigned this position in 2016 to pursue his MBA and challenge himself with new experiences. He is the head of the intelligence committee for USF's CSCMP.

Bharat Tejwani is a Research Assistant for USF's Supply Chain Management department while pursuing his MBA with a concentration in Supply Chain Management. He graduated Summa-Cum Laude with his Bachelor of Science in Finance at USF. After graduation, he worked for PwC as a Tax Process Specialist and then as an Operations and Sales Assistant at Asian Heights Co, an import-export company in Hong Kong. This experience led Bharat to pursue a career in Supply Chain and Logistics. Brian is a Lean Six Sigma professional with a Yellow Belt certification and currently serves as the VP of Programs for CSCMP.

Heather Davis completed her MBA at the University of South Florida with a concentration in Sustainable Business in August 2018. At USF, she served as an advisor for the Graduate Business Association and worked as is a Graduate Assistant in the Marketing Department facilitating business ethics classes. She graduated from The Ohio State University with a Bachelor of Science in Microbiology and, before pursuing her MBA, Heather worked in the pharmaceutical, food, and manufacturing industries. She enjoys traveling, yoga, and reading in her free time.

Kerry Walsh joined the Marketing Department at the University of South Florida as a full-time instructor in 2013 after serving as an adjunct since 2010. She also serves as the director of the Business Honors Program. Walsh has more than 20 years of experience managing sourcing projects for manufacturers, distributors, and retailers worldwide, including a position as import products manager for the second largest office products wholesaler in North America. She also developed proprietary logistics systems for several large U.S. retailers. She holds a Master of Science degree in Marketing from USF and a Bachelor of Science degree in Business Economics from the University of California, Santa Barbara.

Exhibit 1: Additional HfH Services

Source: HabitatforHumanity.com

Exhibit 2: 57 HfH Affiliates in Florida

Source: HabitatforHumanity.com

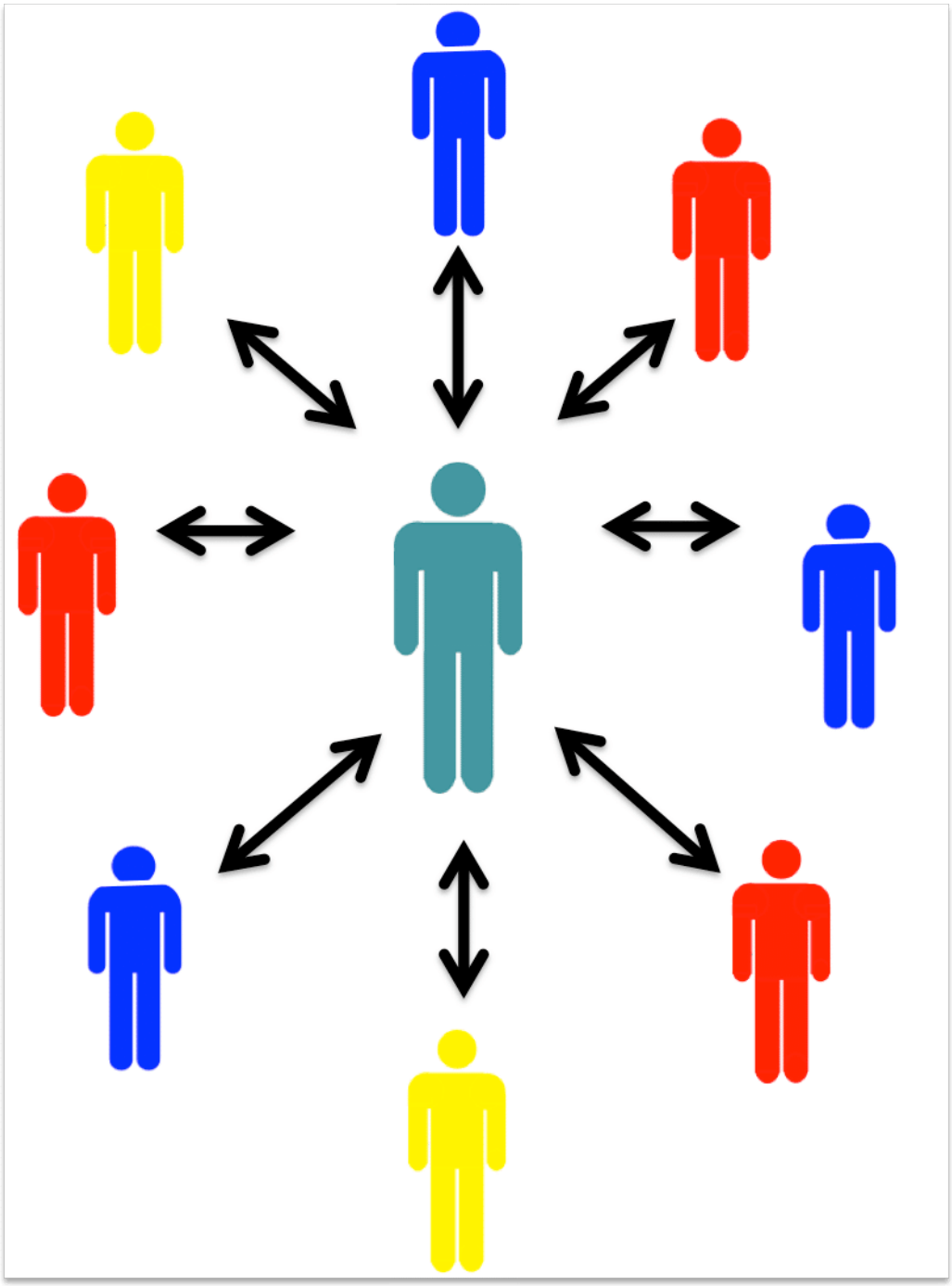
Exhibit 3: Items Analyzed in Case (18 total)

