# The Drivers of Loyalty in the Life Sciences Industry

## Master thesis

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# Abstract

This thesis aims to understand which factors drives customers loyalty in Life science industry. Although, loyalty influencing factors are studied, there are not too many findings on B2B concept and especially there is gap for Life science industry. For this reason, author was focusing on manufacturers who produce equipment for Life science industry laboratories.

This research was conducted on collecting primary data through questionnaires distributed to a sample of 88 people, all experienced managers of Life science industry, and it is based more on numerical data and statistical analysis using SPSS Statistics through correlation and regression. Designed model explains about 54% of the variation in loyalty. The findings suggest that perceived service quality, personal relationships, device design and device quality have positive effect on customers loyalty.

The results can help marketers to understand underlaying factors which affects loyalty and can help to improve marketing actions. Knowing what matters most to customers in their to be loyal cycle, gives marketing and sales leaders the insight needed to gauge where their efforts are likely to have the greatest impact.

Keywords: Marketing, Customer loyalty, B2B, Life science, Laboratory equipment

# Table of contents

# Master thesis

## 1.Introduction

These days technologies are evolving and scientists are frequently revealing new concepts and ideas, thus improving human lives.  Specifically, Life sciences get in to this to understand processes better and help humans become healthier and cure or stop illnesses or even predict possibility of getting ill, e.g. serious diseases as cancer. To get to right conclusions scientists need knowledge and proper equipment. Without these two components, many people might suffer and their lives not be saved.

Global life science instrumentation market is huge, it's projected to reach USD 75.24 Billion by 2022 from USD 51.18 Billion in 2016 (marketsandmarket.com, 2017). Companies that produce Life science equipment, with their actions, are also responsible how quality of life is changing for all humans on planet. There are several underlying factors which move sales in this industry. To be successful company managers must understand what actually moves their business in aim to deliver best and in right quantity.

Many diseases can be detected in early stages or even when there is just a potential of having it. Such approach saves lives for millions every day. Researchers have provided evidence showing that ctDNA analysis can robustly identify post-treatment MRD in localized lung cancer patients, identifying residual/recurrent disease earlier than standard-of-care radiologic imaging (A. Chaudhuri, 2017). Other case study informs that scientists have made a major finding towards developing a blood test for cancer that could identify tumours long before a person becomes aware of symptoms. The new test gave a positive result approximately 70% of the time across eight of the most common cancers when tested in more than 1,000 patients (J.D. Cohen, 2018). Many other tests are already available to detect serious diseases in early stages.  On the other hand, development of disease treatment couldn't be possible without companies that produce equipment for Life science. With latest equipment the time spent around the research is reduced to a minimum and researchers can dedicate their time more for analysing results, which is a high-value activity as opposed to generating them (L. Hock, 2014). These statistics show the rapid changes in the Life science industry and that the equipment must keep pace, along with the need to analyse smaller samples more effectively. These requirements put pressure on equipment manufacturers.

Scientists are able to do their job and save people lived when they have precise, innovative devices that fits to their requirements. To accomplish this task successfully, manufacturers need to do proper marketing research and afterwards find perfect match between demand and supply. Manufacturers must understand whole situation where they stand. In terms of their possibilities, competition, external market situation. Today, with extended buying cycles involving multiple stakeholders, the more you can understand about the process, better it is. Not understanding the situation and not knowing what exactly move customers might lead to not delivered equipment what exclude possibility to make research properly and therefore patients would suffer.

This study implements knowledge from Marketing and examines the effect of external factors on loyalty and aims to explain the key drivers of loyalty in Life science industry. More loyal is customer to certain company, higher is possibility that it will come back to the same manufacturer. While forecasting research continues to pursue improvements in systems and techniques (Mentzer, 1988, Mentzer and Gomes, 1994, Smith et al., 1994), recent studies and reviews have identified gaps in understanding of the relationships of decision taking and thus driving sales affecting factors. In B2B environment futures sales are made by decisions to buy certain device or to work with certain company, thus being more loyal to ones. It's not enough to identify the decision makers in an organization. For marketing and sales activities to be effective, companies need to focus on those points in the decision journey where they can be most successful in influencing those decision makers. Each industry has its specific and it must be taken into account. Not much has been done concerning deep market understanding and sales performance improvement particularly Life science industry. This study as for example is focusing on manufacturers who produce equipment for Life science industry laboratories. Master thesis research questions is following:

*Which factors are influencing loyalty in B2B environment, specifically in Life science industry?*

The academic contribution of this thesis to current literature is significant. This research contributes to the B2B sales literature. Although, a lot research is done in sales, not so much for B2B industry and especially in Life science where exist certain differentiation comparing to other industries. Moreover, there are not many researches which investigate loyalty. The research method used in this thesis is a survey among dealers in Life science industry. There are no recent researches specifically about Life science industry, although there are many general researches about

relationships between manufacturers and dealers in B2B industry.  Many of these previous studies on loyalty, equity, brand importance (e.g. Veerapong. Malai, M. Speece , 2005, M. S. Glynn, J. Motion, R. J. Brodie 2007) are based on qualitative methods. Often just interviewing methods are applied. Authors reasoning is that there are several underlying factors which drive decision. It is important to make conclusions not just by using actual results, e.g. actual sales numbers, but also there must be understanding in underlying factors which moves customer and are essential to customers in B2B. With such information, marketers will be able to make better conclusions and develop next steps of action. This thesis is filling in gap in understanding of key drivers for B2B life science industry.

This paper contributes to the area of improving marketing actions. Knowing who are influencers and what matters most to them in making their purchasing decisions gives marketing and sales leaders the insight needed to gauge where their efforts are likely to have the greatest impact. The findings of authors research could be useful for Life science sector companies. The results in this study could help the companies better understand their business, and the Life science companies could use the results for possible strategic decisions related to future sales and improvement of their devices. When knowing key drivers of customer loyalty, it is easier to predict upcoming events or trends and take right action. Also, this would exclude investments for unnecessary device upgrades as turns out customers value other features more. As it can turns out, not all features of device are equally important for customers. Recommendations could be used to work more efficiently and deliver best products in right quantity to dealers and then to end users e.g. researchers, so that they can do their job and make human lives better. Any company operating in Life science B2B environment will be able to implement new findings in daily routine and improve performance.

After this introduction, author will continue with conceptual framework, literature review presenting the major theories on loyalty influencing factors. These findings strengthen authors hypothesis which are discussed in next chapter as well.

# 2. Conceptual framework and literature

This first section of this chapter presents the conceptual framework and hypothetical factors affecting loyalty in B2B environment. In next section author has gathered most relevant literature and findings related to this topic. Each variable is described with literature, basing on which author has made conclusion with the research hypothesis. In this section the hypotheses are explained in more depth.

## 2.1. Conceptual framework

This section illustrates the conceptual framework of the thesis. The conceptual framework is based on the present literature and is presented in figure 1.
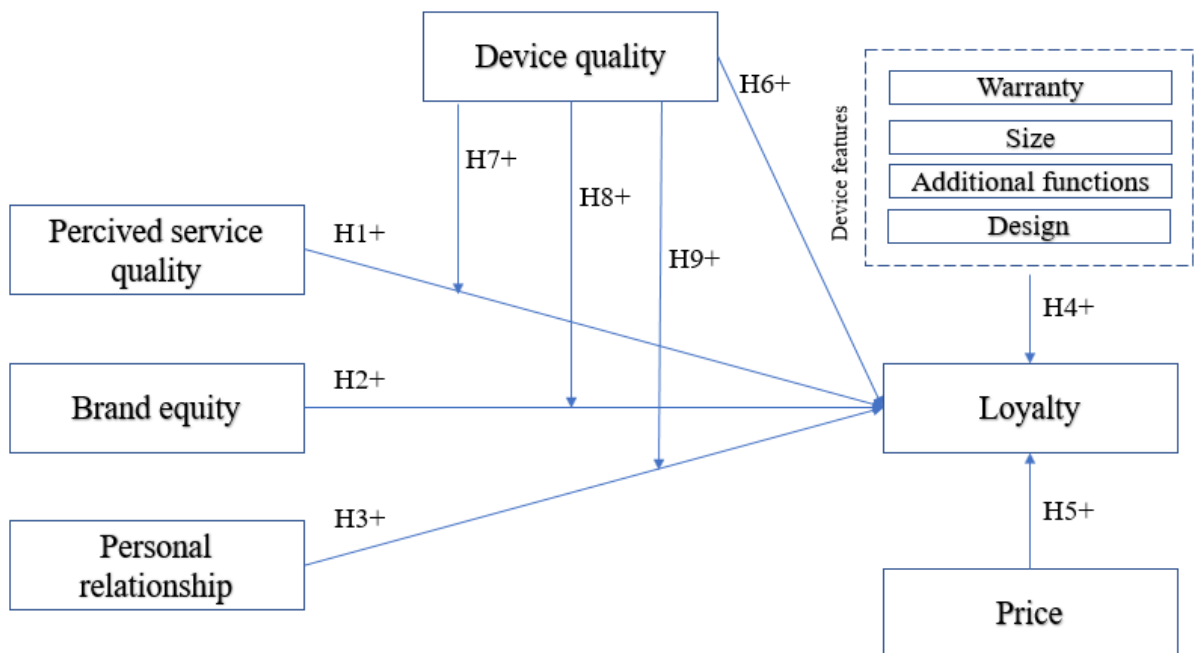


**Figure 1:** Conceptual framework presents all hypotheses based on literature review. Perceived serviced quality has a positive effect on loyalty (H1+). A higher brand equity has a positive effect on the loyalty (H2+). Relationship quality has a positive impact on customer loyalty (H3+). Better device features as: longer warranty, modern design, small footprint size and additional functions in device operations has higher effect on loyalty as less good features (H4+). Prices level has effect on customers loyalty (H5+). Higher device quality has positive impact on customers loyalty (H6+).Device quality moderates the relationships between perceived service quality and loyalty (H7+). Device quality moderates the relationships between brand equity and loyalty (H8+) Device quality moderates the relationships between personal relationships and loyalty (H9+).

