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Conceptual Model for Establishing a Service Company from Scratch

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Abstract

This paper presents a conceptual model for establishing a service company from the ground up, exemplified by the maintenance of refrigeration equipment. The relevance of this study is driven by the rapid expansion of global markets for commercial refrigeration equipment and associated service offerings, where maintenance costs have become a strategic tool for minimizing operational losses. The objective of this work is to develop a conceptual model for launching a service company dedicated to the maintenance of refrigeration equipment in the HoReCa segment, capable of ensuring the uninterrupted and energy-efficient operation of client installations, with minimal unplanned downtime and predictable expenditure. The novelty of the suggested model lies in the integration of digital dispatching, predicted IoT monitoring, and a more effective SLA setup into a single value-added subscription offer, as well as the creation of an operational plan based on small hubs, multi-use groups, and an RACI chart. For the very first time, a money value step has been tested, including checks of small ads and where costs equal benefits; also, a simple product start case with step-by-step growth based on 14 trade sources. The main findings demonstrate that by starting in the restaurant and hotel sector—characterized by high sensitivity to downtime and dense geographic clustering—it is possible to rapidly achieve investment payback and establish service operations through route optimization and agile parts replenishment. A product line structured from reactive repairs through preventive contracts and IoT monitoring to equipment modernization transforms the revenue model into a sustainable stream of recurring high-margin payments. A digital core with predictive analytics and stringent service-level agreements (SLAs) creates a self-learning system in which each service call drives continuous process improvement. This paper will be useful to startup leaders of service companies, field service managers, and researchers in service management.

Keywords: *Service Company, Refrigeration Equipment, Conceptual Model, Predictive Maintenance, Digital Dispatching, SLA, Value Ladder.*

INTRODUCTION

The cooling industry continues to exhibit steady growth: the global market for commercial refrigeration equipment was estimated at USD 85.6 billion in 2024, with a forecasted doubling by 2034 driven by stricter sanitary regulations and the transition of HoReCa enterprises to low-energy-consumption equipment [1]. Meanwhile, maintenance costs are gradually transforming from an ancillary expense into a strategic instrument for reducing operational losses: the global service market for industrial refrigeration has already surpassed USD 3.8 billion. It is growing at a rate that outpaces hardware sales [2].

Against the backdrop of high capital intensity in refrigeration installations, business customers increasingly evaluate providers not by repair costs but by the prevented downtime. Therefore, the mission of the new service company is to ensure the uninterrupted and energy-efficient operation of clients' refrigeration fleets with minimal unplanned stoppages. The vision envisions regional market leadership through digital dispatching and predictive maintenance, with a value proposition centered on guaranteed response times, a stock of original components, and extended post-repair warranties.

A key operational principle is minimizing equipment downtime. Every minute of a non-operational refrigerator translates into inventory loss and a degraded customer experience for a restaurant, as well as direct write-offs for a retail chain. Consequently, the service offering must be designed as a comprehensive subscription, in which monitoring, preventive measures, and emergency interventions form an integrated Service Level Agreement (SLA) loop.

MATERIALS AND METHODOLOGY

This study of the conceptual model for creating a refrigeration equipment service company is based on an analysis of 14 sources, including industry market reports, economic

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assessments of downtime costs, field service benchmarks, regulatory documents, and labor resource statistics. The global market volume for commercial refrigeration systems in 2024 was examined in the Global Market Insights report [1]. Growth in the industrial refrigeration service market was sourced from RefIndustry [2], and the dynamics of the residential refrigeration segment were analyzed by Grand View Research [3]. The customer cluster structure and the count of convenience outlets are detailed in the NACS report [4], while dark-store and Q-commerce development rates are provided in MetricsCart [5]. HoReCa downtime costs were assessed by Xtrachef [6], and the share of preventive HVAC contracts by Mordor Intelligence [7]. Best practices in SLA design and their impact on customer retention were reviewed in Field Service News [8] and WorkTrek [9], with comparative FTFR analyses from Aquant [10] and Fieldpoint FSM [11]. Organizational norms regarding control spans and manager counts are provided by Upkeep [12]. Technician labor costs are reported by the BLS [13], and EPA Section 608 certification requirements are outlined in US EPA documents [14].