Item	Units required per standard house	Unit
Interior door	7	each
3000 psi concrete	58	yard
Window	4	each
2" x 4" x 12' SPF	32	each
2" x 4" x 92 5/8"	260	each
2" x 4" x 12' PT	32	each
7/16" OSB 4' x 8'	90	each
Dimensional asphalt shingle	84	bundle
Vented vinyl soffit	25	each
8" x 8" x 16" CMU	1400	each
1/2" x 4' x 12' drywall	91	psf
Rebar #5 20'	60	each
3068 Entry Door	1	each
3 1/2" baseboard	352	psf
Ceiling mount light fixture	4	each
Cabinets	2	each
Floor Tile	1350	psf
12D Nails	1	carton

Source: USF CSCMP Team, 2018

*CMU: Concrete Masonry Unit, OSB: Oriented Standard Board, SPF: spruce, fir, and pine, PT: Pressure treated

Exhibit 4: Centralized Process

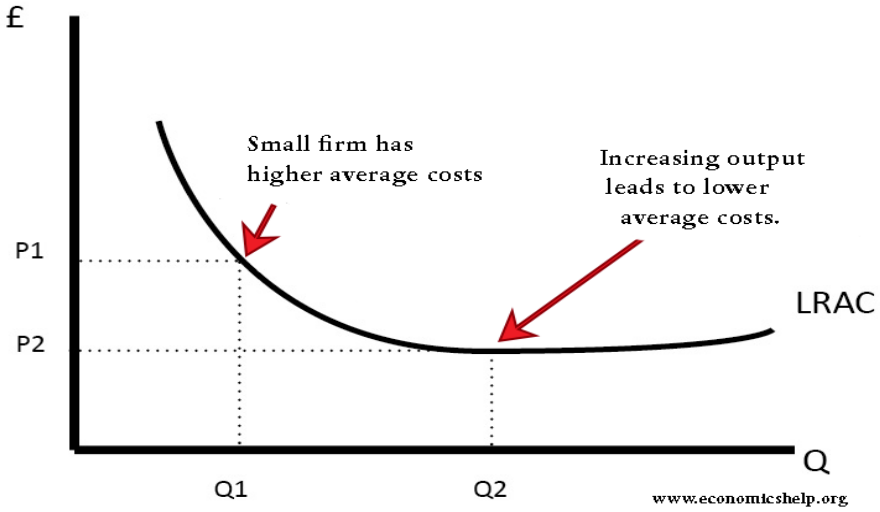


Source: https://organizationalphysics.com/wp-content/uploads/2015/10/PM_too_centralized.png

