Customer Satisfaction Drivers for Industrial Vending Systems
– Evidence from the Manufacturing Industry

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Tove Gioeli and Anna Backer-Meurke
Abstract

**Problem:** Development of a firm’s offering is a vital weapon for competition. Obtaining knowledge on customer expectations and translating those into product development and superior service delivery is surrounded by prioritisation decisions. Industrial vending systems are proven to be a growing field in terms of deployments but have received little academic attention, especially regarding service quality perception to support customer-oriented innovation processes for suppliers, facilitating such decisions.

**Purpose:** To identify key drivers of positive service quality perception and customer satisfaction as well as trust and commitment indicators for business-to-business industrial vending systems.

**Method:** Through an explanatory approach, qualitative data on multiple cases was gathered. 14 in-depth semi-structured interviews were held with customers currently using a specific industrial vending system.

**Conclusion:** Solution characteristics of industrial vending systems impact service quality perception through compliance with customer requirements. A total of 13 customer satisfaction drivers were identified for the investigated industrial vending system, the most important being efficiency, user-friendliness and timeliness. Further, the presence of individual- and company level trust in customer-supplier relationships positively impacts commitment intentions.

**Contribution:** Adds novel knowledge on customer satisfaction for industrial vending systems and contributes with suggestions for managers on how trust and commitment affect customer satisfaction, which can be incorporated into the value promise design, product development and marketing strategies.

**Keywords:** Industrial Vending System, Industrial Product-Service Systems, Service Quality, Value Co-Creation, Customer Satisfaction, Commitment, Trust
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1. Introduction

In the recent decades, Vargo & Lusch (2004) argued that increased emphasis has been put on a so-called service-dominant logic, where the customer functions as a co-creator of value through an ongoing relationship with the supplying firm – as well as being a vehicle for the delivery of services. In line with this reasoning, it has been expressed that trust and commitment together with satisfaction are features of relationship quality (Crosby, Evans & Cowles, 1990) and subsequently, the value co-creation process (Baumann & Le Meunier-FitzHugh, 2014). Liljander & Strandvik (1995) found that satisfaction through a customer’s relationship orientation takes form in a wish to engage in a strong relational exchange with a supplier (see also Palmatier, Scheer, Evans & Arnold, 2008; Palmatier, Scheer & Steenkamp, 2007). Both commitment and trust have been identified as essential variables for successful relational continuity (De Ruyter, Moorman & Lemmink, 2001; Ganesan, 1994; Moorman, Zaltman & Deshpande, 1992; Morgan & Hunt, 1994).

It has been recognised that increasing levels of customer satisfaction and customer retention are among the top challenges that global companies face (Briscoe, 2002; Haverila, Martinsuo & Naumann, 2013; IBM, 2012). These factors are a major concern for service providers as they to a great extent determine the performance of the firm (Segoro, 2013). Further, customer satisfaction and customer retention are impacted by the main determinant of a customer’s service quality perception (Fornell, Johnson, Anderson, Cha & Bryant, 1996; Segoro, 2013).

Industrial literature suggests that a fierce competition has caused manufacturing firms to offer an increased customer value by using services as a way to provide additional customer value through add-on services through bundling services and products into integrated solutions (Oliva & Kallenberg, 2003; Windahl & Lakemond, 2010; Kohtamäki & Helo, 2015).

One such value-adding service is industrial product-service systems, by which a novel understanding of customer benefits and customisation in industrial Business-to-Business (B2B) environments is addressed. A product-service system is defined as a knowledge-intensive, mutually integrated and determinative planning facilitator based on development, implementation, usage and provision of combined product- and service shares that comes with immanent software. (Pasch, Rybski & Jochem, 2016).
Industrial Vending Systems (IVS) are a type of industrial product-service system that combines dimensions of hardware and software, including a supporting service structure dimension (Falasca, Kros & Nadler, 2016). These three dimensions together lead to the precise advantages of modular value creation through individualised solutions specific to a customer’s requirements (Pasch et al., 2016).

However, simultaneous to firms expanding their offering, it has been recognised that simply combining a higher number of services does not in itself create more value for the customer – it is rather the fit with the organisational operations that allows for an increased value creation (Biege, Lay & Buschak, 2012).

Chan & Ip (2011) argue that product development is a vital but complex weapon for competition. Offering more adapted solutions can attract customers but is also associated with rising costs for the supplier (Bichler & Bhattacharya, 2011). An identified cause of dilemma for service providers within information technology service management (here in the form of IVS) is to move away from the beneficial and economies of scale-generating standardised solutions (Ibid). To do so, understanding what makes a product superior and then realising those features requires an inter-departmental process where prioritisation and decisions must be made around attributes, value promise as well as marketing strategies (Chan & Ip, 2011).

Thus, in order to design and offer attractive solutions for the intensely competitive environment within the manufacturing industry, it follows that awareness and measurements of quality are of utmost importance (Pasch et al., 2016).

### 1.1 Research Gap

Even though an IVS is a growing field in terms of deployments, the concept has received little academic attention (Falasca et al., 2016); with very few contributions focusing on service quality assessment and with no previous research aiming to investigate customer satisfaction specifically for IVS solutions.

Researchers have called for the need to develop guidelines on common quality principles and understanding customer benefits specific to these solutions within B2B environments (Pasch et al., 2016). There is also a need for practical guidelines characterising benefits perceived by users of IVS solutions in industrial environments (Falasca et al., 2016). As an extension of
this, we argue that deriving customer satisfaction drivers for IVS solutions would bring insights valuable for product development purposes within this competitive field.

Gounaris (2005) states that perceived service quality impacts a customer’s level of trust and commitment towards the service provider, which consequently lessens the inclination to switch supplier. Thus, investigating trust and commitment indicators linked to customer satisfaction and quality perception for IVS solutions can serve as additional support for firms in their quality improvement decisions and in coping with the challenge of declining customer retention (as mentioned by Briscoe, 2002; Haverila et al., 2013; IBM, 2012).

As an IVS is a product-service solution that combines dimensions of software, hardware and support structure, it is reasonable to argue that parts of its quality assessment can be oriented towards research on each of the respective dimensions. Additionally, the present work draws on the customer satisfaction paradigm widely employed in marketing literature as well as service quality concepts to analyse customer satisfaction within IVS solutions.

1.2 Aim and Research Questions

The aim of this study is to identify key drivers of customer satisfaction, positive quality perception as well as trust and commitment indicators for B2B IVS solutions, investigated from a customer perspective. Since research indicates an increasing demand for tailored offerings adapted to customer requirements, identifying such drivers can provide suppliers with support in their product development, differentiation and marketing strategy. Further, bridging the above-identified gaps can serve to boost awareness around investment decisions for the purpose of quality improvement and enhanced competitiveness for industrial suppliers. This research will therefore answer the following questions:

*How is the customer’s perceived service quality impacted by the supplier’s execution of the three IVS dimensions?*

*What customer satisfaction drivers can be derived from the above?*

*Can any trust and/or commitment indicators be identified for the customers of the IVS solution?*
1.3 Delimitation

The empirical findings of this work are gathered from 14 customers of one specific IVS B2B supplier. These customers are stretched across the three geographical markets of Germany, Sweden and the United Kingdom. However, as this work rests on research arguing that an industrial solution’s fit with the customer operations per se is what determines its success, no attempts are made to search for differences in preferences across countries.

The scope is B2B industrial environments, with the focal point of gathering customer opinions regarding service quality and customer satisfaction of the IVS solution. This study therefore departs from a customer perspective on service quality and customer satisfaction, and subsequently provides recommendations for firms striving to improve their current offering and/or develop a new one.

This study focuses exclusively on commitment as an indicator for customer repurchasing intentions. Commitment in this sense differs from the concept of loyalty (see for example Bolton, Kannan & Bramlett, 2000), which has been found fallible as an indicator for repurchasing intentions and a consequence of customer satisfaction (Bolton et al., 2000; Segoro, 2013).

There are several research streams on the topic of product-service systems. The current work positions itself within the vein of research that considers customers as central to value creation whereas products and services are means of interacting with the customer (see also Pine & Gilmore, 1999; Pawar, Beltagui & Riedel, 2009). Research within product-service systems has in recent years moved towards adopting a service-dominant logic (Smith, Maull & CL Ng, 2014), which is also the case of the current study. More precisely, this work departs from a logic of how material and human resources can be utilised in a way that allows for the most customer value to be (co-)created.
1.4 Study Disposition

The structure of this study is illustrated in Figure 1, followed by a description of each chapter.

![Study Disposition Diagram]

Figure 1. Study Disposition. Source: own.

The first chapter has introduced the relevant background, problem and aim of the current work and positioned its relevance in relation to existing research. To facilitate the reader’s apprehension of the scope, chapter two establishes the framework of theories relevant for the current research. The third chapter accounts for how primary and secondary data was gathered and explains the study approach that was taken as well as data analysis methods. Chapter four presents the empirical findings obtained from respondents, which constitute the foundation for answering the research questions. Derived from these empirical findings, chapter five contains discussions on the results in relation to the theoretical framework.

The last chapter presents the conclusions that can be drawn from answering the research questions. In addition to this, theoretical- and managerial implications are discussed, providing suggestions for managers within the area of IVS as well as positioning the results from a theoretical standpoint. This is followed by a section on limitations of the study, where suggestions for further research are given.
2. Literature Review

The current chapter first gives an overview of the three dimensions of an IVS as well as common measures of quality perception. This is done by accounting for both characteristics and typical quality assessment indicators for each of the dimensions *solution design, software attributes* and *service interactions* with the supplier.

Subsequently, the concepts of customer expectations and satisfaction are discussed, followed by indicators of trust and commitment. These lay a foundation for the next section, which identifies reasons behind a customer’s inclination of switching supplier. Following this, service quality is discussed; both in terms of customer perception and seen from a service provider (supplier) perspective. Subsequently, ways for suppliers in industrial B2B contexts to impact and improve the perceived quality of offerings are presented, such as B2B Marketing and Customer Relationship Management (CRM). These constitute a basis for deriving satisfaction from customer opinions in the form of feedback. It is further discussed how such customer feedback links to product development and thus can be translated into quality improvements.

2.1 The Dimensions of an IVS

An IVS supplier deploys industrial vending machines at the manufacturing customer’s production sites that hold the tools used in the customer’s operations. Implementing an IVS means that the customer outsources both the function of their Information System (IS) and inventory replenishments to the supplier. (Falasca et al., 2016)

IVS solutions are set up as location-specific vending machines (here called the *Solution Design Dimension* in its physical form), with an advanced support infrastructure (here mentioned as the *Service Interactions Dimension*) and more sophisticated internal mechanisms (here named the *Software Attributes Dimension*) (Manrique & Manrique, 2015). These three dimensions are illustrated in Figure 2 below.
The industrial vending machines originate from the classic snack-consuming vending machines that can be found in schools, train stations as well as other public areas (Manrique & Manrique, 2015). The distinction between classical vending machines and industrial vending machines (aside from its non-edible content) is also the reason why the latter are referred to as solutions (Falasca et al., 2016). The setup of a typical IVS can be seen in Figure 3.

Figure 2. The Dimensions of an IVS. Source: own.

Figure 3. A Typical IVS Solution. Source: Key Informant.
As previously mentioned, quality measurements of the three dimensions are directed towards the specific research area for that field. Table 1 more specifically outlines the thematic literature from which this study draws in terms of quality assessment for each of the three dimensions that together constitute an IVS.

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Example</th>
<th>Quality Assessment Orientation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Solution Design</strong></td>
<td>Physical Attributes / Material</td>
<td>Inventory Management</td>
</tr>
<tr>
<td></td>
<td>Overall Setup of the Solution</td>
<td>Functional Service Quality</td>
</tr>
<tr>
<td></td>
<td>Overall Match with Customer</td>
<td>Industrial Product-Service Systems</td>
</tr>
<tr>
<td></td>
<td>Requirements</td>
<td></td>
</tr>
<tr>
<td><strong>Software Attributes</strong></td>
<td>Features / Innovation</td>
<td>Information Systems</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Application Service Provider</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Software as a Service</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Service Quality Perception</td>
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<tr>
<td></td>
<td></td>
<td>Functional Service Quality</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Customer Expectations</td>
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<td></td>
<td></td>
<td>Industrial Product-Service Systems</td>
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<tr>
<td><strong>Service Interactions</strong></td>
<td>Accessibility</td>
<td>Information Systems</td>
</tr>
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<td></td>
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<td>Application Service Provider</td>
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<td></td>
<td>Software as a Service</td>
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<td>Service Quality Perception</td>
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<td>Functional Service Quality</td>
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<tr>
<td></td>
<td></td>
<td>Industrial Product-Service Systems</td>
</tr>
<tr>
<td></td>
<td>Service and Support Order and</td>
<td>Customer Relationship Management</td>
</tr>
<tr>
<td></td>
<td>Deliveries</td>
<td>Customer Feedback</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Technical Service Quality</td>
</tr>
<tr>
<td></td>
<td>Communication Between Supplier</td>
<td>Industrial Product-Service Systems</td>
</tr>
<tr>
<td></td>
<td>and Customer</td>
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</tr>
</tbody>
</table>

*Table 1. Proposed Thematic Literature used for Quality Assessment of an IVS. Source: own.*

The three dimensions of IVS solutions will be discussed more thoroughly in the upcoming sections, starting with solution design.
2.1.1 Solution Design Dimension

By outsourcing parts of the logistical process to a third party (such as in the IVS constellation), the supply chain can be made more effective and cost efficient (Blatherwick, 1998; Zammori, Braglia & Frosolini, 2009). This is apprehended by handing over the responsibility of inventory replenishment to the supplier, with the attempt of creating a win-win situation for both supplier and customer (Claassen, van Weele & van Raaij, 2008). As information regarding inventory levels of the customer is communicated between the customer and supplier, the customer’s need to physically inspect available stock through inventory checks is diminished (Falasca et al., 2016; Manrique & Manrique, 2015).

Moreover, as the supplier through systematic delivery of inventory typically obtains extensive knowledge within the area of supplies delivered to the customer, it consequently makes the supplier increasingly more suitable for forecasting demand and for managing the flow of inventories to the customer also in the future (Claassen et al., 2008).
The IVS vending machine can stock inventory supplies of various sizes and the obligation to use ID cards or similar personalised identification agents allows for the system to keep user-specific records and data on who withdrew items from the machine, the number of items withdrawn and time of withdrawal. (Manrique & Manrique, 2015)

*Quality Assessment for Solution Design*

The interactive nature of an IVS positions the customer as a co-creator of value (Pasch et al., 2016). This makes it all the more important to capture and measure customer satisfaction and that the solution facilitates the internal processes specific to the customer’s operations (Slack, Lewis & Bates, 2004). The quality assessment of these solutions is steered by the degree to which it fulfils customer requirements throughout its entire lifecycle (Waltemode & Aurich, 2013).

The main customer benefits of implementing an IVS type of solution include lower inventory costs and improved customer service (Claassen et al., 2008; Melcer, 2000) as well as increased flexibility, operational efficiency and an opportunity to maintain higher focus on the firm’s core operations (Zammori et al., 2009). Also, the implementation of these solutions enables a company to stock inventory and items connected to maintenance, repair and operations (Falasca et al., 2016) as well as pre-determining what supplies each operator has access to. By having the ability to monitor inventory items and the usage of these, issues such as running out of essential items, other causes of unnecessary downtime and loss of customers can be prevented (Goodwin, 2011).

For the replenishment process to work smoothly, customers pre-define their supply need in terms of maximum or minimum level of various inventories to be held in stock. This in turn diminishes the customer’s obligation of placing orders when stock is running low, as the system automatically transfers stock data to the supplier. Thus, in order to successfully implement automatic inventory replenishment, co-operation between the customer and supplier is crucial. (Reddy & Vrat, 2007)

Nevertheless, Pasch et al. (2016) found that fulfilling customer requirements uniquely by inherent product characteristics is no longer sufficient. According to the authors, *reliability, perceived quality and added value for the customers* impact the quality assessment to a similar degree as fulfilling requirements.
2.1.2 Software Attributes Dimension

Functionality-wise, ISs are one of the most important infrastructures among organisations (Asimakopoulos & Asimakopoulos, 2014). It has been shown that corporations invest more resources than ever in ISs and applications of information technology (Ho & Wei, 2016). The dominant trend is to outsource these operations (Deloitte Consulting LLP Report, 2014) with the benefits of reduced costs and higher focus on core business areas (Lacity, Khan, Yan & Willcocks, 2010).