Hence, the conceptual model (see Figure 1) illustrates the dependent and independent variables that will be studied in this thesis. Loyalty is considered as the dependent variable in this study. This parameter will be measured quantitatively. Other independent variables: brand equity, price, device quality, perceived service quality, personal relationships are expected that influence customers loyalty to company. Separately, if looking just at the device, there are several factors which might be important: offered warranty, size of the device (usually laboratories has limited space, therefore it is important to have device with small foot print), additional features (e.g. having two devices in one, as centrifuge and vortex) and design of device. Author will look at effect on loyalty with all these factors together.

## 2.2 Literature

There are many reasons why people buy things. It's only partially right that because they want them or need them (Christensen, 2016). Fundamentally, the concept of business has remained constant for thousands of years. Firms produce goods and services to turn a profit. It sounds simple enough. However, one of the challenges businesses have faced is to understad what moves customer and how ethically influence their choice.

Brand loyalty is considered to have two dimensions: attitudinal and behavioral loyalty. Attitudinal loyalty is defined as the customer's willingness to repurchase the brand regardless of any obstacles, whereas behavioral loyalty is expressing the actual repurchasing action (Chaudhuri and Holbrook, 2001; Huang et al., 2015). However, Bandyopadhyay and Martell (2007) find that it is attitudinal loyalty that mostly drives behavioral loyalty and ensures a lifelong relationship between the customer and the brand and Foscht et al. (2009) reveal that Gen Y-ers' feelings of loyalty are closely associated with repurchase intentions. The drivers of customer loyalty, actions are dynamic and varies from industry to industry. In the and, it all turns into sales performance. Anderson and Oliver (1987) conceptualized sales performance as the evaluation of salespeople based on what they produce (i.e. sales outcomes) as well as what they do (i.e. sales behaviors). Examples of the former include generations of sales units, revenue, market share, new accounts, profitability, etc., while sales behaviors include selling skills (e.g. adaptive selling, teamwork, effective communication, etc.) and selling activities (e.g. making sales calls, managing time and territory, etc.) (Zallocco, Bolman, Mallin, 2009). To become closer to truth, companies must understand key factors which influence customers

loyalty to their company. Knowing and having these, companies will be able to take right strategic steps to succeed in business. Traditional decision theories in B2B were driven by rational choice processes described in economics and statistics which primarily stressed on profits being the main criteria driving a B2B choice decision (Cyert, 1956). Cyert (1956), in their narrative on "observation of a business decision", suggest that search and information-gathering processes in B2B decision constitutes major portion of the decision-making process and results in the selection of a satisfactory alternative, leading to a specific (technical/economic) goal achievement that satisfies a number of auxiliary conditions. From authors point if view, there are other variables which are not economic, but are crucial for customers loyalty and are not jet investigated for Life science industry.

### 2.2.1. Perceived service quality

B2B buyers and consumers are alike in at least one way: service quality is the key determinant of their further actions for cooperation with certain company. The biggest mistake can be made when selling in a B2B is to go around and try to just "sell products." The bigger is business, the higher-powered decision makers there will be.

Hence, companies would do much better if approach these high-level players and offer them service at the level they are looking for. It is smarter to not just push your product, but also see that behind it there is customer need in being supported and willing to grow together. Although the ability of front line employees to take initiative and be proactive has been viewed as critical in ensuring service quality (Frese, Fay, 2001; Parker, Williams, Turner, 2006), recent surveys (e.g., Gallup, 2013) have shown that a large proportion of service employees exhibit the very low levels of customer engagement, and also do not know what their company stood for, or its vision and values, indicating the importance of training and internal marketing in achieving customer engagement, and delivering service quality. While service quality is an important avenue for customer value creation (Bell & Menguc, 2002), service employees' interactions with customers is key to determining the level of service quality offered by boundary-spanning personnel (e.g., Hartline and Ferrell, 1996; Vroman and Luchsinger, 1994; Zeithaml, Pasuraman, and Berry, 1990). High contact services, where customers directly interact with the service workers for an extended period, are characterized by high levels of communication time, intimacy of communication, and richness of information exchanged (Kellogg

and Chase, 1995). It means that to develop successful and long lasting relationships with customer, employees must be educated and engaged with their work at all levels. Even if manager taking care of certain account will do his best and will have good relationships with customer, the issues in other support departments might damage all cooperation. When selling devices, technical assistance must be always on time. If device broke down and dealer don't know how to fix it, he will be expecting for help from manufacturer. As usually, all problems with devices happens in wrong time and end user must have solution as soon as possible. Daily routing in life science laboratories consist of a series of actions which follows one after another. Skipping one will lead to stop of whole process, thus analysis won't be done on time and patient will not receive his feedback or on other scenario, will receive wrong results what is not acceptable.

Existing studies that have investigated service quality, such as Parasuraman, Zeithaml and Berry (1985, 1988, 1991, 1994). By them was developed a service quality scale based on the banking, credit card, securities, and product servicing industries have rarely measured customer satisfaction in a B2B context. Furthermore, a lot of literature has described consumers (e.g. Garcı´a-Acebro´n, Va´zquez-Casielles, & Iglesias, 2010; Laplaca and Katrichis, 2009; Rossomme, 2003). Also there had been several attempts to construct standardised frameworks for measuring satisfaction in a B2B context (Homburg, Rudolph, 2001; Rossomme, 2003; Sharma, Niedrich, Dobbins, 1999), but each authors conclusion are a bit different. Researchers have argued for and against separating B2B marketing from business-to-consumer (B2C) marketing (Laplaca, Katrichis, 2009). Providing customers with perceived value or customer satisfaction is widely recognized as a means of improving loyalty intentions (Fornell 1996; Zeithaml, Berry, Parasuraman 1996) and actual retention (Bolton 1998; Bolton, Lemon 1999; Mittal, Kamakura 2001). However, research demonstrates that these relationships are potentially complex and dynamic and that the drivers of intentions change and evolve over time (Mittal, Kumar, and Tsiros 1999; Slotegraaf, Inman 2004). Such research focuses on categories as finance service and automobiles. Unclear remains questions how perceived service quality evolve in Life science. For this reason author of this thesis is addressing attention to perceived service quality in B2B, Life science industry and attempt to fill the existing gap in the literature.

In Life science industry dealers are in tights connection with product manufacturer as they need technical assistance related to devices and also strategic assistance which they expect to receive from sales managers. In recent years, scholars and practitioners have increasingly recognized the

importance of managing service employees to obtain organizational performance (Chuang & Liao, 2010; Hennig-Thurau, 2004; Homburg & Stock, 2005; Jun & Cai, 2010; Kehoe & Wright, 2013). Past research suggests that service quality gets negatively affected whenever employees are unwilling or unable to perform a service at the levels required (Zeithaml et al., 1990), and underscores the importance of customer-contact employees in creating perceptions of service quality (i.e. Bitner, 1990; Bowen, Schneider, 1985; Hartline, Jones, 1996). Some other research suggests that service quality is the outcome of internal organizational policies and practices, and is fundamental to the success of a firm in terms of attracting, satisfying and retaining customers (Heskett, Sasser, Schlesinger, 1997; Schneider, White, Paul, 1998; Storbacka, Strandvik, Grönroos, 1994), creating customer satisfaction (Gronroos, 1990), loyalty (Zeithaml, Bitner, 2000), as well as enhancing market share and profitability (Schneider, Bowen, 1995). In accordance to these finding, service quality has significant role in business relationship lasting. It has so many functions that it can't be ignored.

There are many concepts of service quality. An alternative approach in conceptualizing service quality has been proposed by Shemwell and Yavas (1999). These authors claim that, perceived service quality is better conceptualized as a multilevel-hierarchical notion that is comprised of search, credence and experience attributes. Their conceptualization was validated in the consumer services context (health care services) and their study provided strong empirical evidence of face validity. Various studies have investigated the link between perceived service quality and buyer's satisfaction (e.g. Yi, 1990; Kane 1997; Carman, 1990, 2000) and have demonstrated that satisfaction is related with the ability of the firm's outcome to meet an optimum level on certain – specific characteristics that are of importance for the buyer (Oliver, 1997). That means that companies don't have to put equal efforts to cover all customer need in service, but focus on most important first. In turn, these characteristics are frequently referred to as "satisfaction drivers" and are at the core of the notion to perceived service quality, as opposed to laboratory quality (i.e. the level of quality depicted on the service blueprint) and delivered quality (i.e. the extent to which the firm's ability to actually match the standards described in its blueprints). Given that overall satisfaction with the provision of a service is a function of the buyer's degree of satisfaction with various aspects of the service offered, perceived service quality has been suggested to follow the same rational. Hence, the superiority of the hierarchical/multilevel approach in conceptualizing perceived service quality (Gounaris, 2005).

Summarizing said above, provided service quality has many areas affected and is not so easy to measure. From the customers' perspective, solution offerings should shift the responsibility and risks

involved in selected operations to suppliers (Stremersch, Wuyts, Frambach, 2001), and result in cost savings, performance guarantees, optimized processes, customized offerings and, ultimately, a "better or easier life for the customer" (e.g., Miller, Hope, Eisenstat, Foote, Galbraith, 2002, p. 3; Macdonald, Wilson, Martinez, Toossi, 2011). However, the value customers receive from a supplier's solution offering is often difficult to evaluate (Lindberg, Nordin, 2008) as it is often co-created with the supplier (Aarikka-Stenroos, Jaakkola, 2012), and realized in-use (Grönroos, 2011) and over time (Tuli et al., 2007). Empirical studies indicate that, in reality, the value customers realize from solutions often falls short of expectations (Tuli et al., 2007; Epp, Price, 2011).

For Life science industry might be several key factors which are essential while providing service. Whole set of these features positively affects loyalty thus, hypothesis is formulated as:

**H1:** Perceived serviced quality has a positive effect on loyalty.

Although customer service has been evaluated long time ago, but it is still a study that hasn't been done for life science in order to meet the changes in the industry. A clearer understanding as to the sequence of relationship between service quality, customer loyalty and purchase decision can help to ensure better targeting of customer using limited marketing resources.