Methodologically, the work involved:

- Market segmentation into four macro-clusters to select a priority niche;
- Financial modelling of the value ladder with marginal contribution and break-even point calculations;
- SLA and FTFR benchmarking to set target KPIs based on industry standards;
- Development of an operational service-process architecture with clear role allocation via a RACI matrix and identification of key resources.

Results and Discussion

The U.S. refrigeration service market can be logically divided into four macro-segments. The consumer cluster was valued at USD 27.58 billion in 2024 and is growing at a rate of approximately 2.3% CAGR, driven by the replacement of installed units and innovative home-appliance features [3], as shown in Fig. 1.

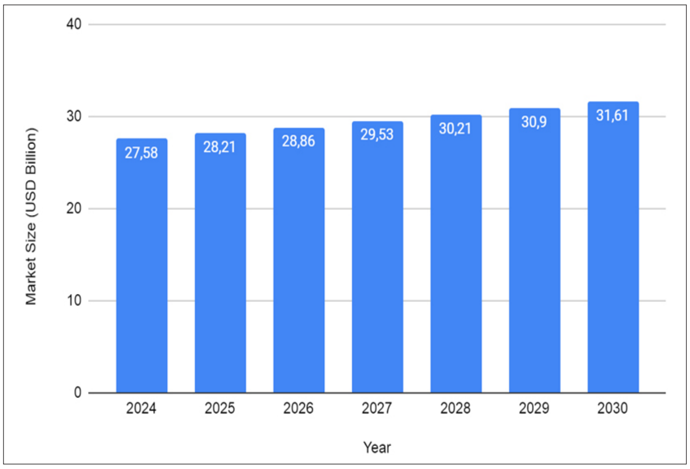

Fig. 1. North America Household Refrigerators and Freezers Market Size [3]

The HoReCa sector falls under the broader commercial contour, which already generates about USD 23.5 billion and is projected to reach USD 45.8 billion by 2034, when energy-efficient installations become standard [1]. The retail sector and FMCG rely on 152,255 convenience stores, with display cabinets constituting the largest equipment-cost category [4]. Finally, the micro-logistics niche—encompassing dark stores and express-delivery hubs—reached USD 7.5 billion in 2023 and is growing at an annual rate of 8%, driven by 10-minute services in major metropolitan areas [5].

When selecting an initial niche, key criteria remain failure frequency, downtime cost, average ticket size, facility density, and clients' willingness to enter SLA contracts. In restaurants, a compressor failure incurs USD 200–700 in parts plus labor, and a four-hour kitchen shutdown adds ≈ USD 3,000 in lost revenue on a daily turnover of USD 10,000 [6]. Nevertheless, HoReCa uniquely combines high downtime sensitivity with geographic clustering of sites, which increases crew utilization and reduces deadheading.

Therefore, it is advisable to launch in the restaurant and hotel segment. Adjacent convenience formats, using similar equipment modules, and rapidly growing dark-store chains, willing to pay for 24/7 monitoring and predictive maintenance, represent additional reserves.

The American refrigeration service market is shifting from one-off calls to comprehensive equipment lifecycle management; accordingly, the product line should be structured as a continuous value ladder. At its base is reactive repair, where the customer pays for labor and parts after a failure; however, this level yields minimal margin and exhibits high price sensitivity. Above that lies preventive maintenance—scheduled inspections and heat-exchanger cleanings, which are typically included under annual contracts. According to Mordor Intelligence, preventive contracts already account for 39% of U.S. HVAC service revenue in 2024, indicating strong business demand for predictable costs and reduced failure rates [7].

The next tier is proactive IoT monitoring, where temperature, compressor current, and refrigerant-pressure sensors transmit telemetry to a cloud platform, allowing algorithms to predict failures. Given HoReCa's sensitivity to product loss during malfunctions, the savings quickly offset the monthly monitoring subscription. The top tier of the stack involves equipment modernization, which includes replacing old compressors with energy-efficient inverter models, switching to low-GWP refrigerants, and installing display cabinets. Although modernization remains a one-off project, it generates the highest gross revenue per client and often follows logically from a long-term service contract.

Monetization proceeds as the client ascends the ladder. At the repair level, revenue is derived from hourly rates and parts mark-ups. With preventive maintenance, a fixed subscription fee smooths seasonal demand fluctuations and improves cash flow forecasting. IoT-monitoring packages introduce a SaaS component, entitling the provider to share in a portion of the savings from reduced downtime. Thus, the company transforms its model from one-off revenue with low predictability to recurring high-margin payments.