According to Sanders & Premus (2002), firms that use ISs in their daily operations can achieve several operational benefits, such as reduced cycle time and costs. By outsourcing their IS, the customer delegates the continuous management of this software dimension to a third party (Smith & Kumar, 2004).

A specific setup for outsourcing an organisation’s IS (Smith & Kumar, 2004) can be seen in application service provision as a partnership-based constellation between customer and the supplier (Lee & Kim, 2005), which is becoming an increasingly popular concept (Lee, Kim &
Kim, 2007). Application service providers offer solutions to customers through rental or leasing agreements.

Katzmarzik (2011) discusses that as the progressions in information technology services move faster, the concept of delivering “software as a service” poses advantages for both supplier and customers as it allows for web-based solutions with remotely managed updates and support. The competitive challenge lies in product differentiation of these solutions, allowing each organisation to benefit in a way that makes the most sense for their operations.

Implementing these computerised IVS solutions enables a company to monitor specific items and generate statistics, which is valuable for companies operating within the industrial environment. This is of particular importance as consumables and maintenance, repair and operations items often account for a distinct part of a firm’s annual spend on indirect purchases and the ability to control and keep track of these expenditures is therefore of high relevance (Goodwin, 2011).

*Quality Assessment for Software Attributes*

For a service provider offering applications, it has been concluded that customer satisfaction is highly related to organizational performance and reasonable pricing as well as educational effectiveness and design of training in use of the application (Dibbern, Goles, Hirschheim & Jayatilaka, 2004).

Several scholars have emphasised service quality as invariably important for success when outsourcing an IS (see for example Dibbern et al., 2004; Grover, Cheon & Teng, 1996; Kim, Chen & Aiken, 2005; Liang, Wang, Xue & Cui, 2016; Petter, DeLone & McLean, 2013; Su & Levina, 2011).

Kivijärvi & Saarinen (1995) found that investments in ISs generate pay-off in the long run as these investments are associated with facilitating improved firm performance. In order to build successful client relationships, Gopal & Koka (2009) argue that it is vital for vendors to cater to a customer’s aspiration for competitive advantage by providing high service quality. It has further been argued that long-term outsourcing partnerships enable the forging of client-specific capabilities (Grover et al., 1996; Deng, Mao & Wang, 2013).
In more concrete terms of quality assessment, Petter et al. (2013) concluded that the following variables affect the perceived success of an IS: *service quality, information quality, system quality, user satisfaction, system use* and *net benefits*. Definitions and examples for measuring these variables are provided in Table 2 below.

<table>
<thead>
<tr>
<th>IS Success Variable</th>
<th>Definition</th>
<th>Examples of Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Service Quality</strong></td>
<td>Quality of the service or support that system users receive from the IS organisation and IT support personnel in general or for a specific IS.</td>
<td>Responsiveness, accuracy, reliability, technical competence, empathy of the personnel staff.</td>
</tr>
<tr>
<td><strong>Information Quality</strong></td>
<td>Desirable characteristics of the system outputs (content, reports, dashboards).</td>
<td>Relevance, accuracy, conciseness, completeness, understandability, currency, timeliness, usability.</td>
</tr>
<tr>
<td><strong>System Quality</strong></td>
<td>Desirable characteristics of an IS.</td>
<td>Ease of use, system flexibility, system reliability, and ease of learning, as well as intuitiveness, sophistication, flexibility, response time.</td>
</tr>
<tr>
<td><strong>System Use</strong></td>
<td>Degree and manner in which staff and customers utilise the capabilities of an IS.</td>
<td>Amount of use, frequency of use, nature of use, appropriateness of use, extent of use, purpose of use.</td>
</tr>
<tr>
<td><strong>User Satisfaction</strong></td>
<td>Users’ level of satisfaction with the IS.</td>
<td>Single item to measure user satisfaction, semantic differential scales to assess attitudes and satisfaction with the system, multi-attribute scales to measure user information satisfaction.</td>
</tr>
<tr>
<td><strong>Net Benefits</strong></td>
<td>Extent to which IS are contributing to the success of individuals, groups, organisations, industries, and nations.</td>
<td>Improved decision making, improved productivity, increased sales, cost reductions, improved profits, market efficiency, consumer welfare, creation of jobs, economic development.</td>
</tr>
</tbody>
</table>

*Table 2. Success Factors of Information Systems. Adapted from Petter et al. (2013).*
Furthermore, it was found by Barki & Pinsonneault (2005) that perceived IS quality is impacted by the system’s ability to integrate to other systems. From a pure technical viewpoint, integration has been used to explain the interconnectedness of a company’s different information technologies and to which degree these share a mutual platform (Chiang, Lim & Storey, 2000). Both Barney (1991) and Ettlie & Reza (1992) argue that successful integration of systems increases the manufacturing productivity and enhances competitiveness. However, in order for the infrastructural linkage of disparate systems to successfully function, the technology connectivity, speed of data (Berente, Vandenbosch & Aubert, 2009) and the ability to integrate the hardware or software for simpler management are highly essential (Bajgoric & Moon, 2009).

As the inventory management within IVS is controlled remotely by the supplier via an integrative IS, demands associated with the performance of this system are high (Falasca et al., 2016). Similar to the research of Berente et al. (2009), Brax (2005) argues that in addition to an integrative IS solution, elaborate information management is fundamental to the success of delivering complex service solutions in industrial environments.

In order to successfully implement an IVS solution, Falasca et al. (2016) found the following crucial factors (so called enablers); information exchange between the parties (where a higher level of information exchange positively affects the perceptions of a successful IVS implementation), the quality of information gathered (which positively affects the perceptions of operational success) and the nature of the supplier-customer relationship (for which a higher relationship quality should amplify perceptions of IVS implementation success).
2.1.3 Service Interactions Dimension

![Figure 6. The Service Interactions Dimension of an IVS. Source: own.](image)

It has been widely recognised in service literature that personal interactions are an important component for reaching customer satisfaction (see for example Crosby & Stephens, 1987; Crosby et al., 1990; Parasuraman, Zeithaml & Berry, 1985). De Ruyter et al. (2001) discuss the complexity present in high-technology markets where suppliers ought to not only invest in product- and service quality but also in building relationships with their customers.

For the case of IVS solutions, it has been proven that a successful implementation can improve the relationship and transparency between the two parties of the agreement (Falasca, et al., 2016). An open dialogue and constant strive for improvement also makes the supplier able to quickly adapt to market and demand changes (Ibid). Baumann & Le Meunier-FitzHugh (2014) argues that long-term relationships between customer and supplier are more likely to be apparent for complex product/services that include a high degree of service elements.
Above, the importance of reliability, perceived quality and the creation of an added value to customers in industrial contexts (Pasch et al., 2016) was introduced, for which the modular constellation of product and service shares is a major advantage (Aurich, Fuchs & Wagenknecht, 2006). This is facilitated through the involvement of both a supplier and customer in the value creation process (Pasch et al., 2016). In the context, the degree of success is determined by an alignment of common goals across the supply chain, including customers, suppliers and other partners (Ibid).

Quality Assessment for Service Interactions

Per definition, IVS collaborations involve the supplier on the one hand and the customer on the other (Aurich et al., 2006), which necessitates a strong customer integration and value creation network (Pasch et al., 2016). As such, the customer’s quality perception includes not only the actual product (in terms of good and service) but also the entire system provided by the supplier (Pasch et al., 2016).

It was concluded by Deng et al. (2013) that the quality of actual service received is a stronger mediator for trust than what customers receive in interactions with the service firm. In turn, the quality of actual service received affects the customer’s commitment towards the supplier through a positive correlation. Thus, suppliers can enhance actual perceived service quality by investing in representatives that are knowledgeable and familiar with the customer’s specific competences, business routines and context. (Deng et al., 2013)

Investments in knowledgeable service personnel that meets customer expectations has been shown to positively impact the customer’s service quality perception (Parasuraman et al., 1985), which consequently results in increased customer satisfaction (Cronin Jr & Taylor, 1992). The subsequent section more specifically accounts for variables affecting customer expectation and satisfaction.

2.2 Customer Expectations and Satisfaction

Rust & Oliver (1994) explain the essence of customer satisfaction in service contexts as the result of customers comparing what was delivered to them with what they had expected. Thus, if a sufficient measure of customer orientation is applied within a firm, information can be obtained pertaining to needs, desires and feedback from current and latent customers.
Facilitating the opportunity to develop products satisfying those expectations (Powpaka, 2006).

Anderson, Fornell & Lehmann (1994) distinguished between customer satisfaction and quality by denoting the two variables of *perception* and *experience*. According to the authors, quality affects the customer’s current perception of a service or good whilst customer satisfaction is not only based on the *current* experience but also past and anticipated ones.

Continuing on the subject, it has been implied that although customer satisfaction and service quality are two separate constructs, they still share a close relationship (Cronin Jr & Taylor, 1992; Taylor & Baker, 1994). As a matter of fact, Cronin Jr & Taylor (1992) argue that service quality is the antecedent of customer satisfaction, which is further amplified by Fornell et al. (1996), stating that perceived quality is the main determinant for overall customer satisfaction.

According to Zeithaml, Berry & Parasuraman (1993), customer expectations are viewed as the anticipated belief about a service or product, serving as the reference for which performance is evaluated. Grönroos (1982) argues that a customer’s expectations of a service or product play a key role in the evaluation of service quality.

For the case of industrial product-service systems, it has been concluded by Pasch et al. (2016) that as the customer is significantly involved in the realisation of the service solution, their service quality understanding should be considered throughout the entire delivery process. In order to implement successful systems leading to higher customer satisfaction, clearly defined goals and processes should be set up (Ibid). According to Baumann & Le Meunier-FitzHugh (2014), trust is a vital component for value co-creation between the supplier and customer. The concept of trust will be discussed in detail in the following section.

### 2.3 Customer Interactions and Trust

Several authors have investigated the specific link between perceived service quality and trust (see for example De Ruyter et al., 2001; Lee et al., 2007; Walter, Hölzle & Ritter, 2002). Trust reflects a form of willingness to expose one self to risk (Mayer, Davis &
Schoorman, 1995) associated with the interdependence established as a consequence of type and depth of a given relationship (Sheppard & Sherman, 1998). A certain level of trust is critical in any lasting relationship (Morgan & Hunt, 1994; Komunda & Osarenkhoe, 2012) and developed through personal interactions (Baumann & Le Meunier-FitzHugh, 2014; Das & Teng, 2001). Generally speaking, trust can be expressed as a function of emotions relating to, for instance, identification or truthfulness regarding intention or ethical behaviour (Ring, 1996). Trust is an important condition for building successful long-term business relationships (see for example Berry, 1995; Dwyer, Schurr & Oh, 1987; Fregidou-Malama & Hyder, 2015; Morgan & Hunt, 1994).

Walter et al. (2002) found that the extent to which a supplier manages to meet the requirements of a customer affects their trust towards that supplier. Specifically for the high-tech industry, De Ruyter et al. (2001) concluded that as offerings in industrial contexts are complex, with rapidly changing technologies and frequent malfunctions, a higher quality offer or value promise positively affects the perceived trustworthiness of a supplier.

Ganesan (1994) proposes to look at trust from different dimensions. Further, Fregidou-Malama & Hyder (2015) argue that understanding the difference between different levels of trust is important in international marketing contexts. Baumann & Le Meunier-FitzHugh (2014) propose that different levels of trust also strongly link to value co-creation as the purpose of business relationships is a mutual value creation.

On an individual level, trust takes expression as an interdependence and risk between individuals (Fregidou-Malama & Hyder, 2015; Sheppard & Sherman, 1998). An example of where individual trust can occur is between representatives of collaborating firms (Fang, Palmatier, Scheer & Li, 2008) such as the interaction between salesperson and customer (Baumann & Le Meunier-FitzHugh, 2014). At the company level, trust occurs in relationships between organisations (Fregidou-Malama & Hyder, 2015). This type of trust has been argued by Altinay, Brookes, Madanoglu & Aktas (2014) to primarily consist of benevolence and credibility. The former indicates the assumption that a party will act according to the interest of the other (Anderson & Narus, 1990) whereas credibility indicates one party’s belief in the other as being competent and reliable enough to fulfil their obligations (Morgan & Hunt, 1994). Investigating the components of credibility and benevolence in B2B environments, Rod & Ashill (2010) found evidence mostly supporting
the impact credibility has on relationship commitment. Further, Ganesan (1994) found that credibility significantly impacts long-term orientation in relationships, contrary to other dimensions of trust (such as benevolence, ed.).

For the specific case of interactions between a salesperson and a customer, Baumann & Le Meunier-FitzHugh (2014) found ability, integrity, benevolence and similarity to be drivers of trust and subsequently necessary components for a successful value co-creation. The results of Baumann & Le Meunier-FitzHugh (2014) imply that managers should put an emphasis on conveying named trust-driving characteristics through customer-facing staff, predominantly salespeople. Also, customers should make an effort to display the same features in order to maximise the effectiveness of value co-creation. The intuition behind this idea is that a trusting salesperson will invest more time and effort in realising the expectations and quality requirements of the customer. (Baumann & Le Meunier-FitzHugh, 2014)

Trust facilitates information disclosure between parties, leading to an improved comprehension of the motives and drives of each party (Gounaris, 2005). As an example of how trust can affect collaborations, Claassen et al. (2008) discuss that a customer with a low level of trust in the supplier’s ability to replenish inventory in a timely manner can tend to apply strict max-min stock limits to insure not running out of stock, which decreases the efficiency of the solution.

Investigating how trust and commitment influence customer retention, Gounaris (2005) specifically found that trust precedes commitment. Actual quality offered to the customer as well as the interaction between supplier- and customer personnel both have an impact on trust building. Thus, if these elements are positive, they positively impact trust in the relationship, which leads to commitment. The next section more thoroughly discusses how suppliers can obtain customer commitment.

2.4 Commitment Indicators
Wilson & Mummalaneni (1986) found that high customer satisfaction creates commitment and bonding between the affected parties, increasing customer retention. In combining these factors, Gounaris (2005) concluded that suppliers offering superior service quality and
effectively bond with the customers enhance the likelihood of building trust and reaching so-called *affective commitment*.

The concept of affective commitment has been vastly explored in previous research (see for example De Ruyter et al., 2001; Geyskens, Steenkamp, Scheer & Kumar, 1996; Kumar, Hibbard & Stern, 1994; Lövblad, Hyder & Lönnstedt, 2012). Kumar et al. (1994) describe affective commitment as a mutual understanding where both parties in the relationship continue the partnership because of an equal desire to do so. Lövblad et al. (2012) further state that affective commitment is crucial for the performance in B2B relationships. Additionally, De Ruyter et al. (2001) argue that affective motivations as well as offered product characteristics are variables affecting the customer’s intention to remain in the partnership with the supplier. Industrial companies should therefore individualise the value creation with customers in order increase customer satisfaction and thus accomplish customer retention (Pasch et al., 2016).

Customers that perceive their needs to be fulfilled by a supplier’s offering are more willing to repurchase from the same supplier rather than purchasing from another one (Fornell, 1992). Also, given the fact that quality and performance are highly essential within the manufacturing industry, customers are accordingly comparing benefits of different suppliers (Guo & Wang, 2015).

The next section accounts for factors that have been found to affect a customer’s decision to switch from one supplier to another.