### 2.2.2. Brand equity

Brands are amongst the intangible assets of firms that significantly contribute to sustainable competitive advantage and brand value is the heart of what consumers pursue from a marketing exchange (Kotler and Keller, 2012). Brand awareness refers to whether consumers can recall or recognize a brand, or simply whether or not consumers know about a brand (Keller, 2008). Brand image is consumer perception and preferences for a brand. Consumers may link the related brand knowledge to the brand name, which finally constitutes brand equity (Aaker, 1991, Keller, 1993). Brand equity is a set of brand assets and liabilities linked to a brand name and symbol that impact value provided by a product or service. So brand equity has several dimensions like brand awareness, brand image, customer-perceived value and brand association. Brands that consumers know are more likely to be included in the consumers' consideration set (Hoyer,Brown, 1990, MacDonald and Sharp, 2000). Therefore, consumers perception about brand increases brand market performance. Many B2B strategists have claimed that brand-building belongs in the consumer realm. They argue that industrial

products do not need branding as it is confusing and adds little value to functional products (Collins, 1977; Lorge, 1998; Saunders, Watt, 1979). Others argue that branding and the concept of brand equity however are increasingly important in industrial markets, because it has been shown that what a brand means to a buyer can be a determining factor in deciding between industrial purchase alternatives (Aaker, 1991). At this day, in accordance to latest researchers there is no one clear guideline available to assist B2B marketers in identifying and measuring brand equity. This topic is till being discovered. Often consumer market is being discussed first and industrial left. The differences between consumer and business markets have been discussed by several authors (Hutt and Speh, 1998; Kotler, Keller, 2005), and organisational buyers have been found to differ in their type of purchase and decision processes (Mudambi, 2002; Thompson et al., 1998; Wilson and Woodside, 2001). These finding suggest that what makes a brand valuable in a B2B market will differ from that in a consumer environment. Despite growing empirical evidence suggesting that brands do influence organizational buying decisions, an understanding of when brands are likely to matter most in B2B contexts is still lacking (Zablah, Brown, Donthu, 2010).

In establishing brand equity, managers must focus on improving brand image, building brand awareness and ensuring the they deliver to customer what was promised at stated level. Grewal, Levy, and Lehmann (2004) note that the rise of the retailer as a brand is one of the most important trends in retailing. It might be the same in B2B environment. As a critical measure of organisational performance, service quality remains at the forefront of both the marketing B2B services: linking service loyalty and brand equity (Jensen, Markland, 1996). Customer loyalty is an important goal for most companies at any industry. It leads to certain marketing advantages such as reduced marketing costs, more new customers, and greater trade leverage (Aaker 1991; Chaudhuri, Holbrook 2001), and it can be said that it is one of the most reliable measures for predicting sales and financial growth.


Previous research has confirmed that the relationship between perceived quality and customer loyalty exists and is positive (Anderson, Sullivan, 1993; Cronin, Taylor, 1992; Harrison-Walker, 2001). It hasn't been tested in life science industry, B2B division. Author of this thesis will try to fill in exhisting gap. One of core elements for brand equity is customers loyalty. Loyalty reflects how likely a customer will stay with a brand or will switch to another. As loyalty increases, the threat of competitive actions is reduced. Therefore, loyalty is generally believed to contribute to major market

performance outcomes (Rauyruen, Miller, Groth, 2009).  For example, loyalty has been identified as one source of brand equity that is demonstrably linked to future profits (Aaker, 1991). In other words, loyalty translates into positive decisions regarding cooperation with certain company and thus improving sales. In support of this, other studies show that brands with high behavioural loyalty have higher market share because of the higher level of repeat purchases by users (Buzzell, Gale, Sultan, 1975). It can be concluded that increase in market share boost sales and revenues.

A significant way of achieving high profitability is to retain existing customers who contribute to the product provider's revenue by continuously purchasing and paying more for products and services and building brand equity to the provider (Rauyruen, Miller, Groth, 2009). Achieving and maintaining a high price premium through attracting and retaining a loyal customer base is particularly significant in B2B market. Nevertheless, there are opposing viewpoints in that loyal customers are not always seen as profitable despite arguments that loyalty makes customers less price sensitive. Some authors argue that loyal customers, or presumably experienced customers, are actually more expensive to serve and that they are often demanding (Reinartz, Kumar, 2002). There are evidence that long-term customers consistently paid lower prices than the newer customers (between 5-7 per cent less, depending on the product category). According to Gardener and Trivedi (1998), this is especially true in the retail sector, but there are no information for Life science industry. As a result it may happend that loyal customers are not always willing to pay a price premium. So it is good to have strong brand and many loyal customers, but it also give certian consequences and can affect sales level and profit.

Anderson (1983) claims that a critical feature of human intelligence is how knowledge pertinent to a decision is identified and utilized. He describes various types of knowledge structures in the brain which contain detailed information or accosiations. Aaaker (1991) defines brands associations as "anything linked in memory to brand". As previously noted by Keller (1993) presents a conceptual; model of brand associations, which consist of brand attributes, brand benefits and brand attitudes. It should be noted that even though attributes are the most objective or concrete level of association, in the reality they are perceptual (Wilkie and Pessemier, 1073). They are perceptual in the sense that regardless of the fact that attributes are the most tangible level of association, it is what the consumer perceives about the attribute that determines its importance or essence (Faircloth, Capella,  Alford, 2015).

The relationship between the consumer and the brand – consumer's perception of that brand – is the key to brand acceptance. The strength of the relationship between the consumer and the brand will reflect the fit between the consumer's own physical and psychological needs and the brand's functional attributes and symbolic values, as perceived by the consumer (Hankinson, Cowking, 1993). So customer with his attetude affects company sales. Study shows that investment in brand image and in the eqity provides a positive sales benefit. And this benefit can be quantified (within the expected limitations of all consumer research) providing additional ammunition in the argument that investing in brands is, for consumer goods businesses at least, the best way to deliver long-term profitability and real increases in business and shareholder value (Ataman, 2003). This finding isn't tested for Life science industry, therefore is researched in this thesis. From said above second hypothesis is derived .

**H2:** A brand equity has a positive effect on the loyalty.

### 2.2.3 Personal relationships

Behind every business there are people, and people function in society via relationships. In a competitive market, having good customer relationship management is important to retain customers (Moon-Koo Kim, Siew Fan Wong, Younghoon Chang, Jong-Hyun Park, 2016). Therefore, successful business is built on good relationships. In a B2C environment, a company might have high number of clients. Although each customer certainly matters, losing one usually isn't enough to impact bottom line or cause a company to fail, simply because the financial value of each individual account isn't especially high. In a B2B environment, by contrast, a representative has far fewer clients. These buyers, are ready to spend extremely high amount of money on the products which are needed to their business. With so much money involved, most business buyers put heavy weight not just on facts, and reputation but also in how they feel, buying from businesses who put a "good vibe" in their gut. Face-to-face interactions between the B2B company and the business buyer provide a framework in which the B2B marketer can build this relationship. Having deep understanding of role of commitment in B2B relationships requires multi-dimensional perspective because commitment as a psychological state is a complex concept, providing many aspects such as beliefs and feelings associated with the person and relationships with him.

The idea of relationship value has roots in business and service marketing, where relationship value is a higher-order construct that has both transactional and relational dimensions (Barry, Terry, 2008). Ulaga and Eggert (2006) define different aspects of the value concept and identified several recurring features. First, the value is a subjectively perceived construct. Different customer segments perceive different values in the same product. Second, the customer-perceived value is a trade-off between benefits (what you get) and sacrifices (what you give) perceived by the customer in a supplier's offering (Ching-Fu Chen, Myagmarsuren, 2011). In B2B the basis of long-term buyer–supplier relationships is the ability of a firm to deliver underlying value and high-quality inputs for buyers (de Ruyter and Wetzels 1999; Gruen, Summers, and Acito 2000). Because of last decades very fast changing technological progress and intensification of competition, suppliers have found it difficult to differentiate their products from those of competitors based solely on product quality (Ulaga 2003). They have instead begun to compete on product service quality, aiming to build long-term, committed relationships with their partners (Cate, Cater 2010).

Study shows that export sales managers satisfaction with the export venture territory situation emerged as a critical construct; there is a strong positive impact on both dimensions of export sales manager performance (i.e., outcome and behavioural) and a significant indirect effect on export sales organization effectiveness. These results are indicative of a halo effect, in which export sales managers perform better in export markets they perceive as more attractive in terms of sales potential, workload, and intensity of competition (Katsikea, Theodosiou, Morgan, 2007). It means that employee attitude can change relationships with customers and thus their decisions. It was approved that top managers cannot take effective action to influence organizational processes and outcomes until they form appropriate judgements: about the level of key variables inside and outside their company (Garg, Walters, 2003). Secondly, about the casual relationships of these variables with one another and with firm performance (Priem, Harrison, 1994). Study revealed that executives must scan external and internal environment, since it is important for firm performance. Executives who don't scan both sectors, or who don't appropriately priorate environmental sectors, will likely be hampered in formatting wrong judgements about their company, situation and customers. Their subsequent actions could cause firm performance to suffer.

It is said that more often failure in business is not because of technological skills, but because of problems with communication, distrust, commitment and confidence (Gross, Peterson, 1978). In fact, some researchers argue that human behaviour may be the most important factor to consider in

methodology choice (Goodwin, 2002). Also effective communication is critical to run a successful and profitable business. To achieve certain goal all company member must be aware of it and must have clear plan how to proceed. In other case company performance can be negatively affected. It is evident from the research that managers regard leadership style, the development of team work and mutual acceptance of each other's priorities and needs as the key to minimising interdepartmental conflict and maximising the efficiency of the enterprise. Effective communication in the broadest sense is a major part of the process of conflict minimisation (Bloch, 1988) and successful performance. Motivation of staff and satisfaction of customer demands seemed to influence the setting of company environment.