Exhibit 5: Decentralized Process

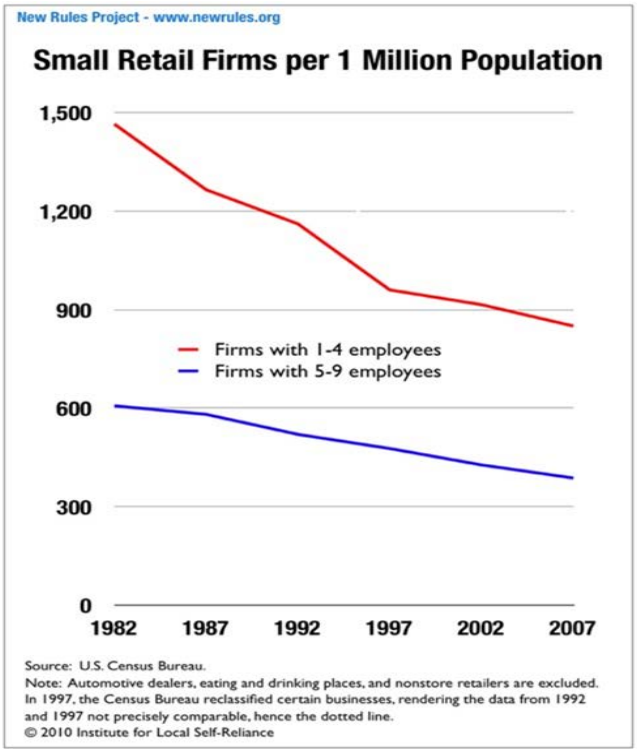
Source: https://hackernoon.com/decentralized-cryptocurrency-exchanges-93039613eeb7

Exhibit 6: Economies of Scale



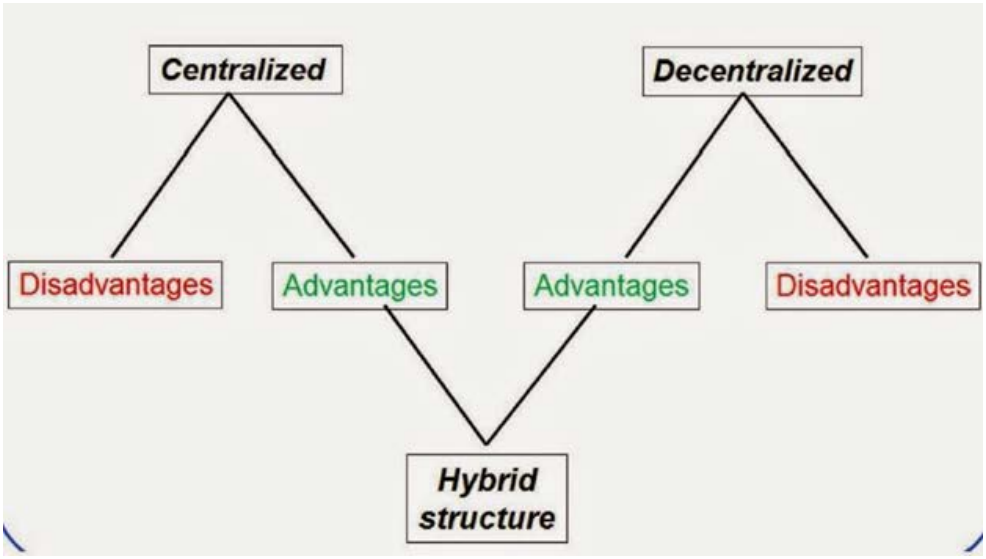
Source: economicshelp.org
*LRAC: Long Run Average Cost