**2.5 Inclination to Switch Supplier**

It is discussed by Komunda & Osarenkhoe (2012) that actors with low trust in a supplier are less likely to have repurchasing intentions. Previous research investigating reasons why customers decide to switch supplier within the B2B environment has mainly revolved around two streams; customer- and relationship value (see for example Hogan, 2001) and factors affecting the likelihood of switching supplier (see for example Heide & Weiss, 1995). For the latter, it has been found that customer experience (Heide & Weiss, 1995), as well as a mismatch between customer expectations and product- and/or service features are affecting the probability of a customer switching supplier (Keaveney, 1995).
In more recent studies, importance has been placed on creating superior customer value (see for example Ulaga & Eggert, 2006B). This has been connected to the service-dominant logic, due to its emphasis on long-term relationships and value co-creation (Matthyssens & Vandenbempt, 2008). Customer satisfaction and perceived content with the performance of the supplier are affecting the decision to switch supplier (Selos, Laine, Roos, Suomala & Pitkänen, 2013). Other factors influencing the customer’s decision to switch include a supplier’s ability to offer efficient Service & Support, know-how, personal interaction, cost and/or product or service quality (Ibid).

Guo & Wang (2015) emphasise the importance for manufacturing companies to adopt both customer orientation and competitor orientation. Taking the example of ISs, if the expected system components of an (including ease-of-use and efficiency to reach pre-set goals in the specified context) are not perceived as fulfilled, the possibility of a customer switching to another supplier is greater (Asimakopoulos & Asimakopoulos, 2014; Guo & Wang, 2015).

As previously established, in understanding how well an industrial solution manages to fulfil customer requirements and expectations, its perceived quality can be assessed. Failure to do so can result in customer’s looking elsewhere for capable technology that meets their demands (Al-Kwífi, Ahmed & Yammout, 2014; Heide & Weiss, 1995). The next section outlines how quality perceptions from the customer perspective can be defined as well as how the service provider can detect and attempt to mitigate shortcomings within their service provision.

2.6 Service Quality
The importance of providing satisfying service quality has been emphasised in previous literature as a way for service companies to create competitive advantage and customer satisfaction (Parasuraman et al., 1985). Well-executed services facilitate sales of goods, enable growth opportunities in matured marketplaces and lengthen the customer relationship (Brax, 2005). Furthermore, Davies (2003) argues that industrial customers demand both goods and services that are integrated and offered as customised solutions. Thus, the importance for firms operating in a B2B environment to create tailored solutions towards different customers within the manufacturing industry is high (Gebauer et al., 2012).

As a mean of measuring service quality, previous scholars have proposed a comparison
between the customer’s service expectations and how these are fulfilled by the service provider (Grönroos, 1982; Lewis & Booms, 1983; Sasser, Olsen & Wyckoff, 1978). The dependent relationship between customer and supplier has been expressed in terms of gaps, by Parasuraman et al. (1985). Briefly outlined, the “GAPS Model of Service Quality” identifies the deficiency of service quality that a customer experiences (namely Gap 5), as the result of four types of internal organisational shortcomings (Gap 4, 3, 2 and 1) in the service delivery process seen from the service provider’s perspective (Ibid). The two subsequent sections further elaborate on and distinguish between Parasuraman et al.’s (1985) five gaps. Starting from a customer perspective, section 2.6.1 discusses the fifth gap whilst section 2.6.2 clarifies the supplier perspective in terms of Gap 4-1.

2.6.1 The Customer’s Experience of Service Quality

Gap 5 of service quality outlines the customer’s experiences of the actual service delivered. The firm’s ability to meet or exceed customer expectations subsequently impacts whether the customer perceives the service quality and performance as high or low. (Parasuraman et al., 1985)

Grönroos (1983) found that two interrelated variables; functional- and technical quality, affect perceived service quality. The prior – functional quality – concerns how customers receive the service whilst the latter – technical quality – regards what customers receive in the interactions with the supplier (Grönroos, 1983). Functional quality refers to behaviour and attitudes, accessibility and flexibility, reliability and trustworthiness and recovery whilst technical quality refers to professionalism and skills (Grönroos, 1988). It was concluded that functional quality has a higher impact on the customer’s perceived service quality than technical quality (Grönroos, 1983).

Due to the intangible and variable nature of services, a prominent uncertainty around presales promises and actual service outcome has been recognised (De Ruyter et al., 2001). How customers perceive service quality is directly impacted by the supplier’s ability to diminish organisational shortcomings (Parasuraman et al., 1985). Subsequently, the remaining four service quality gaps representing the supplier perspective will be described.
2.6.2 Organisational Shortcomings in Service Quality

Gap 4 denotes the discrepancy between service promise communicated to the customer and the actual service delivered. As a customer’s service quality expectations can be affected by promises communicated through advertisement by the firm, it is crucial that the supplier does not promise other than what they can deliver. Discrepancies between value promise and actual service received negatively affects a customer’s attitude towards the supplier. (Parasuraman et al., 1985)

Gap 3 distinguishes between promised quality specification and actual service delivered. The perceived service quality is not only dependent on the undertaken specifications in the form of a value promise but also highly relying on the employee performance of the supplier. The personnel’s expertise and execution exert an essential role in the perceived service quality. However, as knowledge and expertise can differ between individual employees, it is hard to strictly standardise the service or forecast its quality outcome. (Parasuraman et al., 1985)

Gap 2 concerns the dissonance between management’s perception of customer expectation and specifications of service quality. Due to a shortage of resources or lack of trained personnel, the ability to match or exceed customers’ expectations can be difficult. Gap 2 does not necessarily indicate an absence of customer knowledge, but rather the inability to fully satisfy expectations or customer needs. For the manufacturing industry, this can be exemplified through the expectations of quick service. As manufacturing firms are highly dependent on their machines being live, the importance of fast repair provision is one main determinant of expected service quality. (Parasuraman et al., 1985)

Lastly, Gap 1 highlights the difference between customer expectations and managers’ understanding of these. In order to fulfil customers’ expectations and diminish this gap, executives of the supplying firm need to create an understanding of features that connote high service quality for the customers, prior to providing a service. (Parasuraman et al., 1985)

Consistent with Grönroos’s (1983) quality dimensions described above, Brogowicz, Delene & Lyth (1990) state that in order to meet customer’s service expectations, management ought to determine what customers expect and how they expect it. By planning,
implementing and controlling the technical and functional dimensions of an offering, companies are more likely to diminish potential organisational shortcomings. Similar to Parasuraman et al.’s (1985) GAPS model, both Grönroos (1983) and Brogowicz et al. (1990) claim that a type of service quality gaps occur when offered technical and/or functional quality does not meet customer expectations. Further, as functional- and technical quality are not independent of each other, high expectations of one of the dimensions may lead to high expectations of the other (Brogowicz et al., 1990).

It has now been illustrated how organisational shortcomings can have a negative effect on service quality perception. The next section elaborates on ways for a supplier to actively improve a customer’s service quality perception.

2.7 Ways a Supplier Can Impact Service Quality Perception

In a previous section, inclination to switch supplier was discussed. Even though the knowledge-intensive character of high-technology products is associated with a supplier advantage seen through a substantial barrier to switch supplier (Heide & Weiss, 1995), there is also evidence that unsatisfactory technology inclines customers to search for other alternatives (Helfat & Peteraf, 2003). In order for suppliers to avoid this, several measures can be taken in order to bridge the potential shortcomings of an organisation’s offering. Subsequently, examples of specific approaches applicable to impacting the customer’s perception of service quality are presented.

2.7.1 Industrial B2B Marketing

Due to technological developments and intensifying global competition, suppliers are enforced to advance their marketing strategies in order to meet the higher expectations of customers (Latushek, 2010). According to Bose (2002), a firm’s marketing approach needs to be customised and focused on customer-centric (as opposed to product-centric) relationships as a mean to gain a competitive advantage and survive in the competitive environment. The transition from a product-centric focus towards a customer-centric approach requires companies to assess information about customer needs to be able to deliver more accurate solutions in a cost efficient way (Latushek, 2010).

Albadvi & Hosseini (2011) express that B2B Marketing consists of two important aspects, namely; value creation (see also Anderson & Narus, 1999) as well as building and
maintaining relationships (see also Mehta & Durvasula, 1998). It has been established that maintaining, attracting and enhancing customer relationships has a positive influence on firm performance (Berry, 1983; Storbacka & Nenonen, 2009).

In terms of customer interactions, Mattila & Enz (2002) found that the quality of interactions and subsequent level of trust formed between the customer and supplier strongly impacts the customer’s decision on further commitment to the relationship. Additionally, Rafaeli (1993) argues that effective communication has a significantly positive effect on a customer’s intention to repurchase. Thus, effective communication and reinforcement of trust throughout the service delivery process are important facilitators for the development of long-term relationships (Park, Lee, Lee & Truex, 2012; Sharma & Patterson, 1999). There is evidence that a customer’s satisfaction with the outcome of a service interaction constitutes a driver for construct of trust, motivating the customer’s commitment to the supplier (Selnes, 1998; Ulaga & Eggert, 2006A).

In the past decades, there has been an increased focus on customer relationships as key assets for organisations (Kumar, Ramani & Bohling, 2004; Tseng & Wu 2014), both in research and practice (Elmuti, Jia & Gray, 2009). As a foundation for relational marketing literature, it is argued that customer relationships are not composed by one single transaction but rather the investment in long-term relationships of a more stable nature (Verstrepen, Deschoolmeester & van den Berg, 1999).

Xu & Walton (2005) state that the necessity of understanding customer satisfaction indicators lies within acquiring extensive knowledge regarding the customers. As a systematic mean of acquiring such knowledge, CRM systems can be implemented within the business operations (Tseng & Wu, 2014). This strategic tool will be explained in more detail in the subsequent section.

2.7.2 Customer Relationship Management

CRM has been defined as a tool for consistently aligning a company and its business processes – specifically within marketing, sales and service – with the focus on establishing, maintaining and facilitating long-term relationships with customers (Jayachandran, Sharma, Kaufman & Raman, 2005). The purpose of CRM is to gather information about (current
and/or potential) customers and thus be able to determine their probable lucrativenss for the company (Donaldson & O’Toole, 2007).

Resulting from the emergence of information technology and the desire to increase competitiveness through a customer-oriented approach (Tseng & Wu, 2014), CRM emerged as a way of managing customers more efficiently. A firm’s ability to satisfy customer needs through adequate service delivery has a direct impact on profitability (Tseng & Wu, 2014).

Allen (2004) found that organisations fully embracing CRM on a strategic and operational level should expect to see elevated levels of customer satisfaction, which is why customer satisfaction measures are increasingly integrated into CRM activities. Considering that it is around five times more costly to retain a new customer than keeping a previously obtained one (see for example Donaldson & O’Toole, 2007; Fundin & Elg, 2010), it is understandable that CRM practices have formed as a strategic way to enhance customer satisfaction and commitment. Thus, performance and customer satisfaction indicators can be used with the goal to successfully track customer retention and satisfaction, translating feedback into guidance on how to satisfy customer expectations (Allen, 2004).

The next section elaborates on how to capture customer opinions in the form of feedback and how such information can be used to improve the service delivery.

2.7.3 Turning Customer Feedback into Quality Improvement

Drawing from the emergence of a competition-strategy centred on superior and tailored delivery (such as the one discussed by Katzmarzik, 2011), researchers have linked the offering of an increased number of services to the importance of innovation processes (see for example Chesbrough, 2003; Gassmann, Enkel & Chesbrough, 2010; Wikhamn, Ljungberg & Styhre, 2013). To meet customer-demands in an increasingly competitive environment where research- and development costs and shortened product-lifecycles are a reality, organisations are led to focus on innovation and adaptation (Teece, 2007).

Specific to high-technology markets, Bhattacharya, Krishnan & Mahajan (1998), argue that firms create strategies with the aim of providing the most advanced features for their offerings. Suppliers can impact perceived service quality through orienting their offering towards customer needs (Allen, 2004). This is crucial for customers demanding distinctive
capabilities that help them differentiate themselves from the competition (Henard & Szymanski, 2001). Thus, for a supplier to stay relevant in rapidly advancing markets, continuous improvement initiatives are necessary in order to maintain an attractive set of features (Kriegl, 2004; Su, Chen & Sha, 2006).

It has here been presented that the characteristics of a product play a vital role in creating, maintaining and retaining customer relationships as well as yielding profitability (Allen, 2004). As a result of increased competition, one key factor for industrial firms to accomplish is the development of new products and suitable technologies fitted to fulfil customer requirements (Chan & Ip, 2011; Drejer, 2000; Henard & Szymanski, 2001; Teece, Pisano & Shuen, 1997). Customer-oriented feedback data to guide these product development activities can be collected in a number of ways, including (but not limited to) sales, telemarketing operations, advertising, call centers, Service & Support (Chen & Popovich, 2003) and customer complaints (Barlow & Møller, 2008).

Through interactions over these channels, companies are able to better understand each customer’s purchase behaviour and expectations (Tseng & Wu, 2014). As a result of this, firms can manage relationships in ways enabling enhanced customer profitability (Kandell, 2000) and form strategies on how to avoid customers switching supplier (Kamakura, Mela, Ansari, Bodapati, Fader, Iyengar, Naik, Neslin, Sun, Verhoef, Wedel & Wilcox, 2005).

Allen (2004) argues that the foremost objective of a firm’s customer feedback system is to enable the tracking of customer satisfaction and customer retention. In order to benefit from the results of these measures, a firm must find a way to link the content of customer feedback to its business processes. Measuring customer satisfaction can generate valuable input about product and service quality to be fed back into both CRM, product development and marketing strategy (Allen, 2004). Figure 7 illustrates the process in which data in the form customer feedback can generate value once it is analysed and reported; allowing it to be translated into implications for quality improvement (such as product development) and thus restarting the cycle again.
Thus, implementing the customer feedback into product development can fuel innovation with the objective to increase customer satisfaction and maximise customer retention (Allen, 2004). In turn, this enhances firm performance, competitiveness and responsiveness to market change (Stock & Hoyer, 2005). Further, by nurturing communication, collaboration, trust and commitment, product innovation performance can be elevated (Zhao & Cavusgil, 2006) creating superior value for customers (Kohli & Jaworski, 1990; Narver & Slater, 1990).

2.8 Conceptual Framework

It has been presented for IVS solutions how its solution design, software attributes as well as the customer’s service interactions with the supplier affect customer satisfaction and perceived service quality through its fit with the customer’s expectations and requirements. The top part in Figure 8 below refers to the connection between these variables in terms of Conditions. Further, it was illustrated in the literature review how a supplier can impact perceived service quality and consequently customer satisfaction through different Actions. Examples of such methods are CRM activities, B2B marketing, product development as well as gathering and processing customer feedback. Effectively incorporating these actions can consequently diminish potential organisational shortcomings and therefore decrease Gap 5. This in turn increases the customer’s satisfaction and positive service quality perception of the IVS (expressed in the middle part in Figure 8).
Lastly, the lower part in Figure 8 presents the Outcome of the two prior levels. By fulfilling customers’ expectations and requirements, the likelihood of a customer switching supplier decreases but also leads to a customer’s enhanced trust and commitment towards the supplier. This sets in motion a new cycle where the customer’s expectations and the supplier’s ability to fulfil requirements through the three dimensions of the IVS (i.e. the Conditions) impact the perceived service quality as well as the degree of customer satisfaction.

Figure 8. Conceptual Framework. Source: own.
3. Methodology

The following section outlines the methodological elements of this research; the design of the study as well as details on data collection and respondents. It also provides reflections on validity and reliability. This serves to give the reader a solid understanding on how, when and where data was collected as well as how it has been used as foundation for concluding this research.

3.1 Study Design

When establishing the research design, a supplier of an IVS solution was contacted and a relationship was formed where initial meetings were held in order for the researchers to understand the challenges and opportunities that this particular supplier faced.