Traditional decision theories in B2B were driven by rational choice processes described in economics and statistics which primarily stressed on profits being the main criteria driving a B2B choice decision (Cyert et al., 1956). Cyert (1956), in their narrative on "observation of a business decision", suggest that search and information-gathering processes in B2B decision constitutes major portion of the decision-making process and results in the selection of a satisfactory alternative, leading to a specific (technical/economic) goal achievement that satisfies a number of auxiliary conditions. Being loyal and cooperate with company as well as personal relationships has a lot common with emotions and connection. An exploration of research on affective factors in consumer choices shows that the B2C domain literature on affective factors in consumer choices has evolved significantly. The role of emotions in B2C service consumption and its inclusion in traditional models of cognitive evaluation have been stressed; studies range from exploring affect and expectancy value together (Bagozzi, 1982) to understanding the interplay between affect and cognition (Shiv, Fedorikhin, 1999) and particularly service evaluations (Liljander, Strandvik, 1997). There is now a growing body of evidence that postulates the role of the consumer's heart along with mind. Service encounters are now considered as "breeding grounds" for emotion (Grace, 2007; Maguire, Geiger, 2015). Research on emotions and its impact on consumer behaviour in a B2C environment has gathered momentum, with extensive studies in retail environment, but there is not much for B2B and particularly for Life science industry. Emotions in an industrial buying conditions are still relatively unexplored. Although the initial research in B2B loyalty did highlight the role of these non-task, affective factors, it is only now that research such as that of Kaufman et al. shows evidence of the significance and mechanism of affective factors in B2B choices (Pandey, Mookerjee, 2018).

Personal relationships for B2B environment can mean having right and clear communication. Long term cooperation required clarity and honestly. Any lie will make untrusty vibes and that might affect future development of cooperation. Further, there must be realistic deadlines and goals and they must be met. If company has made promise it has to be kept. The better relationship are established during process, the more enjoyable and valuable the deal is for both individuals, and the more likely it is that the buyer will trust the company for future cases. By said above next hypothesis is formulates as:

**H3:** Personal relationship quality has a positive impact on customer loyalty.

To establish the strong working relationship and have positive purchase decision, company must allocate funds toward channels that strengthen interpersonal connections, such as putting money toward technical support or presenting face-to-face meeting and at trade shows. In B2B it takes time to really understand precisely what to sell or how to manage an implementation, as the needs of each buyer are individual and complex. By being in deep connection with customer, right answer could be found.

### 2.2.4 Device features

Customers feel happy about their purchase when their expectations and demands are fulfilled. Consequently, they will continue to buy and use the same product or service (Parasuraman et al., 1994; Oliver, 1997). When a customer feels satisfied, it could be the results of emotional response based on his/her experience of the purchase and use of the product/service, or the cognitive evaluation between the level of expectation and the actual experience (Babin, Griffin, 1998; Oliver, 1997). They way customer feels about the product refers to the customers' overall evaluation of a company and level of loyalty afterwrads.

Life science industry has many different kinds of devices, but some features are common. Author of the thesis is highlighting four main features of this industry and features that can be applied to all type of laboratory equipment. As it happens that device is developed, it stays in the market but after a while it needs to be upgraded or discontinued. In case sales trend is not sharply negative, companies usually do upgrade. This require less investment as development of completely new device. In any case, new or upgraded device, it would be extremely important for companies to know how important this factor affects customers loyalty.

Warranty is one of the factors. At some point customers might think that longer warranty is a sign of unreliable product. In case of Life science industry, it is opposite. Devices are used in medical field and any need of repair is long process. It must be confirmed at several levels, therefore researched highly appreciate longer warranty. In case of warranty they don't need to announce official purchase of spare parts, all is done free of charge and thus saving researched time. Further, researchers in laboratories appreciate devices with less weight. In this case it's easier to move device and also it is expected that it takes less space. Laboratories in Life science industry are usually small; therefore, every square centimetre is at high value. Less space is needed for devices, more space researchers has for samples and tests. Other important feature might be having an additional function. As example, combining two devices in one (e.g. incubator and shaker or centrifuge and vortex). Or it can be some special alarm system. All depends on device, but it should be clear if customers are seeking for special functions or features, or prefer to have classic set.

We all are a human beings and love with the eyes. Researchers in life science are looking at the devices daily and the question is, if design matters as well? As example, in car industry design definitely matters, but life science is more practical field. Studies on export channel management have cited product characteristics as an important factor in determining international Internet marketing activities (Bilkey, Tesar 1977; Cavusgil, Zou 1994) which leads to better sales. From the perspective of exporting firms, the organizations are advised to assess their firm characteristics, product characteristics, channel characteristics, and environmental characteristics when they consider planning and implementing international Internet marketing management (Moon, Jain, 2007). In accordance to author, marketing management affects export performance which is sales.

Having device with more simple design means lower self-cost, but are customers ready to receive more and have high-tech design. Said above, the hypothesis is formulated as:

**H4**: Better device features as: longer warranty, modern design, small footprint size and additional functions in device operations has higher effect on loyalty as less good features

## 2.2.5. Price

Pricing decision has been a crucial decision made by all business enterprises at all levels. When discussing economics, competition and price levels can be defined as the rivalry among the producers to achieve increasing profits, higher sales numbers, etc. In other words, companies wish to sell as much as possible while making the most money. The cycle of competition between sellers never ends. People are always battling for goods that the sellers have, and people's wants are endless. As long as there are buyers wanting things, then there will be competition between sellers.

When company knows what to produce and to whom they need to find right price which customers will find attractive and also which fill fulfill company targets in terms of turnover and profit. When two products have similar core features, but are produced by different companies, competition results. Competition-based pricing strategy involves setting prices based on competitors' prices rather than on own cost and profit objectives. A business, whether small or big, simple or complex, private or public is created to provide competitive prices. In mean thime, it can't be forgottent that price is also affectd by selft cost, competitors price, demand, political factors, environmental factors. It is said that when firms are engaged in strategic competition, a higher speed of diffusion causes the individual firm to decrease the price, thus competition either directly or indirectly has an influence on the price of products, but vary from company to company, depending on the nature of the product and the industry in which the company operates (Obigbemi, 2010). Usually the products with the most features can charge the highest price, so it is suggested to research what competitors are selling first. Core features of all the products should be similar, if not the same, so it is needed to have something special to raise the price of particular product. If, instead, company would rather prefer to be the cheapest, it can be the special feature and leave everything else out. For small and medium companies that operate in massive industries as Life science, their pricing policy should be influenced by competitors. Usually in such industries there are few market giants who set the price level and smaller companies must follow them. At the same time, basing price only on the competitors level can be dangerous. There might be differences in expense making factors. They may pay suppliers less, use other technology, thus having lower self cost, have different marketing budget. That said, it does pay to know how much competitors charge so you can confirm that your prices are realistic for the market (Obigbemi, 2010). Neverthless, consumers attitude and perception about the product must also be taken into account.

Usually price is something that a customer is ready to pay in aim to get something. It may be a most

important factor which can be helpful for creating loyalty (Danish, 2018). Different researchers work through different ways in it such as price is one that consumer gives or scarifies in order to attain something in return (Athanassopoulos 2000: Zeithaml 1988). Price is a very important loyalty criterion that customers use to compare alternatives. So one of deciding elements is price and it generates futher actions. Based on research Mahmud, et al (2014) prices have a significant influence on customer loyalty with a positive relationship. By said above, fifth hypothesis is:

**H5:** Price level affects customers loyalty.

There are cases when customers are loyal to the company because the costs of switching to another company would be too high. Therefore, these customers would pay higher prices to avoid brand change. Also, as long as customers have been close to the company over the years, they are less sensitive to prices (Cecilia, Ladan, Maiju 2007).  Any company should consider if an increase in price will lead to an positive loyalty changes and vice versa. Price competitiveness is a major factor that could directly affect the attractiveness of a particular product. It has to be taken into account that prices migt vary in different regions, e.g.different price levels for European and Asian market. Study reveladed that most firms do not prepare alternative sales forecasts for different strategies, environments, or capabilities occasionally (Dalrymple, 1987). To have more precise map of actions and deeper understanding of customer decisions, these factors must be considered.

It's important to remember that pricing is just one component of the marketing mix, and even very specific pricing decisions need to take into account the other components. Therefore next hypothesis is observed.

### 2.2.6. Device quality

Product quality according to Kotler and Keller (2009) is the overall feature of a product or service on the ability to satisfy the stated/ implied needs. According to Lupiyoadi (2013), the quality of the product shows the extent to which the product meet the specifications. It is also a critical driver of repeat sales. There are many others definitions of product quality to be found in academic literature. Quality has been defined in four categories namely excellence, value for money, conformity to requirements and meeting of customer's requirements (Reeves, Bednar, 1994). Many authors has tried to understand what are the elements that describes " quality" (e.g. Garvin, 1987; Foster, 2001). Agreed

that quality is multidimensional and that each of its dimensions can be used strategically to gain competitive advantage (Mansori, 2018). Quality includes the importance of meeting expectations, of delivering on the benefits that were promised. But it is also said that it is actually better to deliver on strong promises than to deliver without promising as much. Said another way, delivering on high expectations is better than delivering on low expectations. But with high expectations comes higher risk as not fulfilling expectations can have significant negative consequences. Thus, a company is required to find and build a  system that is able to professionally keep its customers, the company is required to be able to increase their competitive advantage through creative, innovative and efficient actions. Thus, they become the choice of many customers who in turn are expected to be loyal consumers. Having consumers are the ultimate goal of all companies (Minar, Safitri 2017). In today's competitive environment, quality is the key to an organization's success and survival. Intense global competition has highlighted the increasing importance of quality. Superior quality no longer differentiates competitors; instead, it validates the worthiness of a company to compete (Giffi,1990).

From literature it can be concluded that when the quality of a particular product increase, customer satisfaction is expected to increases (Fornell, 1996) and ultimately can lead to brand loyalty (Ha, 2011, 2009). It means, satisfied customers are more loyal. Based on this, authors 6th hypothesis is defined as following:

**H6**: Higher device quality has positive effect on loyalty.

Customers who are happy with their purchase, at it relates to quality of purchase, make recommendation about product to their friends and colleagues. A research study reported that each satisfied customer tells nine or ten people about the happy experiences and 13% of dissatisfied customers tell more than twenty people about how bad the company/product were (Sonnenberg, 1993). This is vital reason why companies must understand reasons what makes customers loyal to their brand and keep them in this position for long term.  Device quality depends on multiple factors and one of which is self cost. All companies try to decrese self cost thus having higher margins. In these games beteen how much company win in terms of money and how much lose to get the customer, managers must clearly understant importance of all above mentioned factors. What will be more importnat for company in long term – convert customers to loyal or get short term wins as maximase sales, e.g. via compaign, but afterwards when customer discover that product doesn't meet

his requirements won't turn back. One of the reasons why it is so important is that even if the product quality has been changed, consumers may not trust that product because of their unpleasant experience in previous (Aaker, 1996). In reality, manufacturers and customers have different views on the judgment of the quality dimensions (Morgan, 1985; Aaker, 1996), customers rarely have enough information to assess a product objectively and even though customers have enough information, there may be insufficient time and motivation to do a further judgment, and at the end they may only be able to select little important information to make an evaluation on quality (Aaker, 1996; Wan, 2006). in such cases, loyalty gives advantage as customer follows certain brand, believing that it' s good enough in accordance to his understanding.