The adhesive that retains the client at each level is the Service Level Agreement (SLA). The document stipulates response and recovery metrics—typically 2–4 hours until crew arrival and a 95% first-time fix rate. Aberdeen Group analytics show that companies with formalized Service Level Agreements (SLAs) retain 18% more clients and achieve 13% higher service revenue than those without clear commitments [8]. Hence, the SLA becomes not merely a legal appendix, but a client-evolution tool: by meeting the promised performance on base contracts, the service provider builds trust and facilitates upselling to IoT subscriptions and modernization projects, closing the loop on repeat sales and sustainable profitability.

The operational architecture links the aforementioned value-creation strategy to the daily operations of the service company, defining the logic by which an incoming request becomes confirmed client equipment readiness. It aligns processes, resources, and control metrics so that the previously promised level of refrigeration-system uptime is economically achievable and reproducible.

A high-level service process begins with digital incident intake, where intelligent triage classifies urgency and the typical parts kit. The planning module then generates a route considering the location of the satellite warehouse and the nearest technician's skill set, and a mobile application delivers a diagnostic checklist to the field. Upon job completion, the technician logs results, which automatically update the knowledge base and inventory levels.

To sustain this process, four key resources must be balanced. Personnel are organized into integrated crews, where average technician utilization indicates potential for productivity gains via schedule optimization and reduced empty runs. Inventory is managed by a near-contour storage principle: high-liquidity parts are housed in micro-hubs close to main service points, reducing replenishment cycles to one day. The technology platform integrates the field-service management system, IoT temperature sensors, and a predictive analytics module, enabling some interventions to be handled remotely. Transportation resources are planned according to a time × cargo-temperature class matrix, with each incident class matched to a guaranteed delivery window and an appropriate refrigerated truck type.

The KPI system and SLA-control mechanism cement the architecture: at the strategic level, FTFR, average response time, cost per request, warehouse utilization rate, and vehicle utilization are monitored; at the operational level, a daily deviation dashboard is employed. A standard SLA for critical refrigeration circuits guarantees at least 98% equipment availability and 85% FTFR; breaches trigger service credits to the client and a root-cause analysis procedure [9]. Linking metrics with economic consequences creates internal motivation for continuous improvement and closes the gap between business objectives and field execution.

Collectively, these elements form a self-learning operational system: data from each visit refines planning, spare-capacity personnel shift to preventive work, and improved demand forecasting for parts reduces working capital. Thus, the operational architecture not only supports but continually reinforces the company's original conceptual model, enabling scalable growth without quality degradation.

A high-level service process begins with online request intake: an algorithm classifies criticality and recommends parts kits even before dispatch. The route planner matches location, required competencies, and micro-hub availability, while the mobile app provides the technician with a structured checklist. After completing the work, the results are instantly updated in the knowledge base and inventory. The critical metric is the First-Time Fix Rate (FTFR); the median value across 145 global service organizations is 71.9% [10], as shown in Fig. 2.

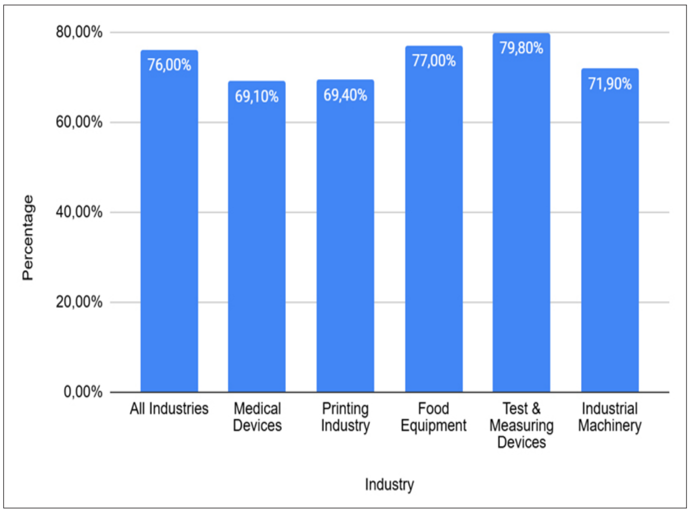

Fig. 2. Median First Time Fix Rate by Industry [10]

Every unfulfilled first-time fix is estimated to incur approximately USD 200–300 in direct costs for a repeat visit, which rapidly accumulates across hundreds of service requests in an extensive maintenance portfolio [11].