The nature of this study is explanatory, exploring the causal relationship between the delivery of a service solution and customer satisfaction of that same solution as well as identifying commitment and trust indicators. For highly subjective matters founded by experience, attitudes and opinions, the explanatory method allows for a deeper orientation (Saunders, Lewis & Thornhill, 2012) such as that for the subject of factors driving customer satisfaction or commitment, to take two examples. According to Bryman & Bell (2011), case studies are appropriate when the intention is to capture phenomena with its complex and unique nature in one single setting. Yet, case studies are not exclusively obliged to one solitary case but can encompass multiple cases (Yin, 1984). This study investigates customer satisfaction in the form of several customer responses (cases) regarding vending solutions supplied by a global engineering company within the manufacturing sector. As suggested by Eisenhardt (1989) and Yin (1984), exploring numerous cases can provide rich and detailed descriptions of a particular phenomenon that could be used to form a holistic picture for the given setting.

In order to create a deeper understanding of underlying values and opinions affecting customer satisfaction, service quality perception as well as trust- and commitment indicators for IVS solutions, a qualitative data collection approach was taken. Qualitative methods are characterised by emphasising words, with the norm of conducting in-depth interviews (Eisenhardt, 1989).

As the present work strives to enrich existing knowledge within the field of IVS, an inductive approach was taken. Empirical data was gathered from 14 respondents and thereafter analysed
through an interpretive philosophy. This interpretive method denotes the ability to investigate the subjective and social constructions within the set phenomenon and its research context. By operating within the natural setting, the likelihood to gain respondents’ trust, stimulate participation and in-depth understanding increases (Saunders et al., 2012). Nonetheless, according to Bryman & Bell (2011), an interpretive approach signifies that the researcher’s personal view can affect the analysis. This potential bias factor was taken into consideration throughout the data evaluation process and measures were taken to process all collected data with both researchers present. Thus, by being two interviewees present in each interview as well as the processing of material gathered, the risk of affecting any outcome in data processing was judged as less prominent.

3.2 Data Collection
The subsequent section outlines where the collected data is gathered from, in which it is categorised into secondary data and primary data. Secondary data refers to publicly available information from previous studies. Primary data, on the other hand, refers to data apprehended with the goal of fulfilling the aim of a particular study. This material can be gathered by applying different data collection methods such as interviews, questionnaires or focus groups. (Saunders et al., 2012; Yin, 2014)

3.2.1 Secondary Data
The secondary data of this study was collected from peer-reviewed academic journals and books, contributing with detailed and rich reviews of the relevant topics as suggested by Saunders et al. (2012). In the process, keywords were used to screen available research and assess each area of relevance for this study. Through this process, the research gaps were detected and subsequently, sufficient material covering the necessary academic fields for the scope of this study was collected.

The article selection did not have restrictions regarding age of the articles; instead an emphasis was put on judging the collected material according to frequency of citations and validation. This method ensured a robust support of the main theories used to found the theoretical framework. This was considered particularly important due to the limitedness of the academic contributions on the topic of IVS. Hence, acknowledged theories and concepts were used to develop a sound framework for this research and make a contribution to broaden the field.
3.2.2 Primary Data

As the current study incorporates several cases and investigates a rather unexplored subject, in-depth semi-structured interviews were the source for primary data, as suggested by Eisenhardt & Graebner (2007). The use of semi-structured interviews enables respondents to freely express and discuss their opinions, which in turn generates reliable and specific data for the research purpose (Louise Barriball & While, 1994).

3.2.2.1 Interviews

By using semi-structured interviews, the researchers were able to measure attitudes and values of respondents (IVS customers in this case). The open-ended design of questions enabled the respondent to elaborate on subjects and served to open up for a possibility to enter unanticipated but relevant topics that were considered important to the respondent in the given context. Interviews included nine questions and were conducted over the phone with an average time of 30 minutes. The interview questions are found in the in Table 2 below.

Prior to each interview, research was made on the specific company’s core activities, business size, market position as well as industry trends and characteristics in order to obtain a deeper understanding of the unique situation and requirements that the respondent might be the subject of. It was perceived that this course of action would facilitate the possibility of a common understanding (as explained by Trost, 2010) allowing the interview to be strictly focused around the respondent’s thoughts and reflections.

Prior to the commencement of an interview, interviewees asked for the respondent’s permission to record the conversation. Respondents were also assured that their answers, name and company were to be kept anonymous and confidential. Once interviews were completed, the material was transcribed. Transcribing the material provided the researchers with an opportunity to identify potential previously overlooked factors that might require follow-up questions or clarifications (also suggested by Lantz, 2007). In this regard, using an explorative method (see for example Lantz, 2007) was advantageous as it allows to sequentially progress on the subject.

Transcriptions of conducted interviews were executed with both researchers present in order to account for potential bias risk (discussed by Bryman & Bell, 2011). In the next step, transcriptions and follow-up questions (where applicable) were communicated back to the
relevant respondent for approval, with clear instructions on a pre-set the approval time. If no answer was received within this given approval time frame, the material was considered approved.

3.3 Population and Sampling
The sample of the study is of a convenience nature. A total of 20 contacts were obtained from the database of the IVS supplier. These contacts were chosen according to four criteria, which were set in order to ensure that the respondent was familiar with both the characteristics of the vending solution, its role within the operations of the company as well as the Service & Support function provided by the supplier. The criteria were as follows:

1. Have worked within the industrial manufacturing industry for at least three years
2. Have worked in a company that has used the vending solution for a minimum of three years
3. Work in a position where they are daily exposed to the vending solution
4. Be familiar with the Service & Support system offered by the supplier

The contacts were initially approached with an email describing the study as well as a presentation of the two authors. The email was formulated as an invitation to participate in the study at a time convenient to the recipient’s schedule. If no answer was received within seven days, a follow-up call was made in an attempt to establish contact. At this time, it was acknowledged that the email had in some cases ended up in the recipient’s spam filter. In this stage, neither of the contacts declined to participate in the study. Aside from one contact that declined upon the initial email, attempts to get in touch with five of the contacts were unsuccessful, causing total fallout of six respondents. Thus, out of the original sample of 20 contacts, a final number of 14 respondents participated in the study. Table 6 in Appendix 1 contains an overview of all respondents participating in the study.

3.4 Operationalization
The top level presented in the conceptual framework refers to how the perception of the three dimensions of the IVS solution, and service quality perception are impacted by a customer’s requirements and expectations. The middle part describes the supplier’s active role as impacting the service quality perception and is thus not represented as a category in the questionnaire. The lower level demonstrates how the accomplishment of a supplier successfully diminishing Gap 5 affects trust and commitment positively whilst lessening a
In order to ensure that the data collection process would generate relevant results for these areas, the questionnaire was divided into two separate sections, each with questions formulated to capture the separate aspects of the customer’s opinions and values. By asking questions regarding how well the current IVS solution fits the operational needs of the customer, what they like the least and most as well as what they would change, the customer is encouraged to speak freely about the actual role the solution plays in everyday operations. Questions were also asked about the Service & Support and how well the service quality in this part of the solution aligns with the need of the customer.

When designing the questionnaire, questions were formulated that captured each of the concepts from the conceptual framework, sorted under two main themes. The first theme of the questionnaire was set to “Service Quality Perception and Solution Dimensions”, illustrating the actual service quality perceived and the solution’s fit with customer requirements. The second theme, “Customer Satisfaction Drivers and Commitment and/or Trust Indicators” was constructed to capture the respondent’s satisfaction with the current solution and whether they would consider switching solution. The individual questions and corresponding concepts from the conceptual framework can be seen in Table 3.

<table>
<thead>
<tr>
<th>Area</th>
<th>Concept</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>Service Quality Perception and Solution Dimensions (Conditions)</td>
<td>Fulfilling Customer Requirements and Expectations Solution Dimensions</td>
<td>- Have you had any changes in your operations where you experienced that your current vending solution was inadequate?</td>
</tr>
<tr>
<td>Service Quality Perception Fulfilling Customer Requirements and Expectations</td>
<td>- Is there any aspect of your current vending solution that you feel is causing your everyday work to be less efficient than necessary?</td>
<td></td>
</tr>
<tr>
<td>Service Quality Perception Fulfilling Customer Requirements and Expectations Solution Dimensions</td>
<td>- Do you consider your vending solution to fully fit your operational needs? What part of the solution is most relevant in this matter?</td>
<td></td>
</tr>
<tr>
<td>Service Quality Perception</td>
<td>- If you could improve something about your current vending solution, what would it be?</td>
<td></td>
</tr>
<tr>
<td>Customer Satisfaction Drivers and Commitment and/or Trust Indicators (Outcome)</td>
<td>Customer Satisfaction Service Quality Perception</td>
<td>- What do you like most about your current vending solution?</td>
</tr>
<tr>
<td>---</td>
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</tr>
<tr>
<td></td>
<td>Customer Satisfaction</td>
<td>- What do you like the least about your current vending solution?</td>
</tr>
<tr>
<td></td>
<td>Customer Satisfaction Service Interactions</td>
<td>- What is most important for you when it comes to customer service from your supplier?</td>
</tr>
<tr>
<td></td>
<td>Commitment and/or Trust Indicators Inclination to Switch Supplier</td>
<td>- Is there anything that could make you consider switching vending solution?</td>
</tr>
<tr>
<td></td>
<td>Commitment and/or Trust Indicators Inclination to Switch Supplier</td>
<td>- What would be the most challenging factor(s) in considering to switch vending solution?</td>
</tr>
</tbody>
</table>


To eliminate the risk of misunderstandings as well as adding to the reliability of the study (Saunders et al., 2012) a pilot interview was conducted. Ensuring an accurate communication during the interviews, all questions were priorly discussed with a set of industry experts. This allowed for appropriate adjustments of phrases and terminology, eliminating previously unanticipated ambiguities (Dalén, 2011).

### 3.5 Data Presentation and Analysis

After transcriptions were approved by respondents, all data was transferred to a common document with all material sorted according to question in order to facilitate an overview of the compiled findings. The analysis of data was done according to three steps: data reduction, data display and conclusion drawing (as suggested by Miles & Huberman, 1994). In the data reduction step, answers that did not correspond with the focus of this study were excluded in such a way that conclusions could be drawn and verified from the remaining data set. Examples of data excluded were occasions when the respondent elaborated on topics other than the question that did not fit within the scope of the research. After the reduction step, the final data set was organised in a compressed assembly of information that facilitated conclusion-drawing. This means that the material was coded in an inductive manner, extracting themes to outline the data in a structured and accessible way. In this step,
the data was also categorised according to number of respondents that had similar answers. The data display step resulted in the following emerging categories:

1. Actual Service Quality Perception
2. Suggested Solution Improvements
3. Factors Affecting the Decision to Switch Solution

Actual service quality perception includes examples of how respondents perceive the solution, both in terms of negative and positive remarks. The next category contains suggestions for improvements not currently perceived as part of the solution. The last emerging category of the empirical data revolves around factors that impact customers’ inclination to switch vending solution. From the data of these three categories, customer satisfaction drivers as well as commitment and/or trust indicators were derived.

The empirical findings were evaluated and displayed according to the three emerging categories and the three dimensions. Due to the aim of this study, no distinction between individual respondents will be done in terms of analysis, but rather according to trends identified across the data set. However, Table 7 in Appendix 2 provides a complete overview of the data obtained, illustrating all respondents in the sample.

Results were interpreted, discussed and linked with relevant theories (as suggested by Yin, 2009) in the conclusion drawing (see also Miles & Huberman, 1994). This final step of drawing conclusions and verification is focused on reflecting upon and comprehending the displayed data set. Even though this process of reflection had commenced at an earlier step, it became more outstanding towards the later stages of the research process. Thus, even though the analysis process here is described according to the three steps presented by Miles & Huberman (1994), the steps were to some extent intertwined and simultaneous as this study progressed. Initially, it was not anticipated whether respondents from different company sizes would perceive the solution’s role in their operations differently and thus, the sample was not designed in a manner that would allow such analysis to a greater extent. However, such tendencies were seen throughout the data collection and analysis process. Therefore, detailed data on company size across the empirical findings was placed in the Appendix 1. This information will not be processed for analysis in the current study, but might prove helpful for future researchers.
3.6 Validity and Reliability

In order to determine the quality of the primary data gathered (Riege, 2003), two criteria for qualitative studies were used, namely trustworthiness and authenticity (as suggested by Lincoln & Guba, 1985).

- The first criteria, trustworthiness, consists of four sub-criteria:
  - Credibility: whether the conducted research follows pre-set rules and the gathered data is reported back to the respondent confirming that facts are correctly understood.
  - Transferability: whether results are applicable to other scenarios. Can be enabled by providing elaborate descriptions of the research process.
  - Dependability: the manifestation of a comprehensive and straightforward explanation of the steps taken in the research process.
  - Conformability: whether the understanding of data is drawn in a logical and unprejudiced manner.

- The second criteria, authenticity, refer to whether the research poses a fair image of the opinions and values derived from the respondents.

In the current study, a number of measures were taken to assure a high trustworthiness and authenticity. Firstly, by developing respondent criteria, interview characteristics and themes, the credibility was increased due to the occurrence of pre-set rules. As all data was collected with two interviewees present, the risk of prejudiced interpretations was judged as less prominent. This risk was further diminished by sending transcriptions of the interviews back to respondents for approval, enabling the detection of potential misunderstandings before further processing of the material. These rules were consistently maintained throughout the study, insuring credibility, conformability and authenticity in the manners described above. Secondly, by detailed and transparent descriptions of data collection method and analysis, the conditions of both transferability and dependability of the study were met. This serves to enable other researchers to comprehend the setting and course of action taken in the research steps. By conveying understanding of the process, the contribution of the current study can be evaluated in accordance with the context in which it was conducted and therefore increase the awareness of its applicability.
4. Empirical Data
The current study investigates customers’ perception of service quality, customer satisfaction drivers as well as trust and commitment indicators in IVS solutions provided by the supplier, with data from 14 respondents; all current customers of that supplier. Following a brief introduction of the supplier, interview data from the customers is subsequently presented according to the three emerging categories as well as the dimensions of an IVS.

4.1 The IVS Supplier
The supplier is a high-tech and global engineering company with solutions based on unique expertise in materials technology, extensive knowledge of industrial processes and close customer cooperation. Through collaboration with a partner, the supplier has in the past years offered an IVS solution to their customers. Consistent with the definition of an IVS, this supplier’s solution includes both hardware in the form of the actual vending machine, the software installed on it as well as Service & Support. (Key Informant)

4.2 Interview Data
The subsequent section outlines the gathered empirical data to be used as foundation in mapping customer satisfaction drivers, service quality perception as well as commitment and/or trust indicators present within the IVS field in the industrial manufacturing industry. The section is finalised with Table 4, summarising the empirical findings in their entirety.

4.2.1 Solution Characteristics and Actual Service Quality Perception
The first category, composed of actual service quality perception, is divided into positive and negative perceptions of the service quality in order to facilitate a clear overview of customer opinions.

4.2.1.1 Positive Perceptions
Solution Design Dimension
Expressed by several respondents was the impression that the IVS is a useful and organised way of storing tools, enabling to easily keep track of current inventory. Another expressed advantage was the benefit for the customer(s) to be able to store items from different suppliers within the vending machine.
**Software Attributes Dimension**

The solution was perceived by the majority of respondents as being convenient and time-efficient as it involves automatic replenishments and permits pre-setting preferred levels of items to be kept in stock. It was further uttered by participants in the study that the IVS simplifies for the operators and in turn increases the efficiency, saves administrative time as well as diminishing the risk of running out of essential stock.

It was expressed as appreciated that the solution enables the respondents to access the system remotely due to the programmed software. Another benefit mentioned was that the system supports a high number of users. Lastly, the ability to trace withdrawn tools to specific operators was positively perceived.

**Service Interactions Dimension**

All respondents agreed that the supplier has an overall satisfying Service & Support system, and some specifically stated that the supplier has a *knowledgeable* Service & Support, thus emphasising the technical expertise.

It was further perceived that the supplier provides quick response to questions. This was mentioned by one respondent to be essential for their continued partnership with the supplier. Speedy and accurate deliveries of spare parts and tools were attributes uttered to be highly important and successfully managed by the supplier. In order to reduce down-time, it was added as important to know in advance when deliveries will come, which respondents felt was fulfilled.