As device quality plays important role in loyalty author has made assumption that device quality could have moderating effect on perceived service quality, brand equity and personal relationships. Several researchers have suggested that product quality might hold the role as a moderator in customer relationships (John and Brady, 2011; Kafetzopoulos, Gotzamani, and Psomas, 2014; Shapiro and Gomez, 2014; Tsiotsou, 2006). This study will consider product quality as a moderating variable in strengthening the relationships between loyalty and personal relationships.

Further, some other research provides some support for a link between service quality and satisfaction (Bitner and Hubbert, 1994; Cronin and Taylor, 1992, 1994; Oliver, 1993) which further leads to loyalty. However, moderating aspects were neglected. In reviewed literature it hasn't been tested if device quality has any moderation effect on perceived service quality. In such scenario, absence of one will significantly weaken correlation between perceived service quality and customer loyalty. It will also be considered that there is role in brand equity correlation.

Thus, hypothesis 7;8;9 are proposed as follows:

**H7**: Device quality moderates the relationships between perceived service quality and loyalty
**H8**:Device quality moderates the relationships between brand equity and loyalty.
**H9**: Device quality moderates the relationships between personal relationships and loyalty.

Within this thesis it will be discovered how important is quality for customers in B2B Life science industry. As nowadays market has two approaches – to offer cheap, low quality devices (usually made in China or India) or to provide high quality but accordingly with higher cost. Since technologies

change so fast, perhaps customers now are fine by having lower quality device and save money as that would give them possibility to change device sooner. When having big investments in device, it is expected to last for long time, but there is risk of using not the most innovative device and having less efficient results.

Summing up, author has 9 hypotheses. The hypotheses and the conceptual model are summarized below.

Table 1. The hypotheses and data measure

| Hypothesis | | Data Measure |
|---|---|---|
| H1+ | Perceived serviced quality has a positive effect on loyalty | Survey question A5, A6 |
| H2+ | A higher brand equity has a positive effect on the loyalty | Survey question A2 |
| H3+ | Relationship quality has a positive impact on customer loyalty | Survey question A8, A9 |
| H4+ | Better device features as: longer warranty, modern design, small footprint size and additional functions in device operations has higher effect on loyalty as less good features. | Survey question A11 |
| H5+ | Prices level has effect on customers loyalty | Survey question A4 |
| H6+ | Device quality has effect on loyalty | Survey question A11 |
| H7+ | Device quality moderates the relationships between perceived service quality and loyalty. | Survey question A10,A11 |
| H8+ | Device quality moderates the relationships between brand equity and loyalty. | Survey question A10,A11 |
| H9+ | Device quality moderates the relationships between personal relationships and loyalty. | Survey question A10,A11 |

In this chapter author looked at available literature findings regarding factors influencing purchase decisions and basing of these findings, author defined hypothesis. In next chapter author will discuss methodology used to test hypothesis.

# 3. Methodology

After setting up the conceptual framework and the development of hypotheses, this chapter presents the method and research design applied to collect data regarding research questions and to test the hypotheses. First, is discussed the research design, further a description of the measures and manipulations, details about used questionnaire, sampling and procedure is provided. Finally, author presents the method of analysis in order to measure the variables.

## 3.1 Survey instrument and data collection

There are no recent researches on loyalty specifically about Life science industry. Overall, to test loyalty affecting factors, quite often researchers use in-depth interviews. This method contributes to the understanding of consumer behaviour and give more deeper understanding for each question, but the results are limited to small samples and to certain group of respondents. In depth interviews are rarely carried out for wide group of respondents as is time consuming. By having less respondents, findings are less general and don't give overall picture of the situation on certain topic.

This study collects data from respondents through a survey. All respondents were dealers in Life science industry. Survey was distributed by email personally asking to fill in the survey. All answers were anonymous. For survey author used Qualtrics.com platform. The survey consists of a short introduction, where is being explained reason of building up a survey, and short description of situation which respondents need to imagine. Further there were 15 questions in total. Questions were phrased as statements and respondents needed to give their opinion on a Likert scale with 7 options (strongly agree, agree, somewhat agree, neither agree nor disagree, disagree, and strongly disagree). The questions were divided on different pages based on the topics. Respondents were not allowed to skip a question, all questions needed to be answered in order to continue to the next section and to complete the survey. Respondents were given unlimited time to give their answers. At the beginning of survey participants were asked demographic questions about their gender, age, education and work experience. Further questions regarding topic were displayed.

The survey used in this thesis is based on previous studies about loyalty among other industries. Author adapted question to this research needs and ensured validity of the scales. Several questions are authors made. Questions where taken and adjusted to needs of this thesis from e.g. Hsin Hsin Chang, Ya Ming Liu (2009) regarding brand importance, Her-Sen Doong, Hui-Chih Wang, Hui-Chi Shih (2008) regarding brand loyalty, Sung Hong Kim, Jin Han Kim & Won Jun Lee (2015) regarding

service quality, Ching-Fu Chen (2011) regarding personal relationships importance. From above mentioned studies just few questions were used and on those some changes in wording were made in order to adjust the survey to the context of this thesis (Appendix 1). Questions regarding additional features which might be important for consumers and quality feature importance was build up my author of thesis. These questions are specifically about laboratory devices used for sample preparation. There are no similar researches on this topic.

This study focusses on loyalty affecting factors for Life science equipment. Author was collecting only responses from people of this industry thus all answers qualify for the analysis. To have proper results judgmental sampling was used. It is s a non-probability sampling technique where author selects units to be sampled based on their knowledge and professional judgment. As this thesis is focusing on B2B, Life science sector, only managers working in this industry are applicable. As judgemental sampling is the only viable sampling technique in obtaining information from a very specific group of people, this method was chosen. Survey was sent to managers who are in charge for cooperation with different suppliers and are taking decisions with which companies to work and what volume of equipment to purchase. There was no question regarding location of respondents, but as author used his contacts from work experience in this industry it can be conformed that answers came from Europe, Middle East, Asia and few from Australia.

Before sending survey to all respondents, a pre-test was conducted within a small group of respondents. This was done with purpose to collect feedback on the existing questions and to adjust them if any unclarity or complexity arise. Several questions were updated in accordance to feedback. The link to the survey was distributed personally through email for each respondent.

## 3.2 Data analysis and methods

In order to test hypothesis survey was shared among all respondents. Further data analysis was conducted with SPSS. Also in total 34 variables were measured by Principal components analysis (PCA) which is used to test if some of the variables are measuring the same underlying construct and if these variables are highly correlated, and if some of them should be removed from further analysis in model. As many variables has been measured and based on questionnaire some of the variables are measuring the same underlying construct (e.g., brand equity, price). If these variables are highly correlated, one might want to include only those variables in linear regression analysis that author

feels most closely represent the construct, removing the others. Whilst PCA is conceptually different to factor analysis, in practice it is often used interchangeably with factor analysis, and is included within the 'Factor procedure' in SPSS Statistics

Regression analysis is used to understand which among the independent variables is related to the dependent variable, and to explore the forms of these relationships. All data was recoded so that the high values on the Likert scale from 1–7 indicated stronger agreement and the lower values stronger disagreement. In authors survey "strongly disagree" was given as the bottom most option and "strongly agree" as the top most option.

The regression model was defined as follows:

$$Y_{Loyalty} = B_0 + B_1 Perceived\ service\ quality + B_2 Brand\ equity + B_3 Personal\ relationships + B_4 Warranty + B_5 Size + B_6 Additional\ functions + B_7 Design + B_8 Price + B_9 Device\ quality + B_{10} Device\ quality * Perceived\ service\ quality + B_{11} Device\ quality * Brand\ equity + B_{12} Device\ quality * Personal\ relationships + \acute{\varepsilon}$$

Having regression model author moves to next chapter - results.

# 4. Results

In this chapter author first of all analyse the survey participants and the characteristics of the data. Before moving on to the testing of the hypotheses, the validity and reliability measurement model is tested. The hypotheses are tested with a linear regression model using SPSS.

## 4.1. Survey participants and model measurement

In total 88 people participated in the survey. Unfortunately, 20 of these responses are not valid for the survey, as they are not completed fully. Therefore, in total 68 answers were used for this analysis and perceived as completed and valid. Out of 68 respondents 49% were males, 51% were females. Half of the respondents (50%) were in the age of 18 to 34 years, 26% were in the age of 35 to 44% years and rest were 45+ years old. Respondent education is presented below:

Figure 2. Respondent education



- High school graduates  - Bachelor's degree  - Master's degree  - Doctorate's degree
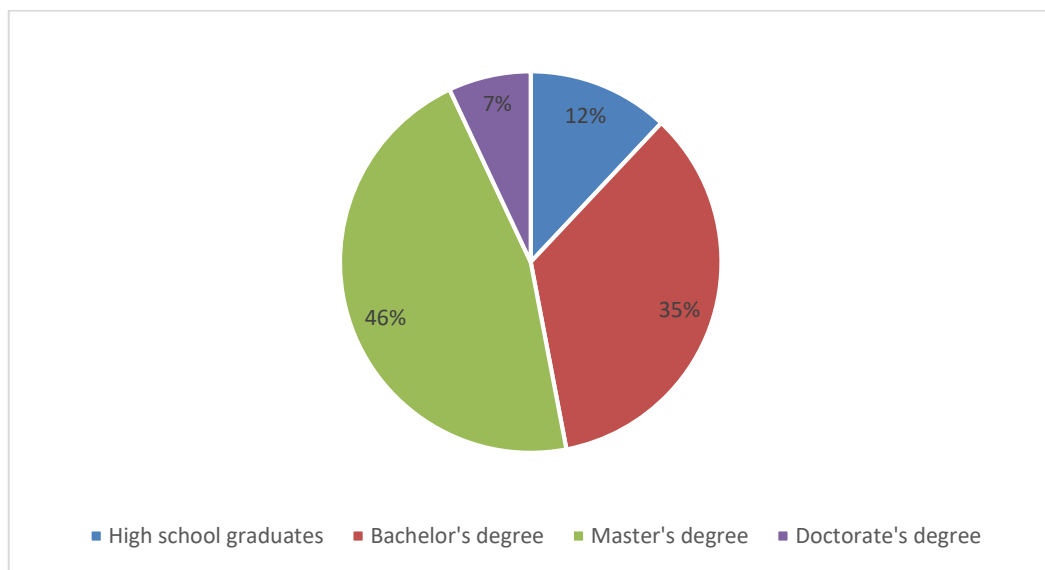
Before proceeding with data analysis as Likert scale was used on multiple questions, scale reliability must be determined. Cronbach's Alpha can be used to test the consistency of the measurement across multiple survey items measuring the same construct over time (Mazzocchi 2008). As per Mazzocchi (2008), the Cronbach's Alpha value should be higher than 0.7 in order to demonstrate good reliability of the item. Author calculated results for model. (Table no.2).