Exhibit 7: Decline in U.S. Small Business



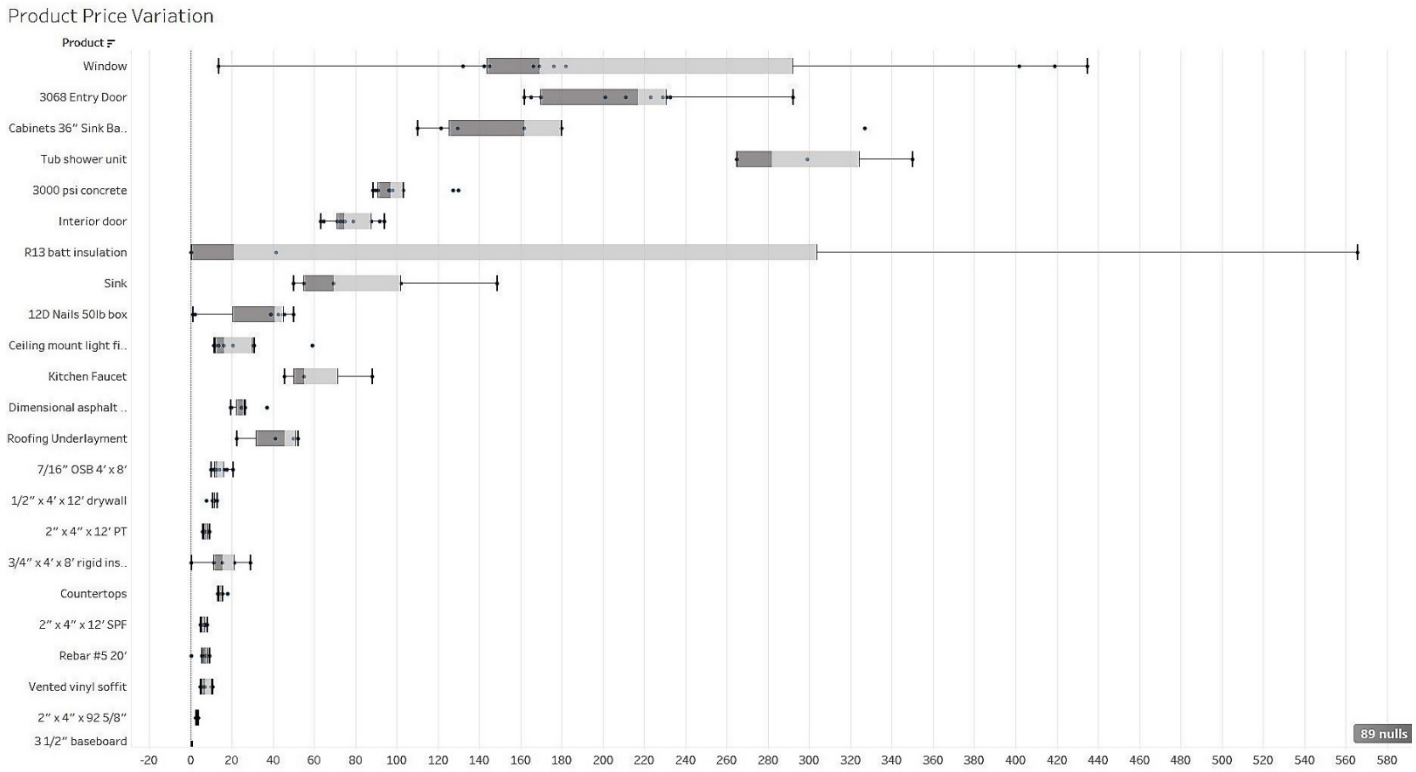
Source: newrules.org

Exhibit 8: Hybrid Model



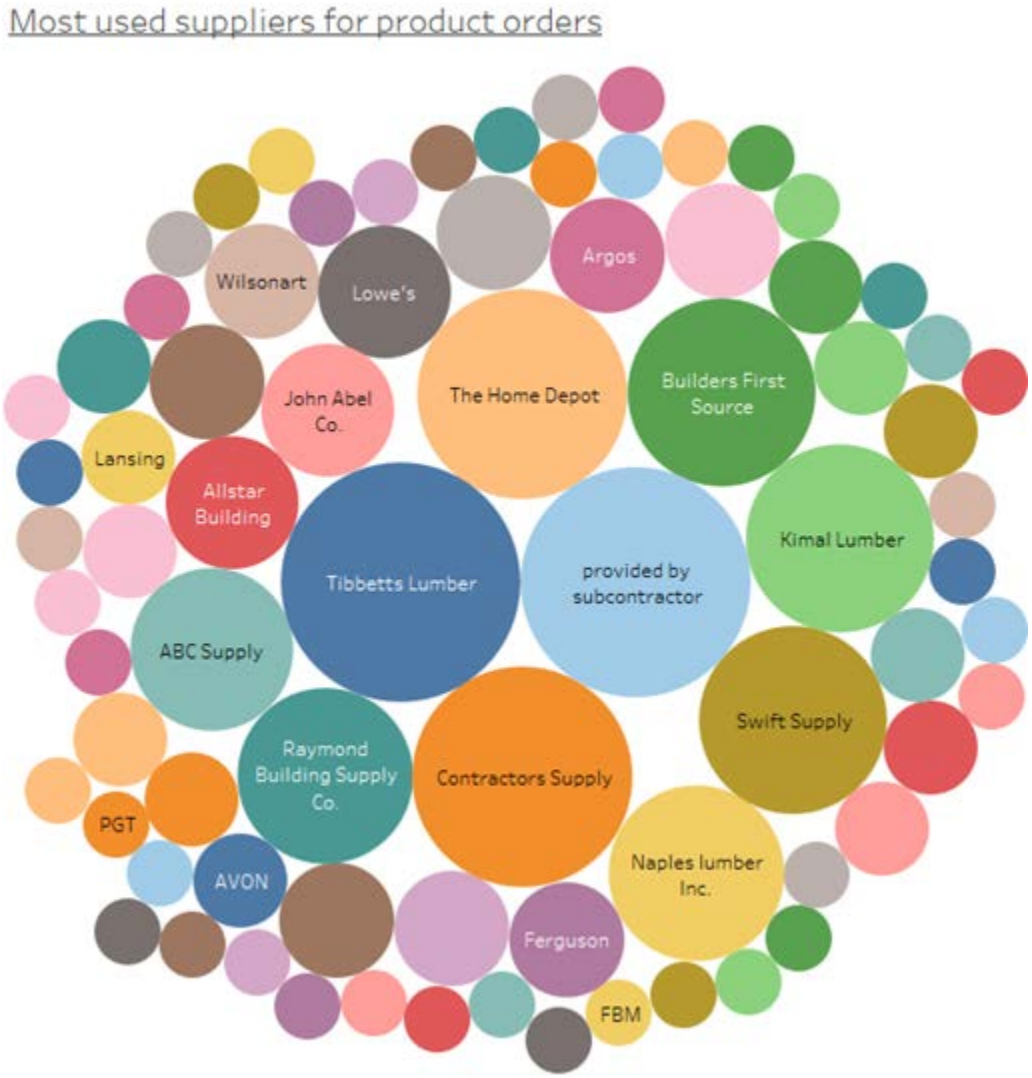
Source: http://kj-procurement.blogspot.com/