Additionally, some respondents representing different companies had the same contact and support person assisting them when technical issues arose. Common among these respondents was that this specific person was valued and perceived as genuinely knowledgeable within the area, which contributed to positive perceptions.

A few respondents stated that they have this particular IVS solution because they partner with the supplier and that they intend to continue to do so.
4.2.1.2 Negative Perceptions

During the data collection, the respondents were asked whether the IVS solution fits their requirements. Aside from one respondent that perceived the current solution to be fully satisfying, some comments regarding less desired characteristics of the dimensions of the current solution were uttered.

Solution Design Dimension

The majority of respondents expressed some kind of dissatisfaction with the IVS in terms of its quality. For example, it was mentioned that drawers used for storing tools in the vending machine at the customer site have a tendency to easily break, which causes unnecessary downtime. Some respondents were also of the opinion that the electronics in these drawers are too sensitive and delicate for an industrial manufacturing environment. One respondent explicitly stated the following:

“The hardware breaks easily due to its poor quality, both in terms of the drawers and the electronics. This in turn causes many other problems. For example, the employees have to pick items from the machine and then manually write down what has been withdrawn, which is not properly handled.”

Another outspoken comment was the inconvenience stemming from the necessity of manually reloading the machine with new tools upon inventory delivery, causing inefficiency. It was also stated that the re-filling process is complicated due to the fact that the items arrive unlabelled and excessive time is therefore spent on identifying which machine the tools belong to, before machines can be re-filled.

Software Attributes Dimension

In terms of user-friendliness, the software in the current IVS solution (used by operators to log into the IVS and navigate in order to withdraw tools) was perceived by several respondents to have flawed filtering and menu options with difficulties to search for specific tools; especially is the article number of the desired tool is unknown. It was explicitly remarked that a non-user-friendly language and arbitrary article names complicated the process. Another comment was that occasions when the supplier changes article numbers without notifying the customers create further difficulties.

Furthermore, one respondent was dissatisfied with the software’s inability to retain old features after software upgrades. This respondent specifically expressed that:
“The one functionality or area that is very poor is the ability to integrate possible upgrades. For example, sometimes they (the supplier, ed.) will do an upgrade and then delete a feature and it seems very difficult to get that feature to be re-instated.”

It was expressed that when new features were introduced, old features were deleted and hard or impossible to retain. As these features corresponded with an established operating flow, the respondent uttered that it would have been convenient to be able to keep specific features to avoid the necessity of implementing new routines.

Another comment expressed by some respondents was that the solution lacked innovativeness in its overall constellation. As a consequence, these respondents perceived that the supplier was not able to deliver their value promise to the same extent as some of the supplier’s competitors.

The IVS solution is based on manual inputs for withdrawing tools. This means that upon logging onto the IVS and taking out the needed tool(s), operators are required to manually type in the number of tools taken out from the machine. In turn, this information on items taken out steers the updating of inventory levels in the information system and a recurring issue is when operators mistakenly input a number of items into the system that does not correspond with the actual number of item(s) taken out (for example, taking out one box of tools containing 20 items and indicating the number 1). By indicating the number 1, the system logs that one item was taken out whereas the user intended one box. As manual entries currently are mandatory and used as a basis for the process of automatic replenishments, correct input is of great importance. This awareness caused some sites to instate regular inventory checks and adjust inventory levels accordingly, which was perceived as time consuming and counter-efficient.

Service Interactions Dimension
The remark was made that deliveries of stock usually take time, which negatively impacts satisfaction with the solution. It was also established that in order for the respondents to trust the supplier, accurate information regarding delivery time of supplies and spare parts are crucial; which was not always fulfilled.

Despite the fact that some respondents, as previously indicated, expressed it as appreciated to have one specific contact person, it was also established by these respondents that relying
on one specific person is problematic when it clashes with this person being off duty. At these occasions, the companies are forced to get assistance from a third party and it was mentioned that this third party reacts less quickly.

Additionally, the following shortcoming of the supplier was pointed out: the sales personnel of the supplier at the current time tend to have insufficient knowledge of operational processes from a holistic point of view. One particular respondent felt that these conditions affected the quality of guidance this salesperson was able to give on the solution and how it could serve to assist with increasing efficiency by fulfilling customer requirements.

Expressed by a minority of respondents was also the subscription period of three years, which was perceived as too long.

In discussing solution characteristics and actual service quality perception of the IVS, suggestions were made for how the solution could be developed to better fit customer requirements. The next section outlines these suggested improvements.

4.2.2 Suggested Solution Improvements

Solution Design Dimension

In terms of hardware, the need for machines to meet a higher standard of durability, or alternatively be easier to repair if broken, was uttered. It was further suggested that the IVS design should be more adapted to an industrial context, regarding both hardware and electronics.

Aside from the one respondent who already was of the option of being able to store tools from multiple suppliers within the vending machine, a few respondents expressed this as a desired feature. Also, flexibility of storing multiple items of various sizes within the same drawer of the IVS vending machine was desired.

Software Attributes Dimension

Resulting from comments on flawed filtering options, a function was desired that upon logging in would allow the user to apply a filter that only shows the cost centres relevant to that specific user. This would increase the efficiency when using the system, as operators then would spend less time looking for their relevant option among a high number of
alternatives. A filter would also decrease the risk of users indicating the wrong information, such as logging the withdrawal of a tool under an incorrect cost centre, which would require a correction at a later stage.

Commonly expressed among respondents in the study was the need for software improvements with the objective of increased efficiency, lower costs and return on investment. It was also stated that the IVS should be more innovative; one respondent clearly stated that the supplier in the past couple of years had started to fall behind in comparison to its competitors.

Further on the same topic, it was expressed that the software could benefit from improvements that would allow for a higher degree of user-friendliness and language accessibility. For example, suggestions were to have a higher transparency of information regarding items being stocked in the machine. Currently, the labels of items have names perceived as arbitrary article numbers and the suggestion came up from some respondents that these should be more accessible for operators working on the shop floor, such as being searchable by a specific machine. To illustrate the problem, one respondent expressed the following:

“A lot of engineers know what a tip looks like (a tip is one example of tool stored in the IVS, ed.) but not necessarily what it is called – sub menus would also be useful to make finding items quicker.”

This was further acknowledged by another respondent, stating that:

“It should be more user-friendly for the staff. They do not know all the designations for the items we have in the machine, which makes it a hassle for them.”

Another improvement suggestion was that operators only should have access to items connected to the specific area they operate in. This could make the search process user-friendlier and improve the efficiency of the operations. In addition, the need for an augmented straightforward handling of orders and suppliers in the system was also uttered.

Furthermore, it was desired to adapt the software in a way that that allows management to have better control of what features and tools the operators have access to. A few respondents that did not have the feature of automatic software upgrades expressed the desire of having this done remotely by the supplier. On this topic, it was uttered that a
similar update of price changes was attractive. Also, as an extension of a previously made comment, it was suggested that the process of retaining old features when updating the system should be made more efficient and allow keeping old features in spite of updates.

Further, it was desired that automatically generated reports from the IVS’s software could independently suggest updated min-max order points for stock based on order history of the customer as well as for the system to generate statistics on inventory costs. If reports could advise cost levels and raise awareness of articles that are rarely being used, it would enable for higher levels of efficiency.

It was desired for the IVS to have a possibility of being more integrated with the customer’s business system. In the current setup, some master data need to be manually updated both in the business system and in the supplier portal used directly as an extension of the IVS, which increases both the workload and the risk of human fault. If the system could transfer master data automatically, it would save time and effort as well as decrease the risk of inaccuracies due to human fault.

It was also expressed as attractive to have a higher measure of transparency in the communication system between the supplier and the customer. For instance, one respondent suggested that when service tickets are created upon the customer having registered an issue, the customers would have appreciated more information and updates on the status and progress of the service request going forward. It was stated that a more organised service ticket/support system in this sense would contribute positively to the efficiency of the customer’s operations.

*Service Interactions Dimension*

Logically following from the previously expressed view of sales personnel having insufficient knowledge, a desire for the sales team in general to have a higher understanding of business operations was disclosed. It was said that this higher expertise in this sense would enable sales personnel to more successfully guide the customer to a solution that facilitates their operations in an optimal way.

As mentioned in the previous section, dissatisfaction with the delivery speed of new stock was stated. A desire was therefore to improve this area and thus make the deliveries quicker.
Furthermore, the desire to have “full customer service” was uttered, where the supplier would incorporate a higher number of services in their offering: from the process of reloading the machine with new stock to serving the machine if something were to break.

Following the customer’s actual service quality perception and suggestions for improvements, there were comments regarding customers’ intention or likelihood of switching solution. These statements are presented below.

4.2.3 Factors Affecting the Decision to Switch Solution

Solution Design Dimension
When asked what would be the most decisive factor in considering switching solution, respondents equal to half of the sample expressed the need for a solution to fulfil cost-efficiency. It was also added that the solution’s ability to generate return on investments and payback are decisive factors in the choice of supplier/solution. Another expressed determinant factor when choosing supplier was the ability to store items from different suppliers within the vending machine.

Software Attributes Dimension
In terms of software, more than one third of respondents were of the opinion that it is essential for the supplier to offer software that enables the customer to achieve cost-efficiency in their operations.

Service Interactions Dimension
Speedy deliveries and accurate information on these deliveries are important factors to be fulfilled in order for the respondents to not consider switching supplier. Further, the occurrence of no down-time in operations was a vital aspect for the major part of the interviewed respondents.

Individual contacts with the supplier are crucial for the satisfaction and the quality of the supplier-customer relationship is a determinant factor when choosing (and staying with) a supplier. Furthermore, the preference of having one concrete contact person to turn to in the partnership was also stated as one determinant factor that will lessen the customer’s inclination to switch supplier.
A few respondents also expressed that they are satisfied with the supplier and have built trust for them, which is the reason why they continue to partner with this supplier.

<table>
<thead>
<tr>
<th>Solution Characteristics and Actual Service Quality Perception</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive Perceptions</strong></td>
<td></td>
</tr>
<tr>
<td>Safe and organised way to store tools, good overview of inventory</td>
<td>R1, R4, R5, R7, R8, R12, R14</td>
</tr>
<tr>
<td>Convenient and time-efficient, Automatic replenishment, can pre-set max-min</td>
<td>R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R13</td>
</tr>
<tr>
<td>Saves administrative time, increases efficiency and decreases the risk of running out of stock, makes it easier for operators</td>
<td>R1, R2, R3, R4, R6, R8, R9, R10, R14</td>
</tr>
<tr>
<td>Overall satisfying Service &amp; Support</td>
<td>R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14</td>
</tr>
<tr>
<td>Service &amp; Support: Quick answers</td>
<td>R1, R2, R3, R4, R5, R6, R7, R9, R14</td>
</tr>
<tr>
<td>Service &amp; Support: Knowledgeable staff</td>
<td>R2, R4, R5, R6, R9, R14</td>
</tr>
<tr>
<td>Accessible Service &amp; Support</td>
<td>R1, R2, R3, R5, R6, R7, R9</td>
</tr>
<tr>
<td>Knowing when deliveries will come</td>
<td>R1, R3, R14</td>
</tr>
<tr>
<td>Remote access to the system, automatic software updates</td>
<td>R9, R10, R14</td>
</tr>
<tr>
<td>Ability to trace withdrawn tools to operators</td>
<td>R12</td>
</tr>
<tr>
<td>System supports a high number of users</td>
<td>R5</td>
</tr>
<tr>
<td>Enables to store items from multiple suppliers</td>
<td>R14</td>
</tr>
<tr>
<td>Personal relationship, individual and company level</td>
<td>R7, R9, R10, R13, R14</td>
</tr>
<tr>
<td>Speedy and accurate deliveries + spare parts, no down-time</td>
<td>R3, R4, R7, R8, R10, R14</td>
</tr>
<tr>
<td><strong>Negative Perceptions</strong></td>
<td></td>
</tr>
<tr>
<td>Dissatisfaction with the overall quality</td>
<td>R1, R2, R3, R4, R5, R7, R8, R9, R10, R11, R12, R13, R14</td>
</tr>
<tr>
<td>Plastic drawers and too sensitive electronics (unfit for industrial environment)</td>
<td>R3, R5, R9</td>
</tr>
<tr>
<td>Problems when the supplier changes article number without notifying</td>
<td>R2</td>
</tr>
<tr>
<td>Time-consuming to get deliveries</td>
<td>R3</td>
</tr>
<tr>
<td>Issue</td>
<td>Respondents</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------</td>
</tr>
<tr>
<td>Box/item, wrong inventory balance</td>
<td>R3, R7, R8, R12, R14</td>
</tr>
<tr>
<td>Reloading the machine with tools takes time</td>
<td>R3, R11, R14</td>
</tr>
<tr>
<td>Tools arriving unlabelled</td>
<td>R9</td>
</tr>
<tr>
<td>Inaccurate delivery information</td>
<td>R12</td>
</tr>
<tr>
<td>Problem to get old features back when updating the software</td>
<td>R9</td>
</tr>
<tr>
<td>Long subscription time</td>
<td>R6, R10</td>
</tr>
<tr>
<td>Lack of innovation</td>
<td>R3, R10, R11, R13</td>
</tr>
<tr>
<td>Flawed filtering and menu options with difficulties to search for specific tools without knowing the article number, complicated language</td>
<td>R3, S R4, L R5, R7, R8, R9, R10, R11, R12, R14</td>
</tr>
<tr>
<td>Dependency on one specific contact person</td>
<td>R13</td>
</tr>
<tr>
<td>Insufficient sales personnel knowledge</td>
<td>R5</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Suggested Solution Improvement Areas</strong></th>
<th><strong>Respondents</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher integration between systems</td>
<td>R5</td>
</tr>
<tr>
<td>Filtering (for example: cost centres)</td>
<td>R5</td>
</tr>
<tr>
<td>Advanced report-generation giving feedback on inventory use and statistics</td>
<td>R4, R5</td>
</tr>
<tr>
<td>More user-friendly handling of orders and suppliers in system</td>
<td>R1, R11</td>
</tr>
<tr>
<td>Software allowing higher management control</td>
<td>R9</td>
</tr>
<tr>
<td>Possibility to retain old features after updating the system</td>
<td>R9</td>
</tr>
<tr>
<td>Innovation</td>
<td>R3, R10, R11, R14</td>
</tr>
<tr>
<td>Automatic software upgrades and price info</td>
<td>R8, R9</td>
</tr>
<tr>
<td>Full customer service</td>
<td>R14</td>
</tr>
<tr>
<td>Flexibility (of mixed suppliers)</td>
<td>R10, R11, R12, R14</td>
</tr>
<tr>
<td>Flexibility (items of various sizes within the same drawer)</td>
<td>R10, R12, R13</td>
</tr>
<tr>
<td>More durable hardware, adapted for the industrial environment</td>
<td>R3, R5, R9</td>
</tr>
<tr>
<td>User-friendliness; Accessible language, finding what you want fast, filtering options, user-specific modes, sub menus</td>
<td>R3, R4, R5, R7, R8, R9, R10, R11, R12, R14</td>
</tr>
<tr>
<td>Having knowledgeable sales personnel, understanding the holistic perspective of operations and how the solution can facilitate these</td>
<td>R5</td>
</tr>
<tr>
<td>Software improvements leading to higher cost-efficiency</td>
<td>R3, R4, R5, R8, R9, R10</td>
</tr>
</tbody>
</table>
More organised service ticket system | R5
---|---

<table>
<thead>
<tr>
<th>Factors Affecting Decision to Switch Solution</th>
<th>Respondents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost-efficiency</td>
<td>R4, R5, R8, R10, R11, R12, R14</td>
</tr>
<tr>
<td>Payback</td>
<td>R5</td>
</tr>
<tr>
<td>Flexibility of suppliers</td>
<td>R11</td>
</tr>
<tr>
<td>Return on investment</td>
<td>R4, R5</td>
</tr>
<tr>
<td>Supplier relationship, company level</td>
<td>R7, R9</td>
</tr>
<tr>
<td>Personal relationship, individual level</td>
<td>R10, R13</td>
</tr>
<tr>
<td>To have one specific contact person</td>
<td>R14</td>
</tr>
<tr>
<td>Speedy deliveries + spare parts, no down-time</td>
<td>R3, R4, R7, R8, R10, R14</td>
</tr>
<tr>
<td>Accurate information on deliveries + spare parts, no down-time</td>
<td>R1, R3, R9, R11, R12</td>
</tr>
<tr>
<td>Software allowing for the customer to achieve cost-efficiency</td>
<td>R3, R4, R8, R9, R10</td>
</tr>
</tbody>
</table>

*Table 4. Empirical Findings and Respondents. Source: own.*
5. Analysis

Subsequently, the predominant findings are linked to the theoretical framework in order to illustrate the relevance of the empirical study. Based on the empirical findings, a total of 13 customer satisfaction drivers were identified for the IVS solution. These were derived from each area of the empirical findings (i.e. service quality perception, identified commitment-and/or trust indicators as well as inclination to switch supplier) and can be found in Table 5 below.