Table.2 Reliability scale

| Cronbach's Alpha | Cronbach's Alpha Based on Standardized Items | N of Items |
|---|---|---|
| 0,898 | 0,917 | 34 |

Scale reliability test was done for all 34 statements of questionnaire. As it can be seen in Table 2, Cronbach's Alpha is 0,898 which means that used Likert scale measures correctly, i.e., it measures Brand Equity, Loyalty, Price, Perceived service quality, Device quality, Personal relationships. That in regression model allows author to perform regression analysis on Loyalty.

When looking at each item separately (Appendix 2, indicated in yellow), it can be see that there are 2 statements:

- *When you have to choose supplier for laboratory equipment: - I am interested in purchasing devices from different brands;*

- *How strongly you agree or disagree with statements below in situations when you have to choose supplier? - My purchase decision mainly depends on offered price from supplier*

which affect Cronbach's alpha the most and by removing these two from analysis we would improve overall Cronbach's alpha. As improvement in Cronbach's alpha is not very significant and average measurement is comparatively high, author consider scale to be reliable for all items in questionnaire.

Before running regression model and PCA, author conducted Pearson correlation test to see if correlation exists between dependent variable and independent variables. Variables can be related by a linear relationship that can be summarized between two variables, called the covariance. A covariance value of zero indicates that both variables are completely independent. Also positive covariance indicates that both variables change in the same direction, whereas negative covariance indicates that both variables change in opposite direction (table 3).

Table 3. Correlation matrix

| Correlations | | Perceived Service Quality | Brand equity | Personal Relationship | Device Quality | Price | Device Features | |
|---|---|---|---|---|---|---|---|---|
| Pearson Correlation | Loyalty | 0,569 | 0,295 | 0,565 | 0,502 | 0,322 | 0,425 | |
| | Perceived Service Quality | | 0,239 | 0,480 | 0,620 | 0,488 | 0,279 | |
| | Brand equity | | | 0,328 | 0,345 | 0,349 | 0,326 | |
| | Personal Relationship | | | | 0,604 | 0,098 | 0,514 | |
| | Device Quality | | | | | 0,255 | 0,492 | |
| | Price | | | | | | 0,269 | |
| Sig. (1-tailed) | Loyalty | 0,000 | 0,007 | 0,000 | 0,000 | 0,004 | 0,000 | |
| | Perceived Service Quality | | 0,025 | 0,000 | 0,000 | 0,000 | 0,011 | |
| | Brand equity | | | 0,003 | 0,002 | 0,002 | 0,003 | |
| | Personal Relationship | | | | 0,000 | 0,214 | 0,000 | |
| | Device Quality | | | | | 0,018 | 0,000 | |
| | Price | | | | | | 0,013 | |
| N | Loyalty | 68 | 68 | 68 | 68 | 68 | 68 | |
| | Perceived Service Quality | 68 | 68 | 68 | 68 | 68 | 68 | |
| | Brand equity | 68 | 68 | 68 | 68 | 68 | 68 | |
| | Personal Relationship | 68 | 68 | 68 | 68 | 68 | 68 | |
| | Device Quality | 68 | 68 | 68 | 68 | 68 | 68 | |
| | Price | 68 | 68 | 68 | 68 | 68 | 68 | |

As many variables has been measured and based on questionnaire some of the variables are measuring the same underlying construct (e.g., brand equity, price). If these variables are highly correlated, one might want to include only those variables in linear regression analysis that author feels most closely represent the construct, removing the others. Principal components analysis (PCA) should be used for this. It is a variable-reduction technique that shares many similarities to exploratory factor analysis. Whilst PCA is conceptually different to factor analysis, in practice it is often used interchangeably with factor analysis, and is included within the 'Factor procedure' in SPSS Statistics. In accordance to results (Appendix no.3) and in accordance to Tabachnick, Fidell (2001) if there are few correlations above 0.3 it is a waste of time carrying on with the analysis, clearly this research don't have such problem. There are quite a few above 0,3 (cells in green) that states correlation though it's comparatively weak. If it's above 0,5 then correlation is average, this research has that as well (yellow cells). There are no correlations above 0,8 (very strong) in this data set.

Further author checked communalities. A communality is the extent to which an item correlates with all other items. The higher communalities the better. If communalities for a particular variable are low (between 0.0-0.4), then that variable may struggle to load significantly on any factor. In this data set

all communalities are above 0,5 which is good result (Appendix no.4). Also Total variance was tested. In total 1 model should explain around 70% of variations in data set to be considered a valid and useful model. Authors data set 1 model consists of 11 components and cumulative % is 71,304 (Appendix no.5) which is acceptable result. As looking at Eigen values, it can be concluded that 13 factors account for most of the total variability in data. The Eigenvalues for the first 13 factors are all greater than 1.The remaining factors account for a very small proportion of the variability and are likely unimportant.

## 4.2. Hypotheses testing

To test the hypotheses regarding factors influencing loyalty in Life science industry, a multiple linear regression analysis was performed with SPSS. First of all, author needed to transform data. For linear regression variables must be at continues level (e.g., Likert scale, variables must be coded starting from 0, thus all Likert scale variables are recoded, where Values are recoded as following: (1=0) (2=1) (3=2) (4=3) (5=4) (6=5) (7=6).

Then Kolmogorv-Smirnov coefficient was checked for normal distribution. Based on Kolmogorov – Smirnov test if $p<0,05$ (Asymp.Sig. (2-tailed)), then normal distribution does not exist. From results of this analysis (Appendix no.6) it can be concluded that for continuous variables normal distribution does not exist, nevertheless when looking at Q-Q plots and histograms for Likert scale items it can be observed that though normal distribution is not ideal, it is close enough to it, so it can be considered that answers in these variables create normal distribution.

Further author checked all hypothesis using linear regression (results are in table.4, page 33; detailed output in Appendix no.8). The results of the linear regression analysis gave confirmation on hypothesis H1, H2 and H3.

Perceived service quality and personal relationships has positive effect on loyalty as $p<0.05$. As from data of beta coefficient, when perceived service quality increases in 1unit, the customers loyalty increases in 0.400, ceteris paribus. For personal relationships, if that increases for 1 unit, customers loyalty increases for 0.410, ceteris paribus.
Hypothesis regarding brand equity effect on loyalty was not supported as $p>0.05$.

Authors assumption was that certain device features has effect on loyalty. As regression analysis shown, model is significant as $p < 0.05$, but looking into details, only one feature has effect.

Only modern design has positive effect on loyalty since $p < 0.05$. Rest features in this model are statistically insignificant as p value $> 0.05$. In this case, when that the device design increases in 1 unit, the customers loyalty increases in 0.191, ceteris paribus.

Further author checked hypothesis regarding price. As it can be seen in table.4, price impact on loyalty was not supported in this research as $p>0.05$.

Further, was tested hypothesis regarding device quality effect on loyalty. Analysis shows that it has positive effect as $p < 0.05$.

The beta of the coefficient shows that when that the device quality increases in 1 unit, the customers loyalty increases in 0.535, ceteris paribus.


## 4.3. Moderating effect

In accordance to authors hypothesis, device quality has effect on perceived service quality, brand equity and personal relationships, it's moderating effect which affects the strength of the relationship between a dependent and independent variable. Author tested if device quality has moderating effect on perceived service quality, brand equity and personal relationships.
As results shows there is no moderating effect on above mentioned.


## 4.4. Full model

When hypothesis are tested, author also tested whole model. Results are in table.4 (page no.33).

As can be seen, the model is overall statistically significant (pvalue=0.000<0.05). All taken variables explain about 54% of the variation in loyalty.

Perceived service quality has positive effect on loyalty as p<0.05. The same as brand equity which p<0.05 and personal relationships.

In accordance to authors hypothesis, device quality has effect on perceived service quality, brand equity and personal relationships, it's moderating effect which affects the strength of the relationship between a dependent and independent variable. Author tested if device quality has moderating effect

on perceived service quality, brand equity and personal relationships.  As results from full model shows, there is moderating effect on perceived service quality $p<0.05$ and on brand equity $p<0.05$. In accordance to results, there is no moderation effect on personal relationships as $p>0.05$.