Exhibit 9: Tableau Table: Product Price Variation



Source: USF CSCMP Team, 2018
*CMU: Concrete Masonry Unit, OSB: Oriented Standard Board,
SPF: spruce, fir, and pine, PT: Pressure treated

Exhibit 10: Tableau Table: Commonly Used Suppliers

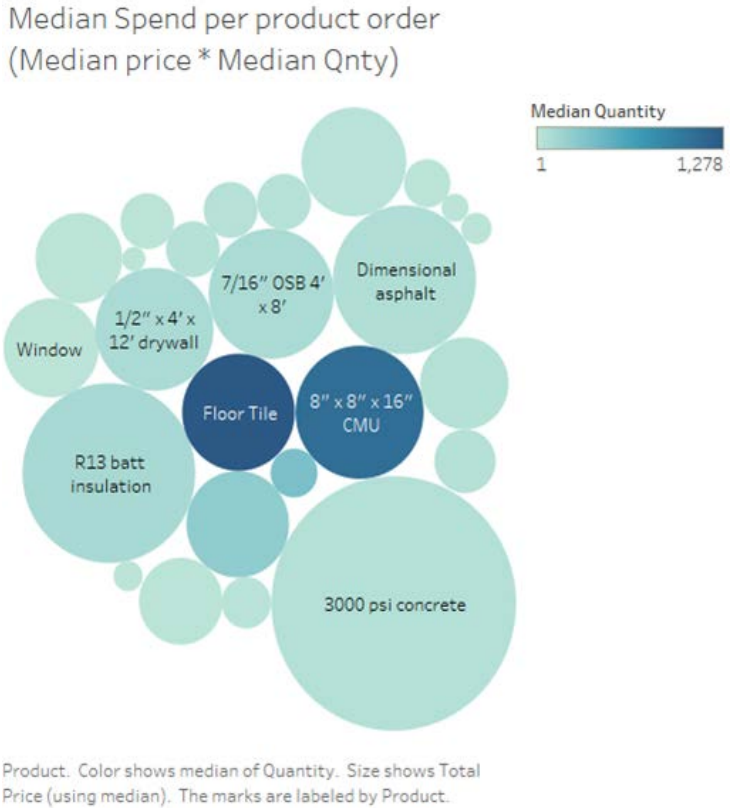


Source: USF CSCMP Team, 2018
*The size of the circles corresponds with the number of purchases through that supplier.

Exhibit 11: Tableau Table: Supplier Location

Source: USF CSCMP Team, 2018

Exhibit 12: Tableau Table: Spend and Volume



Source: USF CSCMP Team, 2018

*CMU: Concrete Masonry Unit, OSB: Oriented Standard Board