<table>
<thead>
<tr>
<th>Solution Characteristics and Actual Service Quality Perception</th>
<th>Identified Customer Satisfaction Drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive Perceptions</strong></td>
<td></td>
</tr>
<tr>
<td>Safe and organised way to store tools, good overview of inventory</td>
<td>Efficiency</td>
</tr>
<tr>
<td>Convenient and time-efficient, Automatic replenishment, can preset max-min</td>
<td>Efficiency</td>
</tr>
<tr>
<td>Saves administrative time, increases efficiency and decreases the risk of running out of stock, makes it easier for operators</td>
<td>Efficiency</td>
</tr>
<tr>
<td>Overall satisfying Service &amp; Support</td>
<td>X</td>
</tr>
<tr>
<td>Service &amp; Support: Quick answers</td>
<td>Timeliness</td>
</tr>
<tr>
<td>Service &amp; Support: Knowledgeable staff</td>
<td>Expertise</td>
</tr>
<tr>
<td>Accessible Service &amp; Support</td>
<td>Organised Support Structure</td>
</tr>
<tr>
<td>Knowing when deliveries will come</td>
<td>Transparency</td>
</tr>
<tr>
<td>Remote access to the system, automatic software updates</td>
<td>Information Quality</td>
</tr>
<tr>
<td>Ability to trace withdrawn tools to operators</td>
<td>Information Quality</td>
</tr>
<tr>
<td>System supports a high number of users</td>
<td>Information Quality</td>
</tr>
<tr>
<td>Enables to store items from multiple suppliers</td>
<td>Flexibility</td>
</tr>
<tr>
<td>Personal relationship, individual and company level</td>
<td>Trustworthiness</td>
</tr>
<tr>
<td>Speedy and accurate deliveries + spare parts, no down-time</td>
<td>Timeliness</td>
</tr>
<tr>
<td><strong>Negative Perceptions</strong></td>
<td></td>
</tr>
<tr>
<td>Dissatisfaction with the overall quality</td>
<td>X</td>
</tr>
<tr>
<td>Plastic drawers and too sensitive electronics (unfit for industrial environment)</td>
<td>Durability</td>
</tr>
<tr>
<td>Problems</td>
<td>Identified Customer Satisfaction Drivers</td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>------------------------------------------</td>
</tr>
<tr>
<td>Problems when the supplier changes article number without notifying the customer</td>
<td>Transparency</td>
</tr>
<tr>
<td>Time-consuming to get deliveries</td>
<td>Efficiency</td>
</tr>
<tr>
<td>Box/item, wrong inventory balance</td>
<td>Information Quality</td>
</tr>
<tr>
<td>Reloading the machine with tools takes time</td>
<td>Efficiency</td>
</tr>
<tr>
<td>Tools arriving unlabelled</td>
<td>Efficiency</td>
</tr>
<tr>
<td>Inaccurate delivery information</td>
<td>Transparency</td>
</tr>
<tr>
<td>Problem to get old features back when updating the software</td>
<td>Information Quality</td>
</tr>
<tr>
<td>Long subscription time</td>
<td>Flexibility</td>
</tr>
<tr>
<td>Lack of innovation</td>
<td>Innovation</td>
</tr>
<tr>
<td>Flawed filtering and menu options with difficulties to search for specific tools without knowing the article number, complicated language</td>
<td>User-friendliness</td>
</tr>
<tr>
<td>Dependency on one specific contact person</td>
<td>Flexibility</td>
</tr>
<tr>
<td>Insufficient sales personnel knowledge</td>
<td>Expertise</td>
</tr>
</tbody>
</table>

**Suggested Solution Improvement Areas**

<table>
<thead>
<tr>
<th>Suggested Solution Improvement Areas</th>
<th>Identified Customer Satisfaction Drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher integration between systems</td>
<td>Integration</td>
</tr>
<tr>
<td>Filtering (for example: cost centres)</td>
<td>User-friendliness</td>
</tr>
<tr>
<td>Advanced report-generation giving feedback on inventory use and statistics</td>
<td>Information Quality</td>
</tr>
<tr>
<td>More user-friendly handling of orders and suppliers in system</td>
<td>User-friendliness</td>
</tr>
<tr>
<td>Software allowing higher management control</td>
<td>Information Quality</td>
</tr>
<tr>
<td>Possibility to retain old features after updating the system</td>
<td>Information Quality</td>
</tr>
<tr>
<td>Innovation</td>
<td>Innovation</td>
</tr>
<tr>
<td>Automatic software upgrades and price info</td>
<td>Information Quality</td>
</tr>
<tr>
<td>Full customer service</td>
<td>Organised Support Structure</td>
</tr>
<tr>
<td>Flexibility (of mixed suppliers)</td>
<td>Flexibility</td>
</tr>
<tr>
<td>Flexibility (items of various sizes within the same drawer)</td>
<td>Flexibility</td>
</tr>
<tr>
<td>More durable hardware, adapted for the industrial environment</td>
<td>Durability</td>
</tr>
<tr>
<td>User-friendliness; Accessible language, finding what you want</td>
<td>User-friendliness</td>
</tr>
</tbody>
</table>
Having knowledgeable sales personnel, understanding the holistic perspective of operations and how the solution can facilitate these

Software improvements leading to higher cost-efficiency

More organised service ticket system

<table>
<thead>
<tr>
<th>Factors Affecting Decision to Switch Solution</th>
<th>Identified Customer Satisfaction Drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost-efficiency</td>
<td>Economic Efficiency</td>
</tr>
<tr>
<td>Payback</td>
<td>Economic Efficiency</td>
</tr>
<tr>
<td>Flexibility of suppliers</td>
<td>Flexibility</td>
</tr>
<tr>
<td>Return on investment</td>
<td>Economic Efficiency</td>
</tr>
<tr>
<td>Supplier relationship, company level</td>
<td>Trustworthiness</td>
</tr>
<tr>
<td>Personal relationship, individual level</td>
<td>Trustworthiness</td>
</tr>
<tr>
<td>To have one specific contact person</td>
<td>Trustworthiness</td>
</tr>
<tr>
<td>Speedy deliveries + spare parts, no down-time</td>
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<tr>
<td>Accurate information on deliveries + spare parts, no down-time</td>
<td>Trustworthiness</td>
</tr>
<tr>
<td>Software allowing for the customer to achieve cost-efficiency</td>
<td>Economic Efficiency</td>
</tr>
</tbody>
</table>


In the following sections, customer satisfaction drivers derived from the empirical evidence are presented and discussed in detail, as these symbolise the desired characteristics that drive customer satisfaction, service quality perception, trust and commitment. Figure 9 shows the identified customer satisfaction drivers divided by the three dimensions as well as by the associated number of respondents for each.
### Figure 9. Identified Customer Satisfaction Drivers by Dimension. Source: own.

#### 5.1 Solution Design Dimension

5.1.1 Flexibility

It was established in the empirical evidence that some respondents desired more flexibility in the solution. This was expressed as an interest in mixing items of different character in the same drawer of the IVS solution and adding items from different suppliers within the vending machine. The desires for the solution to be flexible can be mirrored in Zammori et al.’s (2009) findings, stating that in having higher flexibility, the customer can focus more resources and energy on their core operations. Petter et al., (2013) include flexibility as a component in their success variable of system quality, expressed as a desirable characteristic. If this need would simplify the operations for customers, a corresponding offer could be used to hone a supplier’s competitiveness and positively affect the customer’s intentions to stay in a long-term relationship (Pasch et al., 2016). This is also supported by Brax (2005), who suggests that well-executed services lengthen the supplier-customer relationship. As argued by both Davies (2003) and Pasch et al. (2016), industrial customers demand customised, individual solutions, which increases the importance of considering to tailor solutions specific to customer needs.

Detecting the upcoming of new or changed customer demands is explained by Falasca, et al.’s (2016) argument that a constant strive for quickly adapting to demand changes can be...
facilitated and reached through an open dialogue with customers. This further aligns with the findings of Drejer (2000), who states that the intense competition makes product development and innovation of suitable technological solutions key for industrial firms. An increased customer focus can according to Slack et al. (2004) facilitate the value co-creation process, taking place between the supplier and customer. As product development is a vital and complex weapon for competition (Chan & Ip, 2011), the ability to turn feedback into enhancement of a company’s offering and business processes is a necessity (Allen, 2004).

5.1.2 Durability
The empirical evidence shows that one of the respondents was fully satisfied with the current solution. In line with numerous scholars presented in this study (such as Fornell, 1992; Guo & Wang, 2015; Al-Kwif et al., 2014), this customer is therefore likely to repurchase and continue the relationship with the supplier.

However, common across a higher number of respondents was the need for higher quality in terms of durability of the hardware. This is comparable to Guo & Wang (2015), who found that product quality within the manufacturing industry is essential for the operations. It further supports Waltemode & Aurich (2013), arguing that quality assessment for industrial product-service systems is determined by the degree to which the solution fulfils customer requirements throughout its entire lifecycle; and thus needs to be of lasting quality. If the hardware of the solution is fragile, it has a negative impact on the customer’s quality perception in failing to fulfil the requirements. Additionally, the fact that the customer’s quality perception has been proven to include the entire system provided by the supplier (Pasch et al., 2016), there is a need for assessing the solution in terms of all its components and consider developments that can generate benefits across these dimensions.

5.2 Software Attributes Dimension
5.2.1 Innovation
The empirical evidence shows that respondents explicitly perceived the software to lack innovativeness. As expressed by Chan & Ip (2011), product development initiatives can be used to diminish the risk of customers switching to another solution. Innovation is a substantial strategic element for service firms (Chesbrough, 2003; Gassmann et al., 2010; Wikhamn et al., 2013) in a context driven by intense competition (Guo & Wang, 2015) since successful innovations help yield profits and efficiency for both the supplier and customer
Respondents expressed dissatisfaction with aspects relating to the software attributes dimension, which can be connected to Petter et al.’s (2013) satisfaction determinants for IS systems. It is specifically outlined that a successful IS outsourcing is facilitated by factors such as (to mention a few) ease-of-use, appropriateness of use, higher productivity, usability and user satisfaction (Ibid).

Thus, if the factors of an IS are not facilitating the expectations of the customers, the quality perception risks to be negatively impacted. This is further emphasised by the comment from one respondent, expressing that the supplier in recent years has fallen behind in innovation and does not currently manage to fully deliver its value promise in a competitive way. Similarly, it is supported by research arguing that firms in high-technology markets have a pressure to maintain the most advanced features in their offering (Bhattacharya et al., 1998), which requires continuous improvements (Krieg, 2004; Su, Chen & Sha, 2006) as well as superior and tailored delivery (Katzmarzik, 2011). If this is not fulfilled, suppliers risk losing customers who start looking elsewhere for technology that comes closer to their preferences (Al-Kwif et al., 2014; Heide & Weiss, 1995).

The meaning of the feedback from the specific respondent just above can be connected to the necessity expressed by Guo & Wang (2015) for suppliers to remain attentive to both customer desires and competitor orientation as in the highly competitive climate amongst suppliers, customers are constantly comparing the different options on the market. This is also comparable to Parasuraman et al.’s (1985) Gap 4, illustrating the dissonance between the promised and delivered value of a service. This underlines the relevance of linking product development decisions to customer feedback in the form of satisfaction measurements, which can generate a higher customer satisfaction (as expressed by Allen, 2004). Thus, in order for the supplier to align their investments in product development with actual customer expectations, these measures can be evaluated and incorporated into the firm’s business processes, leading to increased customer satisfaction.

In order to remain competitive towards other actors, Latusek (2010) argues that suppliers should concentrate on CRM in their B2B marketing activities. Through information sharing and feedback generated within the CRM interactions, suppliers are able to deliver more suitable offerings based on customer needs (Ibid), which is essential in order to gain competitive advantage and success in the market (Bose, 2002). The idea to tailor offerings in
order to compete by increasing the appeal towards existing and prospective customers is here supported by the findings of several authors stating the correlation between a solution’s fit with customer requirements and perceived service quality (see for example Biege et al., 2012; Pasch et al., 2016; Waltemode & Aurich, 2013).

5.2.2 User-friendliness

It was previously established that there is an increasing trend for providers of industrial solutions to tailor their approach to customer needs. This is done on the basis of letting the needs of the user influence how the system should be designed, seen as a potential combination of modules creating customisation opportunities (Pasch et al., 2016). Expressions for the need of tailoring can be seen in the fact that it was desired by several respondents to simplify the language of the system to be more appropriate for the “shop floor” where the users operate. Opinions included that labels should be more clearly listed in a way alternate to the current article numbers as well as introducing an option allowing operators to search for tools via specific machines and positions, increasing the efficiency. This would enable a quicker and more accurate withdrawing of tools from the machine. Another remark from respondents was the need for software to meet conditions of increased efficiency, lower costs and return on investment. Those desires can be related to the cost benefits mentioned by Falasca et al. (2016) as well as the customer net benefits presented by Petter et al. (2013).

The above suggestions further concur with the results of Petter et al. (2013), stating that usability and user experience are determinant success factors within ISs. Also, Asimakopoulos & Asimakopoulos (2014) argue that customers are more likely to switch solutions if these components are not perceived as fulfilled. As satisfaction components for ISs include ease-of-use, effectiveness and ability to efficiently reach set goals (Ibid), the IVS solution needs to meet these conditions within the operations of an organisation. The empirical evidence collected within the current study indicates that customers are satisfied with the software of the IVS to a certain extent. The factors positively affecting this satisfaction are that the system allows the customer to remotely access the system so that virtual stock levels can be viewed but also enables software updates to be made from a distance by the supplier.

A potential efficiency gain was also pointed out in the possibility to allow users to only see
the cost centres relevant to their role. This can be connected to Falasca et al.’s (2016) second enabler for IVS solutions, namely *quality of information gathered*. By allowing a user-friendly setup of the system, the user can easily access relevant information and use it advantageously. In order to fully benefit from the characteristics of industrial solutions, Bajgoric & Moon (2009) argue that the possibility to adapt the hardware or software to allow simpler management is essential. This is also consistent with Davies (2003) who argues that industrial customers are demanding integrated, customised solutions offered as both goods and services (as is the case with industrial product-service systems).

Preserving customer opinions that reflect lacking functions of a solution can be a tool for obtaining a better understanding on customer expectations (Allen, 2004). If customer expectations are well understood, this information can subsequently be used to bridge potential service quality gaps in accordance with Parasuraman et al.’s (1985) GAPS model. If properly monitoring performance, a supplier can take actions to impact customer satisfaction (Kandell, 2000).