Table 4. Multiple regression results. Model 1-6

| | | Model 1 | | | Model 2 | | | | Model 3 | Model 4 | Model 5 | | | Model 6: Full model | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | H1 | H2 | H3 | H4 | | | | H5 | H6 | H7 | H8 | H9 | H1 | H2 | H3 | H4 | | | | H5 | H6 | H7 | H8 | H9 |
| | | Perceived Service Quality | Brand equity | Personal Relationship | Extended Warranty | Small size | Additional functions | Modern design | Price | Device Quality | Moderator 1: Device quality X Perceived Service Quality | Moderator 2: Device quality X Brand equity | Moderator 3: Device quality X Personal Relationship | Perceived Service Quality | Brand equity | Personal Relationship | Extended Warranty | Small size | Additional functions | Modern design | Price | Device Quality | Moderator 1: Device quality X Perceived Service Quality | Moderator 2: Device quality X Brand equity | Moderator 3: Device quality X Personal Relationship |
| Unstandardized Coefficients | B | 0.400 | 0.082 | 0.410 | ,058 | -,001 | ,096 | ,191 | 0.250 | ,535 | ,023 | -,083 | ,001 | -2.576 | 1.649 | 2.376 | -0.021 | -0.019 | -0.031 | 0.179 | 0.098 | 0.736 | 0.466 | -0.274 | -0.330 |
| | Std. Error | 0.113 | 0.092 | 0.127 | ,096 | ,087 | ,099 | ,088 | 0.127 | ,113 | ,055 | ,069 | ,046 | 1.212 | 0.773 | 1.007 | 0.085 | 0.091 | 0.096 | 0.096 | 0.139 | 0.812 | 0.195 | 0.132 | 0.171 |
| Standardized Coefficients | Beta | 0.378 | 0.088 | 0.354 | ,081 | -,001 | ,139 | ,328 | 0.223 | ,502 | ,049 | -,139 | ,002 | -2.432 | 1.778 | 2.054 | -0.030 | -0.026 | -0.043 | 0.247 | 0.087 | 0.691 | 4.627 | -2.539 | -3.066 |
| | t | 3.527 | 0.889 | 3.220 | ,600 | -,007 | ,975 | 2,174 | 1.972 | 4.710 | ,426 | -1,205 | ,020 | -2.126 | 2.133 | 2.360 | -0.252 | -0.205 | -0.326 | 1.860 | 0.702 | 0.906 | 2.396 | -2.083 | -1.929 |
| | Sig. | 0.001 | 0.377 | 0.002 | ,551 | ,995 | ,333 | ,034 | 0.053 | ,000 | ,672 | ,233 | ,984 | 0.038 | 0.037 | 0.022 | 0.802 | 0.839 | 0.746 | 0.068 | 0.486 | 0.369 | 0.020 | 0.042 | 0.059 |
| Collinearity Statistics | Tolerance | | | | | | | | | | | | | 0.006 | 0.012 | 0.011 | 0.599 | 0.528 | 0.468 | 0.471 | 0.539 | 0.014 | 0.002 | 0.006 | 0.003 |
| | VIF | | | | | | | | | | | | | 157.341 | 83.527 | 91.042 | 1.669 | 1.893 | 2.136 | 2.124 | 1.854 | 69.820 | 448.369 | 178.629 | 303.663 |

From carried out regression analysis author have following conclusions on hypothesis.

Table 5. Hypothesis test results

| Hypothesis | | Status | |
|---|---|---|---|
| | | **Model 1-5** | **Full model** |
| H1+ | Perceived serviced quality has a positive effect on loyalty | supported, since $p < 0.05$ | supported, since $p < 0.05$ |
| H2+ | A higher brand equity has a positive effect on the loyalty | not supported, since $p > 0.05$. | supported, since $p < 0.05$ |
| H3+ | Relationship quality has a positive impact on customer loyalty | supported, since $p < 0.05$. | supported, since $p < 0.05$ |
| H4+ | Better device features as: longer warranty, modern design, small footprint size and additional functions in device operations has positive effect on loyalty. | supported, since $p < 0.05$ device design: since $p < 0.05$. | not supported, since $p > 0.05$ |
| H5+ | Prices level has effect on customers loyalty | not supported, since $p > 0.05$. | not supported, since $p > 0.05$ |
| H6+ | Device quality has positive effect on loyalty | supported, since $p < 0.05$ | not supported, since $p > 0.05$ |
| H7+ | Device quality moderates the relationships between perceived service quality and loyalty. | not supported, since $p > 0.05$ | supported, since $p < 0.05$ |
| H8+ | Device quality moderates the relationships between brand equity and loyalty. | not supported, since $p > 0.05$ | supported, since $p < 0.05$ |
| H9+ | Device quality moderates the relationships between personal relationships and loyalty. | not supported, since $p > 0.05$ | not supported, since $p > 0.05$ |

As can be seen, some hypothesis are supported in full model and not in models 1-5 and vice versa.  In full model author has confirmation on hypothesis of brand equity importance and moderation effects of device quality on perceived service quality - loyalty and also on brand equity – loyalty. Other way around, model 1-5 confirms that device features matters and especially device design as long as full model declines this relationship. Device quality has significant effect on loyalty in model 1-5, but is not confirmed in full model.

It has to be noted that full model has significant multicollinearity. However, multicollinearity doesn't affect how well the model fits, therefore full model can't be ignored completely. For this reason, author kept all models. For output, tolerance should be $> 0.1$ (or VIF $< 10$) for all variables, as long as in full model VIF exceeds 10. It shows that independent variables in a regression model are

correlated. This situation reduces the precision of the estimate coefficients, which weakens the statistical power of regression model. For this reason, author made final conclusion of this research based on model 1-5 output.

# 5. Discussion and conclusions

In this section, first of all, the findings of the thesis are summarized and discussed. Then author presents the theoretical implications and practical recommendations. In conclusion author mentions limitations of the study as well as discuss the directions of future research.

## 5.1 Discussion

This thesis aims to understand which factors influence loyalty specifically in Life science industry. Recent studies and reviews have identified gaps in understanding of the relationships of loyalty and other affecting factors. B2B environment works under different rules in comparison to B2C environment. Also, each industry, within certain business model, has something specific that knowing can improve success at sales. It's not enough to identify the decision makers in an organization. For marketing and sales activities to be effective, companies need to focus on those points in the decision journey where they can be most successful in influencing those decision makers. Not much has been done concerning deep market understanding and sales performance improvement particularly Life science industry. For this reason, author was focusing on manufacturers who produce equipment for Life science industry laboratories.

The results do not fully support pronounced hypothesis. It was expected that each hypothesis will have significant effect on loyalty as these findings were supported by literature overview. Findings of this study shows that Life science industry is more complicated and differs from other sectors with it's specific loyalty drivers.

Previous research has confirmed that the relationship between perceived quality and customer loyalty exists and is positive (Anderson and Sullivan, 1993; Cronin and Taylor, 1992; Harrison-Walker, 2001). It hasn't been tested in Life science industry, B2B division, till the date. Author of this thesis has concluded that the same relationship exists in Life science industry. As research is done in technical industry, that seems expected. When working with certain company, customer get loyal to the brand after certain actions. In technical sector, service quality really maters. Even multinaional companies can have error with the devices or must recall whole batch of devices due to failure. That happens, but research proves that it's ver important how these any other failures are fixed and what support customer will get. That determines loyalty.

The finding regarding brand equity is perhaps the most surprasing in this thesis. The results indicate that there is no correlation between brand equity and loyalty which is completely against stament from literature. Brands that consumers know are more likely to be included in the consumers' consideration set (Hoyer and Brown, 1990, MacDonald and Sharp, 2000), thus being perceived as potential purchase spot. A possible explanation for the contradicting results from the literature and thesis findings could be that used termin in survey was not well explained and respondents understood question differently.

Quite often B2B cooperation is long-term buyer–supplier relationships where firm has ability to deliver underlying value and high-quality inputs for buyers (de Ruyter and Wetzels 1999; Summers Acito 2000). Because of last decades very fast changing technological progress and intensification of competition, suppliers have found it difficult to differentiate their products from those of competitors based solely on product quality (Ulaga 2003). They have instead begun to compete on product service quality, aiming to build long-term, committed relationships with their partners (Cater 2010). These statements were supported by the research of the thesis. Indeed, also in Life science industry personal relationships has positive correlation on loyalty.

Author also tested correlation for certain device features. Author was having findings that as example, in car industry design definitely matters. Studies on export channel management have cited product characteristics as an important factor in determining international Internet marketing activities (Bilkey and Tesar 1977; Cavusgil and Zou 1994) which leads to loyal customers and better sales. Findings shows that tested model is statistically significant, but looking in results feature by feature, only device design is statistically significant and has affect to loyalty. This could be explained as scientists use these devices daily and it is important that device looks good. We all are human beings and we evaluate by eyes as well. Life science industry is high tech sector and device that looks old won't be appealing for scientists. For rest features, which wasn't statistically significant, as warranty, device size and additional functions, it can be explained that it doesn't matters that much to scientists as Laboratory equipment is well standardized sector and although manufacturers are offering small differences in their devices, thus trying to differentiate products, that is not loyalty affecting.

The study results do not show significant correlation between price and loyalty. This result contradicts with common statemen that price matters the most and that a higher price has a negative effect on the purchase decision. Life science industry is rapidly developing and receiving big investments in last decades. This is specially seen in well developed regions as Japan, UAE, West Europe. In these

regions adtitude to price and price sensativity is different as in just developing regions, e.g. Eastern Europe, Asian countries as Thailand, Vietnam. Author conclude that research results could be different and this hypothesis could show any correlation is survey would be done for certain region, not globally.

It was proved that device quality has significant effect on loyalty. This is in line with literature, e.g. as Yuen and Chan (2010) showed better product quality will maintain  high level of customer satisfaction, which encourages customers to make future purchases. Thus, customer loyalty is gradually formed. The same can be applied to Life science industry. This stuy show that the improvement of product quality will benefit to the company. This research didn't confirm any moderating role of device quality on perceived service quality, brand equity and personal relationships. Correlation is stronger without moderation. Device quality as moderator was not widly analyzed in leterature and author made assuption that there could be other moderating factors in model, which were not obsorbed in this research.

Based on the results of this study, there are several factors which are not in accordance to literature. To be completely sure if they are such in Life science industry,survey should be adjusted with better formulated questions and respondents devided by regions as different markets has different perception. Also higher amount of respondents would make reults more reliable.

## 5.2 Managerial implications

The findings of this study have implications for Life science equipment manufacturer performing in B2B environment. The results can help marketers to understand underlaying factors which affects loyalty and can help to improve marketing actions. Knowing what matters most to decision makers in their to be loyal cycle, gives marketing and sales leaders the insight needed to gauge where their efforts are likely to have the greatest impact. The results in this study could help the companies better understand their business, and the Life science companies could use the results for possible strategic decisions related to future sales and improvement of their devices.

As studies shows, the most important area is getting customer loyal to the company. Manufacturers should ensure good, personal relationships and exceptional service quality. Industry is limited to global safety requirements for devices. There is a lot of regulatory requirements. That leaves space

for being different not that much on device and technical solutions, but more on what company can offer to customer as to person. What kind of support he will have, how his relationships will look like. In B2B buyers are companies, but companies are also different as persons. Depending on region where it comes from, size of the company, main corporate policy – it requires different approach. By building this customer gets loyal and company's brand get stronger.