Balancing the process relies on four key resources. Personnel are organized into cross-functional crews, which embed efficiency gains through optimized dispatching and reduced deadheading. Inventory is managed via nearby micro-hubs for high-turnover parts, shortening replenishment cycles to one day and lowering working capital requirements. The technology platform integrates temperature IoT sensors, a predictive analytics module, and a field-service management system, enabling remote resolution of specific incidents. Transportation is planned through a time × cargo-temperature class matrix, wherein the refrigerated-truck type and delivery window are closely linked to the request urgency. A KPI and SLA framework cements the architecture: an internal deviation dashboard publicly displays FTFR, average response time, warehouse utilization, and vehicle loading rate, providing a unified basis for management decisions.

The organizational structure is designed to preserve operational speed as order volume grows. At launch, five key roles are sufficient: a CEO responsible for strategy and investment; a COO who translates these into processes; a commercial lead who builds the sales funnel and contracts Service Level Agreements (SLAs); a service manager who ensures resource readiness and KPI compliance; and technicians who deliver value on the customer site.

Interaction clarity is formalized in an RACI matrix, which for each service phase—from diagnosis to invoicing—specifies who is Responsible, Accountable, Consulted, and Informed. This approach simultaneously eliminates effort duplication and reduces the risk of communication breakdowns.

The team-scaling plan is based on a clear span of control: empirically, one managerial unit per ten technicians is considered adequate; beyond this range, the organization either loses agility or accumulates bureaucratic overhead [12]. As the client base grows, the structure branches into regional supervisors, dedicated product owners for the digital platform, and data-management specialists, while preserving the core RACI framework, thus enabling scaling without loss of service speed or quality.

The financial model is based on three stable revenue streams: one-off repair calls, subscription-based service plans, and parts markup. Labor costs are calculated using the median annual wage for HVACR specialists—equivalent to USD 28.75 per hour—allowing rapid estimation of the variable cost of a standard visit as the sum of labor, parts, and mileage [13]. Under this structure, each job's contribution margin covers fixed expenses for software licenses, micro-hub rent, liability insurance, and salaries of a small management team; the break-even point is reached when four technicians handle several hundred calls per month, and the payback period for initial investments in vehicles and warehouse typically spans two years.

To accelerate scaling post-MVP, the company must choose between reinvesting profits and raising seed capital. The former path ensures organic growth without a debt burden. At the same time, the latter allows for a doubling of crew size and geographic reach via a partial equity sale, but requires transparent unit economics metrics validated by a customer series.

Legal requirements are governed by federal Section 608 of the Clean Air Act: any employee who may open a refrigerant circuit and release refrigerant must hold an indefinite EPA certification at the appropriate level. Only certified technicians are permitted to purchase refrigerants, and the intentional release incurs substantial fines and civil liability risks [14]. Additionally, the company complies with OSHA standards for safe hot work. It tracks gas cylinders, subsequently transferring spent refrigerants to accredited reclaimers, which are integrated into operations via mobile app scanning of batch codes.

The launch roadmap is divided into three logically connected phases. In the first three months, the MVP is formed: the company is registered, a micro-hub is leased, the first technicians are certified, and the cloud platform is configured to handle several dozen requests. The next three months focus on automating route planning, deploying the mobile checklist, and stabilizing at hundreds of calls, demonstrating economies of scale. Over a six- to twelve-month horizon, a pilot for remote temperature monitoring using IoT sensors is rolled out, compressor supplier partnerships are established, and accumulated downtime reduction statistics serve as the basis for investor negotiations and the transition from linear to exponential growth. These stages are systematized in Fig. 3.