**5.2.3 Integration**

Regarding customers’ desire for integration levels between the IVS and the business system, it was expressed that the integration was an important factor in order to better operational efficiency. There were substantial inefficiencies associated with lower levels of integration between the IVS and business system. It was specifically stated that the absence of integration created a need to manually import data from one system to another, which negatively impacted the record accuracy and time-efficiency. This empirical finding is consistent with Barki & Pinsonneault (2005), arguing that perceived IS quality is affected by the system’s possibilities to integrate with other systems, such as the interconnectedness with other information technologies of the customer and to which these share a mutual platform (Chiang et al., 2000). Successful integration of system also enhances productivity and competitiveness of a supplier’s offering (Barney, 1991; Ettlie & Reza, 1992). Thus, extending the possibilities for integration of the IVS solution could serve to increase satisfaction and productivity as well as obtaining higher customer retention.
5.2.4 Information Quality

The empirical findings display a desire for informative software with efficiency-enhancing abilities. However, from the responses around solution improvements, it can be derived that users feel that quality of information is not used to its fullest in the current IVS solution.

For example, desired was a solution that could correct the recurring issue of mismatches between the actual inventory levels and indication of number of items withdrawn by users, caused by manual inputs. This interrupts the communication of accurate data transferred both to the supplier and also the internal updates of the virtual inventory levels that go into the customer’s system. The identified dissatisfactory aspect caused by faulty information supports the findings of Berente et al. (2009) stating that the information quality and data transferred between the two parties is a necessity for the systems to successfully function. As an answer to that type of discrepancy, respondents expressed that their organisation uses regular inventory checks as a proactive way of preventing downtime in operations caused by inaccurate virtual inventory levels. However, this undermines one of the efficiency benefits expressed by Manrique & Manrique (2015), namely that automatically transferred data informing the supplier of current stock levels at the customer site can diminish the need to physically inspect available stock.

From the above follows that if the operational problem created by inaccurate stock registration could be mended, customers would not need to consider manual inventory checks and thus efficiency could be achieved. Additionally, it is in line with Gounaris (2005) to argue that offering a superior service quality consequently would increase the customer’s level of trust and affective commitment towards the supplier.

Furthermore, respondents expressed a desire to have the system generate reports and statistics on how to optimise max-min stock levels that drive reorders as well as data that indicate whether items are merely taking up space in the machine without being used regularly. These items could then be excluded, allowing for a higher cost- and space efficiency as well as raising awareness of excess inventory; information that would otherwise be difficult to obtain. As stated by Sanders & Premus (2002), increased usage of ISs comes with several benefits such as reduced costs. It is therefore understandable how these functions are vital and desired by the customers. Also, as statements from the respondents illuminate a lack of functional quality in the solution, improvements would
according to Grönroos’s (1983), findings consequently imply that the customer’s perception of the service quality is negatively affected to a greater extent than if the shortcoming had been on a technical dimension.

In order for a supplier to mend such shortcomings, resources could be employed to better apprehend the benefits of the IS in terms of information quality, system use and net benefits in line with Petter et al.’s (2013) research. Placing efforts on improving the use of the IS according to the suggestions above could serve to enhance the functional quality of the solution as well as increasing trust and commitment towards the supplier in line with arguments of Deng et al. (2013). It is also understandable why the mentioned features in addition to having an organised support structure are important, as the usage of ISs has been shown by Sanders & Premus (2002) to increase operational benefits.

Respondents also uttered the desire for software that could allow their management to have better control of what features and tools their operators have access to as well as to have a more flexible and up-to-date software that contains the ability to more easily retain features that have been deleted in updates of the IVS solution. This can be related to the system quality success factor explained by Petter et al. (2013) as regarding the desirable characteristics of an IS. The authors conclude that system flexibility and reliability positively correlate with increased IS-success and affects the perceived service quality (see for example Dibbern et al., 2004; Grover et al., 1996; Kim et al., 2005; Liang et al., 2016; Su & Levina, 2011), which subsequently impacts the customer satisfaction (Cronin Jr & Taylor, 1992).

5.2.5 Efficiency
Reasons why respondents found the IVS solution safe and convenient included the fact that the system is identification-controlled and supports many users. The empirical data also indicates that the customers perceived the IVS to be an efficient way of storing tools as well as increasing the overall efficiency in operations by saving administrative cost and time. Furthermore, the majority of respondents stated that the solution meant a decreased risk of running out of essential stock. The above aligns with the findings of Goodwin (2011), arguing that benefits of IVS solutions consist of reduced downtime and allowing monitoring of stock availability.
It was further mentioned that the ability to pre-set max-min preferred stock levels simplifies the replenishment flow. As expressed by Reddy & Vrat (2007), such processes require communication between customer site and supplier. The objective of the IVS’s automatic replenishment function is to eliminate the obligation of placing orders when the stock is low, as the system automatically transfers stock data from the customer site to the supplier. This is supported by the findings of Zammori et al. (2009), who argue that through outsourcing the responsibility of inventory to a supplier, flexibility and operational efficiency can be increased and the customer can commit more resources on their core operations.

Sharing a mutual platform between supplier and customer is stated by Chiang et al. (2000) to be key in the successful continuous interconnectedness between the parties. Respondents in the data set expressed that software improvements were necessary in order to reach increased operational efficiency. This correlates with Brax (2005) and Al-Kwif et al. (2014), who argue that an IS is one of the most important infrastructures among organisations and thus fundamental to the success of delivering complex service solutions in industrial contexts.

However, the empirical findings illustrate a shortcoming regarding the communication between the supplier and customer, which resulted in a perceived failure for the solution to reach its full potential of efficiency. This issue was acknowledged as when the supplier changed article number without advising the customers, which is comparable to Falasca et al.’s (2016) enabler of information exchange between the supplier and customer and that shortcomings in this area negatively affect success perception of the solution. It is also in line with the findings of Brax (2005), who argues that in addition to an integrated IS solution, elaborate information management is crucial for the successfulness of delivering complex service solutions in industrial environments. Thus, if the supplier could find a way to more clearly convey this information through the features of the solution, the success of the IVS solution would be enhanced and efficiency could be increased.

Simultaneously, the competitive environment in the manufacturing industry makes it all the more important to measure customer satisfaction and assess whether the solution facilitates the internal processes specific to the customer’s operations (Slack et al., 2004). This is a pressing matter as several respondents felt that the solution is convenient for its purpose, but that measures should be taken to improve the quality of the delivered offering.
5.2.6 Economic Efficiency

The empirical findings display that several respondents viewed cost-efficiency, return on investment and payback as determinant factors when evaluating supplier(s) and satisfaction with a solution. In addition, some respondents suggested that software improvements could consequently increase the cost efficiency. This aligns with Petter et al.’s (2013) previously mentioned net benefits associated with improving an IS, which positively correlates with enhanced productivity and cost efficiency.

This links with the argumentation of Selos et al. (2013), stating that the possibility of cost benefits affects the choice of supplier. Following Guo & Wang’s (2015) statement, importance lies within the firm’s ability to meet or exceed other competitors in order to retain customers.

5.3 Service Interactions Dimension

5.3.1 Timeliness

The empirical findings display that timeliness in terms of speedy and accurate deliveries of inventory as well as providing a quick answer to questions are of importance. However, one respondent was not satisfied with the supplier’s offering in this regard. The failure to meet this customer's expectations concerned the reception of accurate inventory replenishments and spare part deliveries. The customer specifically expressed that in order for them to fully trust the supplier, accurate information regarding deliveries is crucial. Supporting this are the findings of Walter et al. (2002), stating that firms meeting customer expectations are more likely to be trusted by the customer. It is also in line with Parasuraman et al.’s (1985) Gap 2, indicating that a customer’s perceived service quality is dependent on the supplier’s ability to provide timely Service & Support functions, such as that of spare part deliveries.

Corresponding with Claassen et al.’s (2008) statement, it is important for the supplier to maintain the customer’s trust in order to avoid them “stocking up” inventory as insurance for not running out of items vital for their operations. The reason behind this is that the cost- and efficiency control benefits of these solutions are direct consequences of maintaining low stock levels and successful inventory management. Thus, “stocking up” inventory has a negative impact on the efficiency of the solution. However, no such deliberate tendencies can be identified within the scope of the current study, which could be an indicator of customer-supplier trust, derived from Claassen et al.’s (2008) reasoning.
5.3.2 Transparency
The empirical findings illustrate that some respondents perceived the transparency around delivery information as sufficient and important. However, a few respondents expressed the need for higher transparency around delivery schedules and change in article numbers. This was stated as a determinant factor for their trust towards the supplier. In alignment with Falasca et al.’s (2016), for customers to better plan operations and increase their efficiency, importance lies within the communication between the customer and supplier regarding such issues.

As stated by Zhao & Cavusgil (2006), nurturing the communication and collaboration between supplier and customer can consequently enhance the product innovation performance, which both Kohli & Jaworski (1990) and Narver & Slater (1990) argue subsequently creates superior value for the customers. Further highlighting the importance of transparency is Latusek (2010), who argues that through extensive information sharing, suppliers are able to deliver more suitable offerings based on each customer's needs.

5.3.3 Expertise
As stated by Manrique & Manrique (2015), IVS solutions come with an advanced infrastructure of Service & Support. Regarding the Service & Support offered by the supplier in the scope of the current study, all respondents agreed that it is overall satisfying. In addition, some respondents stated that the supplier had a knowledgeable staff with high technical expertise. According to Brax (2005), customers are in need of a continuous support function as a fundamental success factor in delivering complex service solutions in industrial environments. This was also seen in the one customer uttering the desire for full customer service, including outsourced refilling of the vending machines as this was perceived as time-consuming.

In the research of Allen (2004), Service & Support around a product or service is expressed as part of CRM practices, which positively impacts customer satisfaction. Given that customer relationships are a firm's key assets (Tseng & Wu, 2014) and that the service quality perception can be impacted through channels such as; e-mail, sales, advertising and Service & Support (Chen & Popovich, 2003), the supplying firm has a possibility to increase service quality through these means of interaction.
Furthermore, the empirical findings indicate that a broad understanding of business operations across the supplier’s sales personnel is essential in order to successfully guide the customer to a solution that facilitates operations in an optimal way. As this was not perceived to fully be the case for the IVS supplier, it illustrates an occurrence of Gap 3, namely that of shortcomings in the performance of the supplier personnel (Parasuraman et al., 1985). Thus, it further displays insufficient technical quality, in terms of professionalism and skills provided by the supplier as expressed by Grönroos (1988). The phenomenon also links with the findings of Baumann & Le Meunier-FitzHugh (2014), identifying that for a successful value creation to take place, managers should put an emphasis on conveying trust and capability through its sales personnel. Morgan & Hunt (1994) defined credibility as one party’s belief in the other as being competent and reliable enough to fulfil obligations. Given that Rod & Ashill (2010) found that for B2B environments, credibility has an impact on commitment, it can be argued that the credibility of the sales personnel, here expressed in terms of perceived competence (expertise), should have an impact on the customer’s commitment intentions.

Deng et al. (2013) argue that a firm placing efforts on improving the personnel’s knowledge of their customer’s specific business routines can result in customers apprehending a higher perceived service quality. Successfully bridging this gap has importance as offered quality and personal interactions between the supplier and customer influence trust-building and customer retention (Gounaris, 2005). In agreement with Kamakura et al. (2005), analysing information around customer interactions can be used to develop strategies that decrease the risk of customers switching supplier. Thus, for a supplier to increase their chances of customer retention as well as a more positive customer perception of service quality around the IVS solution, these factors are of utmost importance.

5.3.4 Trustworthiness

More than half of the respondents across the sample expressed that personal relationships – both on individual and company level – as well as the importance of accurate deliveries, impact the trustworthiness of the supplier.

For example, it was mentioned previously for the customer satisfaction driver of expertise that the supplier lacked a broader understanding of the business operations for the customer and that this enhanced the occurrence of Gap 3. In the given situation, it is reasonable to
further relate this shortcoming to another of Parasuraman et al.’s (1985) gaps, namely Gap 1: emphasising the ability of a service firm’s managers to apprehend the needs of the customer prior to delivering the service.

Thus, should the managers be aware of the previously mentioned Gap 3 taking expression in the sales personnel’s interaction with the customer, they could, as suggested by Deng et al. (2013), provide additional training to their staff that would in turn help bridging both Gap 3 and Gap 1. Especially since the supplier firm operates within a high-tech environment, a superior value promise can increase the trustworthiness associated with the offering (De Ruyter et al., 2001), but this trustworthiness is dependent on the fact that the actual service delivered is consistent with the initial value promise.

Additional empirical evidence relating to trustworthiness was seen in the form of respondents who highly valued a particular contact person of the supplier. This contributes to diminish the shortcomings of this Gap 3 (Parasuraman et al., 1985). In mentioning this specific contact person, the respondents explicitly expressed reliability and knowledge within the relevant area of responsibility to be determinants of their satisfaction. This further implies individual-level trust as an important aspect when forming long-term successful business relationships (as expressed by Fregidou-Malama & Hyder, 2015), as well as indicating support for the credibility aspect discussed by Rod & Ashill (2010) specific to B2B environments.

As actors with higher levels of trust towards a supplier are more inclined to re-purchase (Komunda & Osarenkhoe, 2012), the identified individual-level relationship between each of these respondents and the supplier is likely to have a positive impact on the continuity in the supplier-customer relationship.

Furthermore, a few respondents stated that in spite of some existing inadequacies, they would still choose this particular solution over other options because of their existing partnership with the supplier. This indicates the presence of company-level trust, which in agreement with the research of Morgan & Hunt (1994) denotes that there exists credibility and reliance from the customer that the supplier is competent enough to fulfil their obligations. This further supports the research of Rod & Ashill (2010) and Morrisson &
Hyppertz (2010), who argue that credibility within B2B environments subsequently impacts relationship commitment.

5.3.5 Organised Support Structure

The empirical evidence demonstrates that respondents emphasised the importance of an organised support structure. For example, the findings display that a higher transparency in the communication from supplier to customer was desired and that recipient confirmations would be a convenient way to let the customer know that a particular service ticket has been received and actions will be taken to mend the issue. Enabling a more organised support system in this sense was believed to amplify the efficiency of operations and can be compared to one of the enablers of IVS success, namely information exchange between the parties (Falasca et al., 2016). Thus, following Falasca et al.’s (2016) reasoning, a more efficient communication could therefore lead to increased cost-service- and inventory benefits.

The empirical evidence in this study also shows that having accessible Service & Support is essential. The customer’s desire for available personnel when needed aligns with Selos et al.’s (2013) argument that the supplier’s ability to offer efficient Service & Support affects the customer's perception of the provider. Also, as Falasca et al. (2016) argued; if the supplier and the customer have a mutual understanding of expectations regarding the partnership and thus effectively communicate these prospects through continuous and accessible dialogues, this can ultimately enhance the commitment in the relationship.
5.4 Adapted Conceptual Framework

Derived from the empirical findings and combined with previous research, extensions of the conceptual framework have been made, which are presented in Figure 10.

The figure displays how the identified satisfaction drivers for each dimension of the IVS are distributed as well as contextualising in terms of recommendations how a supplier can impact service quality perception for each of these channels. By obtaining customer feedback and incorporating it back into business processes, organisational shortcoming in the form of service quality gaps can be corrected, leading to elevated customer satisfaction and positive service quality perception. In turn, this has beneficial effects on customer trust, commitment and inclination for customers to switch supplier.

Figure 10. Adapted Conceptual Framework. Source: own.
6. Conclusion and Implications

The aim of this study was to identify key drivers of customer satisfaction and positive quality perception as well as commitment and trust indicators for B2B IVS solutions from a customer perspective. Subsequently, each research question will be answered based on the empirical findings gathered from the 14 respondents. In addition, theoretical- and managerial implications are presented, positioning the results from a theoretical standpoint and providing suggestions for managers within the area of IVS. Lastly, limitations of the study are discussed, where suggestions for further research also are given.

6.1 Answers to Research Questions

As an answer to the first research question, it can be concluded that the solution design, software attributes and service interactions associated with the IVS impact the customers’ service quality perceptions through its compliance with customer requirements. Evidence of this was seen for all three dimensions of the IVS.

In the cases when the IVS solution facilitated the customer’s operational needs, it affected the quality perceptions positively. However, in the cases where the solution did not succeed in facilitating the operational needs of the customer, the quality perception was negatively impacted. A number of deficiencies between the customer’s expectation and experienced service quality of the solution were detected. These have been expressed in terms of organisational shortcomings of the supplier, for which suggestions of mitigating actions were given.

As an answer to the second research question, the empirical findings on actual and desired solution characteristics as well as a customer’s inclination to switch supplier, resulted in a total of 13 customer satisfaction drivers for the investigated IVS. It can be concluded that out of the identified customer satisfaction drivers, efficiency, user-friendliness and timeliness were perceived as most important by the customers. These drivers were stated by respondents to have a high impact on operational efficiency and fit with operations. In terms of value co-creation, facilitating a use of the IVS that rather enables than restricts the fulfilment of customer requirements has a positive impact on customer satisfaction.
It can be concluded for the third research question that relationships where elements of individual-level and company-level trust existed had a positive impact on commitment intentions. Yet, the customers perceived that the supplier did not fully succeed in fulfilling its value promise, which negatively impacted their service quality perception. However, the Service & Support function of the supplier was overall seen as adequate, which contributed to positive perceptions of the service quality, leading to an amplified degree of trust.

It was also found that personal interactions resulting in an increased individual- and company level trust for the supplier functioned as commitment indicator. Indirectly, actual service quality delivery consistent with value promises was found to be a second commitment indicator, as this is a consequence of the actions of service personnel in customer interactions.

6.2 Theoretical Implications
This study answers to the explicit call for satisfaction indicators within industrial product-service systems and specifically within IVS. In order to do so, the present work draws on research available on industrial vending systems and expands the academic field by incorporating quality assessment measures from a variety of scholars associated with the three dimensions of an IVS. Following this, the contribution of the current work is firstly a number of concrete satisfaction drivers associated with IVS solutions for B2B environments. Secondly, this study points to specific commitment and trust indicators functioning as useful building blocks for the future expansion of this particular research domain.

As such, this work creates a basis for further developments within this relatively unexplored academic field. Together with the proven trends pointing towards a growing market for IVS solutions in terms of deployments, the current research creates an important contribution for future researchers. Additionally, by incorporating several research fields closely tied to that of IVS, this study simultaneously lends support to those research fields from a general standpoint whilst forging an academic path on satisfaction measures associated with IVS solutions.

6.3 Managerial Implications
This study has several managerial implications. Following the results, there are some examples of how actual service delivery can be systematically improved. Increased
documentation of customer feedback occurring in interactions of the personnel from the service firm and customer organisation can reveal desired improvements in the supplier's offering that, if realised, can lead to enhanced service quality perception, trust and commitment. In developing a better understanding of customer operations, product development, CRM and marketing strategies can be adapted to specifically emphasise individual customer requirements. This further serves to increase the understanding on how the supplier’s offering can be designed in a way attractive to the customers. By incorporating the given satisfaction drivers into product differentiation choices, managers can get guidance on what customers expect and value the most in IVS solutions.

To facilitate satisfaction drivers such as flexibility, modular designs of an IVS offering are preferred as opposed to a standardised approach. As guidance around product development decisions, it can be kept in mind that strong motivators for customer satisfaction within IVS solutions are cost- and efficiency benefits as well as return on investment.

Further, the results of this study point to a necessity for managers to consider the expertise of sales personnel as a mean for fulfilment of customer requirements but also as a facilitator for trust and commitment. The importance of a supplier’s demonstration of credibility and knowledge in personal interactions with customers was found to be a recurring topic in customer interviews.

6.4 Limitations and Suggestions for Further Research

The current study investigated customer satisfaction drivers by interviewing respondents with experience from a particular IVS solution. The study has a few potential limitations. Firstly, as it is based on a convenience sample, it serves to give examples of satisfaction drivers rather than generalizable results.

Moreover, it was detected along the course of this study that customers had slightly different versions of the IVS solution with different constellations of solution design and software attributes. A study on quality perception for strictly identical solution types might therefore have generated somewhat different results.

The current study rests on research from a number of disciplines based on the assigned dimensions of an IVS in order to overcome the scarce existing research on the topic. It may
be that other researchers had chosen slightly different foundations to rely upon, which might result in a framework differing from the current one. Nevertheless, it is our strong conviction that investigating the case of IVS solutions from a variety of angles would only prove beneficial for the purpose of broadening the research field.

The results of this study open up a number of avenues for future research. As accounted for in the methodology chapter, possible tendencies of differences in customer requirements as a function of company size were detected along this study. Looking more closely into this possibility (preferably in a larger study with a random sample) could generate a higher level of generalizability. Nonetheless, this study contributes with academic relevance and managerial implications adding to a scarce body of research.

In addition to deeper investigations around how organisations of differing sizes can fully leverage the benefits of IVS solutions, a study focusing on customer satisfaction drivers across different customer segments could help reveal other variables that impact customisation needs. An alternate route for further research would be to complement satisfaction drivers derived from customer opinions with more objective measures calculated in the form of actual cost- or time saving allowing for comparisons between solutions. This would serve to provide a deeper understanding of trade-offs that both customers and suppliers face in the choice between differing IVS designs.
References


Eisenhardt, K.M. (1989). Building Theories from Case Study Research. *Academy of


Appendices

Appendix 1

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Abbreviation</th>
<th>Company Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>R1</td>
<td>Medium</td>
</tr>
<tr>
<td>2</td>
<td>R2</td>
<td>Medium</td>
</tr>
<tr>
<td>3</td>
<td>R3</td>
<td>Small</td>
</tr>
<tr>
<td>4</td>
<td>R4</td>
<td>Small</td>
</tr>
<tr>
<td>5</td>
<td>R5</td>
<td>Large</td>
</tr>
<tr>
<td>6</td>
<td>R6</td>
<td>Small</td>
</tr>
<tr>
<td>7</td>
<td>R7</td>
<td>Small</td>
</tr>
<tr>
<td>8</td>
<td>R8</td>
<td>Medium</td>
</tr>
<tr>
<td>9</td>
<td>R9</td>
<td>Small</td>
</tr>
<tr>
<td>10</td>
<td>R10</td>
<td>Small</td>
</tr>
<tr>
<td>11</td>
<td>R11</td>
<td>Small</td>
</tr>
<tr>
<td>12</td>
<td>R12</td>
<td>Small</td>
</tr>
<tr>
<td>13</td>
<td>R13</td>
<td>Small</td>
</tr>
<tr>
<td>14</td>
<td>R14</td>
<td>Small</td>
</tr>
</tbody>
</table>

*Table 6. Respondents, Abbreviations and Corresponding Company Size. Source: own.*

The thresholds for company size were set according to the definition provided by the Liikanen (2003) of small companies (10-49 employees), medium-sized companies (50-249 employees) and large companies (over 250 employees).
## Appendix 2

<table>
<thead>
<tr>
<th>Solution Characteristics and Actual Service Quality Perception</th>
<th>Respondents</th>
<th>Company Sizes Represented</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Positive Perceptions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safe and organised way to store tools, good overview of inventory</td>
<td>R1, R4, R5, R7, R8, R12, R14</td>
<td>4 Small, 2 Medium, 1 Large</td>
</tr>
<tr>
<td>Convenient and time-efficient, Automatic replenishment, can pre-set max-min</td>
<td>R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R13</td>
<td>8 Small, 3 Medium, 1 Large</td>
</tr>
<tr>
<td>Saves administrative time, increases efficiency and decreases the risk of running out of stock, makes it easier for operators</td>
<td>R1, R2, R3, R4, R6, R8, R9, R10, R14</td>
<td>6 Small, 3 Medium</td>
</tr>
<tr>
<td>Overall satisfying Service &amp; Support</td>
<td>R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14</td>
<td>10 Small, 3 Medium, 1 Large</td>
</tr>
<tr>
<td>Service &amp; Support: Quick answers</td>
<td>R1, R2, R3, R4, R5, R6, R7, R9, R14</td>
<td>6 Small, 2 Medium, 1 Large</td>
</tr>
<tr>
<td>Service &amp; Support: Knowledgeable staff</td>
<td>R2, R4, R5, R6, R9, R14</td>
<td>4 Small, 1 Medium, 1 Large</td>
</tr>
<tr>
<td>Accessible Service &amp; Support</td>
<td>R1, R2, R3, R5, R6, R7, R9</td>
<td>4 Small, 2 Medium, 1 Large</td>
</tr>
<tr>
<td>Knowing when deliveries will come</td>
<td>R1, R3, R14</td>
<td>2 Small, 1 Medium</td>
</tr>
<tr>
<td>Remote access to the system, automatic software updates</td>
<td>R9, R10, R14</td>
<td>3 Small</td>
</tr>
<tr>
<td>Ability to trace withdrawn tools to operators</td>
<td>R12</td>
<td>1 Small</td>
</tr>
<tr>
<td>System supports a high number of users</td>
<td>R5</td>
<td>1 Large</td>
</tr>
<tr>
<td>Enables to store items from multiple suppliers</td>
<td>R14</td>
<td>1 Small</td>
</tr>
<tr>
<td>Personal relationship, individual and company level</td>
<td>R7, R9, R10, R13, R14</td>
<td>5 Small</td>
</tr>
<tr>
<td>Speedy and accurate deliveries + spare parts, no down-time</td>
<td>R3, R4, R7, R8, R10, R14</td>
<td>5 Small, 1 Medium</td>
</tr>
</tbody>
</table>

<p>| <strong>Negative Perceptions</strong>                                     |             |                           |
| Dissatisfaction with the overall quality                      | R1, R2, R3, R4, R5, R7, R8, R9, R10, R11, R12, R13, R14 | 9 Small, 3 Medium, 1 Large |</p>
<table>
<thead>
<tr>
<th>Issue</th>
<th>Respondents</th>
<th>Company Size(s) Represented</th>
</tr>
</thead>
<tbody>
<tr>
<td>Plastic drawers and too sensitive electronics (unfit for industrial</td>
<td>R3, R5, R9</td>
<td>2 Small, 1 Large</td>
</tr>
<tr>
<td>environment R9)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problems when the supplier changes article number without notifying</td>
<td>R2</td>
<td>1 Medium</td>
</tr>
<tr>
<td>Time-consuming to get deliveries</td>
<td>R3</td>
<td>1 Small</td>
</tr>
<tr>
<td>Box/item, wrong inventory balance</td>
<td>R3, R7, R8, R12, R14</td>
<td>4 Small, 1 Medium</td>
</tr>
<tr>
<td>Reloading the machine with tools takes time</td>
<td>R3, R11, R14</td>
<td>3 Small</td>
</tr>
<tr>
<td>Tools arriving unlabelled</td>
<td>R9</td>
<td>1 Small</td>
</tr>
<tr>
<td>Inaccurate delivery information</td>
<td>R12</td>
<td>1 Small</td>
</tr>
<tr>
<td>Problem to get old features back when updating the software</td>
<td>R9</td>
<td>1 Small</td>
</tr>
<tr>
<td>Long subscription time</td>
<td>R6, R10</td>
<td>2 Small</td>
</tr>
<tr>
<td>Lack of innovation</td>
<td>R3, R10, R11, R13</td>
<td>4 Small</td>
</tr>
<tr>
<td>Flawed filtering and menu options with difficulties to search for</td>
<td>R3, S R4, L R5, R7, R8, R9, R10, R11, R12, R14</td>
<td>8 Small, 1 Medium, 1 Large</td>
</tr>
<tr>
<td>specific tools without knowing the article number, complicated</td>
<td></td>
<td></td>
</tr>
<tr>
<td>language</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dependency on one specific contact person</td>
<td>R13</td>
<td>1 Small</td>
</tr>
<tr>
<td>Insufficient sales personnel knowledge</td>
<td>R5</td>
<td>1 Large</td>
</tr>
<tr>
<td><strong>Suggested Solution Improvement Areas</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Higher integration between systems</td>
<td>R5</td>
<td>1 Large</td>
</tr>
<tr>
<td>Filtering (for example: cost centres)</td>
<td>R5</td>
<td>1 Large</td>
</tr>
<tr>
<td>Advanced report-generation giving feedback on inventory use and</td>
<td>R4, R5</td>
<td>1 Small, 1 Large</td>
</tr>
<tr>
<td>statistics</td>
<td></td>
<td></td>
</tr>
<tr>
<td>More user-friendly handling of orders and suppliers in system</td>
<td>R1, R11</td>
<td>1 Small, 1 Medium</td>
</tr>
<tr>
<td>Software allowing higher management control</td>
<td>R9</td>
<td>1 Small</td>
</tr>
<tr>
<td>Possibility to retain old features after updating the system</td>
<td>R9</td>
<td>1 Small</td>
</tr>
<tr>
<td>Innovation</td>
<td>R3, R10, R11, R14</td>
<td>4 Small</td>
</tr>
<tr>
<td>Automatic software upgrades and price info</td>
<td>R8, R9</td>
<td>1 Small, 1 Medium</td>
</tr>
<tr>
<td>Factor</td>
<td>Respondents</td>
<td>Company Sizes Represented</td>
</tr>
<tr>
<td>----------------------------------------------------------------------</td>
<td>-------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td>Full customer service</td>
<td>R14</td>
<td>1 Small</td>
</tr>
<tr>
<td>Flexibility (of mixed suppliers)</td>
<td>R10, R11, R12, R14</td>
<td>4 Small</td>
</tr>
<tr>
<td>Flexibility (items of various sizes within the same drawer)</td>
<td>R10, R12, R13</td>
<td>3 Small</td>
</tr>
<tr>
<td>More durable hardware, adapted for the industrial environment</td>
<td>R3, R5, R9</td>
<td>2 Small, 1 Large</td>
</tr>
<tr>
<td>User-friendliness; Accessible language, finding what you want fast, filtering options, user-specific modes, sub menus</td>
<td>R3, R4, R5, R7, R8, R9, R10, R11, R12, R14</td>
<td>8 Small, 1 Medium, 1 Large</td>
</tr>
<tr>
<td>Having knowledgeable sales personnel, understanding the holistic perspective of operations and how the solution can facilitate these</td>
<td>R5</td>
<td>1 Large</td>
</tr>
<tr>
<td>Software improvements leading to higher cost-efficiency</td>
<td>R3, R4, R5, R8, R9, R10</td>
<td>4 Small, 1 Medium, 1 Large</td>
</tr>
<tr>
<td>More organised service ticket system</td>
<td>R5</td>
<td>1 Large</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Factors Affecting Decision to Switch Solution</strong></th>
<th><strong>Respondents</strong></th>
<th><strong>Company Sizes Represented</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost-efficiency</td>
<td>R4, R5, R8, R10, R11, R12, R14</td>
<td>5 Small, 1 Medium, 1 Large</td>
</tr>
<tr>
<td>Payback</td>
<td>R5</td>
<td>1 Large</td>
</tr>
<tr>
<td>Flexibility of suppliers</td>
<td>R11</td>
<td>1 Small</td>
</tr>
<tr>
<td>Return on investment</td>
<td>R4, R5</td>
<td>1 Small, 1 Large</td>
</tr>
<tr>
<td>Supplier relationship, company level</td>
<td>R7, R9</td>
<td>2 Small</td>
</tr>
<tr>
<td>Personal relationship, individual level</td>
<td>R10, R13</td>
<td>2 Small</td>
</tr>
<tr>
<td>To have one specific contact person</td>
<td>R14</td>
<td>1 Small</td>
</tr>
<tr>
<td>Speedy deliveries + spare parts, no downtime</td>
<td>R3, R4, R7, R8, R10, R14</td>
<td>5 Small, 1 Large</td>
</tr>
<tr>
<td>Accurate information on deliveries + spare parts, no down-time</td>
<td>R1, R3, R9, R11, R12</td>
<td>4 Small, 1 Medium</td>
</tr>
<tr>
<td>Software allowing for the customer to achieve cost-efficiency</td>
<td>R3, R4, R8, R9, R10</td>
<td>4 Small, 1 Medium</td>
</tr>
</tbody>
</table>

*Table 7. Empirical Findings and Respondents in Relation to Company Size. Source: own.*