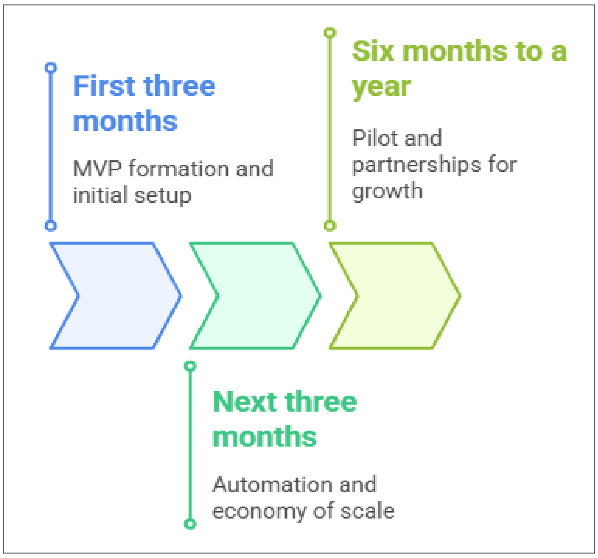

Fig. 3. Phased Implementation Timeline for MVP Development, Process Automation, and Growth Partnerships (compiled by author)

Thus, the conceptual model considered demonstrates that, by starting with the niche HoReCa segment and incrementally expanding the service offering—from reactive repair to preventive maintenance and IoT monitoring, and ultimately to equipment modernization—it is possible to construct a sustainable value ladder. The digital core, equipped with predictive analytics and stringent Service Level Agreements (SLAs), ensures the minimization of downtime and growth of client lifetime value (LTV). In contrast, the balanced operational architecture—based on micro-hubs, cross-functional teams, and clear Key Performance Indicators (KPIs)—guarantees the reproducibility of processes during scaling. Collectively, these elements create a self-learning system in which every service call and every metric becomes a driver of continuous improvement, enabling the company to transition smoothly from the startup phase to a regional market leader.

CONCLUSION

The proposed conceptual model for establishing a service company in the industrial refrigeration sector demonstrates high potential for sustainable development and scalable growth when launched in the niche HoReCa segment. Market analysis indicates that the global volume of commercial refrigeration equipment reached USD 85.6 billion in 2024, while service revenues have already surpassed USD 3.8 billion. The principal driver of success is not the cost of maintenance per se, but rather the ability to minimize unplanned equipment downtime. The company's mission—ensuring the continuous and energy-efficient operation of clients' refrigeration fleets with minimal unplanned stoppages—together with its vision of leadership through digital dispatching and predictive maintenance —delineates a clear market-positioning strategy.

The choice of the restaurant and hotel segment as the launch market is justified by its combination of high sensitivity to downtime, substantial stoppage costs, and dense geographic clustering of sites. This focus maximizes crew utilization, reduces dead-heading, and rapidly demonstrates economies of scale. Additional growth opportunities exist in adjacent convenience-store formats and dark-store networks, which are willing to invest in round-the-clock monitoring and predictive maintenance. At the same time, segmentation of the market into four macro-clusters—residential, commercial, HoReCa, retail FMCG, and micrologistics—validates the prioritization of this niche.

The product portfolio should be structured according to the value ladder principle: starting with reactive repair (low margin), advancing through preventive contracts—which account for approximately 39% of U.S. HVAC-service revenue—to proactive IoT monitoring, and culminating in one-off equipment modernization projects. This approach transforms the revenue model from one-off income with low predictability into recurring high-margin payments, allowing the provider to share a portion of the savings from reduced downtime with clients. Formalized SLAs—with strict response-time and first-visit metrics—remain the key instrument for client retention and evolution; research indicates they increase client retention by 18% and boost service revenue by 13% [8].

The company's operational architecture establishes a self-learning system in which the digital core integrates incident intake, intelligent triage, route planning, mobile checklists, inventory management, and feedback via knowledge-base updates. Balancing resources—personnel, micro-hubs, vehicles, and the technological platform—ensures attainment of the strategically promised level of refrigeration-system uptime at optimal cost. The integration of planned KPIs and an SLA control mechanism solidifies the architecture, establishing a framework for continuous process improvement and providing economic incentives for the team.

In summary, the conceptual model illustrates how the sequential development of the service offering—from reactive repair through preventive maintenance and IoT monitoring to modernization—combined with digital dispatching, predictive analytics, and stringent service-level agreements (SLAs), enables the construction of a sustainable value ladder. This model ensures downtime minimization, growth of client lifetime value (LTV), and reproducibility of processes during scaling, laying the foundation for transforming a startup into a regional leader in the refrigeration services market.

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