## 5.3 Limitations and further research

This thesis is one of the first studies focusing on Life science industry drivers of loyalty. Although, loyalty influencing factors are studied, there are not too many findings on B2B industry and especially there is gap for Life science industry. The results indicated that overall understanding of Loyalty drivers cannot be easily applied to this industry.

This study, despite the significance of its findings, has a number of limitations. First of all, the small size of the sample and the sample selection bias limits the validity of the results. The nature of the study set limitations for the data collection, limiting the sample size. This can negatively affect the internal validity of the results. It should be considered that target audience was very narrow, only purchase decision makers, with extensive experience in industry were asked to fill in survey. Amount of approached such specialist was low, thus low number of respondents. Also respondents were from different regions (Europe, Asia, CIS, Australia). Due to different markets, it seems that better is not to generalize survey, but make it even more specific for each region and with higher number of respondents to ensure validity.

Secondly, deeper survey should be made for further research. Survey should be made with more into details questions and respondents should be able to spend more time on survey and more easily understand questions. With existing format, there were too many unfinished surveys (22 out of 98) although there was no time limit to fill in survey.

Future research should also study latest trends of the industry and investigate if they have any effect on loyalty. It means that there could be more important factors related to loyalty as itself and these might actually drive customers even more. Even though, there is regulatory frame in which companies must fit, Life science industry is high-tech industry and, in some occasions, new technologies are in the market before spotted by regulatory framework. That makes devices and companies different and

for academic and business world, would be good to know if that matters.

Meanwhile, further research could study already observed variables more deeply. E.g. device quality. In accordance to literature it has different dimensions such as performance, reliability, durability, serviceability. These all can be analysed separately and could give new understandings.

# 6. References

Aadel A. Chaudhuri, Jacob J. Chabon (2017). Early detection of lung cancer MRD by ctDNA profiling. cancerdiscovery.aacrjournals.org , American Association for Cancer research

Aaker, D.A. (1991). Managing Brand Equity: Capitalizing on the Value of a Brand Name. Free Press, New York, NY

Aarikka-Stenroos, L., & Jaakkola, E. (2012). Value co-creation in knowledge intensive business services: A dyadic perspective on the joint problem solving process. Industrial Marketing Management, 41(1), 15–26.

Alberto Holly, Ke Xu and Priyanka Saksena (2011). The determinants of healthcare expenditure. Retrieved from  http://www.who.int/health_financing/documents/report_en_11_deter-he.pdf

Anderson, E.W. and Sullivan, M.W. (1993). The antecedents and consequences of customer satisfaction for firms. Marketing Science, Vol. 12, pp. 125-43.

Anderson, Rolph E. and Srini S. Srinivasan (2003). E Satisfaction and E-Loyalty: A Contingency Framework.  Psychology & Marketing, 20 (2), 123–38

B. Ataman, (2003). A note on the effect of brand image on sales. The Journal of Product and Brand Management v12 n4/5 (2003) 237-250

Babin, B.J., Griffin, M., 1998. The nature of satisfaction: an updated examination and analysis. J. Bus. Res. 42 (February), 127–136.

Bagozzi, R.P. (1982), "A field investigation of causal relations among cognitions, affect, intentions, and behavior", Journal of Marketing Research, Vol. 19 No. 4, pp. 562-583.

Beatty, Sharon E. and Scott M. Smith (1987). External Search Effort: An Investigation Across Several Product Categories. Journal of Consumer Research, 14 (1), 83–95.

Bell, S. J., & Menguc, B. (2002). The employee–organization relationship, organizational citizenship behaviors, and superior service quality. Journal of Retailing, 78(2), 131–146.

Bitner, M.J. and Hubbert, A.R. (1994), ``Encounter satisfaction versus overall satisfaction versus quality", in Rust, R.T. and Oliver, R.L. (Eds), Service Quality: New Directions in Theory and Practice, Sage, London, pp. 72-94.

Bowen, D. E., & Schneider, B. (1985). Boundary-spanning-role employees and the service encounter: Some guidelines for management and research. In John A. Czepiel, Michael R. Solomon, & Carol F. Surprenant (Eds.), The service encounter: Managing employee/customer interaction in service businesses (pp. 127–147). Lexington, MA: D.C. Heath and Company

Brian Bloch, (1988). Conflict between departments managers opinion. Industrial Management & Data Systems v88 n9-10 (19880901): 11-13

Buzzell, R.D., Gale, B.T. and Sultan, R.G.M.,(1975). Market share: a key to profitability. Harvard Business Review, Vol. 53, pp. 97-106.

By: marketsandmarkets.com, (2017). Life Science Instrumentation Market by Technology Retrieved from: https://www.marketsandmarkets.com/Market-Reports/life-science-chemical-biotech-instrumentation-market-38.html

Byeong-Joon Moon & Subhash C. Jain (2007). Determinants and Outcomes of Internet Marketing Activities of Exporting Firms, Journal of Global Marketing, 20:4, 55-71

C. Gross, R. T.Peterson (1978). Some human problems in industrial sales forecasting. Industrial Marketing Management v7 n6 (1978): 367-368

Cater, T., and B. Cater. 2010. Product and relationship quality influence on customer commitment and loyalty in B2B manufacturing relationships. Industrial Marketing Management 39 (8):1321–33.

Chaudhuri, A., and Holbrook, M.B. (2001). The Chain of Effects from Brand Trust and Brand Affect to Brand Performance: The Role of Brand Loyalty. Journal of Marketing 65 (2):81-93.

Ching-Fu Chen, Odonchimeg Myagmarsuren (2011). Brand equity, relationship quality, relationship value, and customer loyalty: Evidence from the telecommunications services. Total Quality Management & Business Excellence v22 n9 (2011) 957

Chisnall, P.M. (1997), Marketing Research, 5th ed., McGrawHill, Maidenhead.

Chuang, C. H., & Liao, H. U. I. (2010). Strategic human resource management in service context: Taking care of business by taking care of employees and customers. Personnel Psychology, 63(1), 153–196.

Collins, L. (1977). A name to conjure with – a discussion of the naming of new brands, European Journal of Marketing, Vol. 11 No. 5, pp. 339-63.

Corstjens, Marcel and Rajiv Lal (2000). Building Store Loyalty Through Store Brands. Journal of Marketing Research, 37 (August), 281–91.

Cronin, J.J. and Taylor, S.A. (1992), ``Measuring service quality: a re-examination and extension'', Journal of Marketing, No. 56, July, pp. 55-68

Cronin, J.J.J. and Taylor, S.A. (1992). Measuring service quality: a re-examination and extension. Journal of Marketing, Vol. 56, pp. 55-68.

Cyert, R.M., Simon, H.A. and Trow, D.B. (1956), "Observation of a business decision", The Journal of Business, Vol. 29 No. 4, pp. 237-248.

K.L. Keller (2008). Strategic branding management: building, measuring, and managing brand equity (3rd ed), Prentice Hall, Upper Saddle River, New Jersey 07458.

Cyert, R.M., Simon, H.A. and Trow, D.B. (1956), "Observation of a business decision", The Journal of Business, Vol. 29 No. 4, pp. 237-248.

D.A. Aaker (1991). Managing brand equity: capitalizing on the value of a brand name. The Free Press, New York, N.Y.

de Ruyter, K. D., and M. Wetzels (1999). Commitment in auditor-client relationships: Antecedents and consequences. Accounting, Organizations and Society 24 (1):57–75. doi:10.1016/S0361-3682(98)00008-7.

Demsi Minar, Anindia Safitri, 2017. Brand Image and Product Quality on Customer Loyalty (Survey in Cekeran Midun). TRIKONOMIKA v16 n1 (20170621): 43

Dianne Waddell, Amrik S Sohal. Forecasting: The key to managerial decision making (1994). Management Decision v32 n1 (1994) 41

E. Katsikea, M.Theodosiou, R. E. Morgan, (2007). Managerial, organizational, and external drivers of sales effectiveness in export market ventures. Journal of the Academy of Marketing Science v35 n2 (Jun 2007) 270-283

Frese, M., & Fay, D. (2001). Personal initiative (PI): An active performance concept for work in the 21st century. In B. M. Staw, & R. M. Sutton (Eds.), Research in Organizational Behavior, Vol. 23. (pp. 133–187). New York: Elsevier.

Gallup (2013). State of the American workplace: Employee engagement. http://www. gallup.com/services/178514/state-american-workplace.aspx (Last accessed 8th April 2015)

Grace, D. (2007), "How embarrassing! An exploratory study of critical incidents including affective reactions", Journal of Service Research, Vol. 9 No. 3, pp. 271-284.

Hankinson, G. and Cowking, P. (1993). Branding in Action. McGraw-Hill, London Book Company Limited.

Harrison-Walker, L.J. (2001). The measurement of word-of mouth communication and an investigation of service quality and customer commitment as potential antecedents. Journal of Service Research, Vol. 4, pp. 60-75.

Hartline, M. D., & Ferrell, O. C. (1996). The management of customer-contact service employees: An empirical investigation. Journal of Marketing, 60(4), 52–70

Huang, Ming-Hui and Shihti Yu (1999). Are Consumers Inherently or Situationally Brand Loyal? A Set Intercorrelation Account for Conscious Brand Loyalty and Nonconscious Inertia. Psychology & Marketing, 16 (6), 523–44

Imoleayo Foyeke Obigbemi (2010). The Impact of Product Price Changes on the Turnover of Small and Medium Enterprises in Nigeria. Retrieved from https://www.researchgate.net/publication/46508170_The_Impact_of_Product_Price_Changes_on_the_Turnover_of_Small_and_Medium_Enterprises_in_Nigeria

J.T. Mentzer, R. Gomes (1994). Further extensions of adaptive extended exponential smoothing and comparison with the M-competition. Journal of the Academy of Marketing Science, 22 (1994), pp. 372-382

James B. Faircloth, Louis M. Capella, Bruce L. Alford ( 2015). Journal of Marketing Theory and Practice v9 n3 (20151208): 61-75

Jensen, J.B. and Markland, R.E. (1996), Improving the application of quality conformance tools in service firms. Journal of Services Marketing, Vol. 10, pp. 25-55.

Joshua D. Cohen, (2018). Blood test could use DNA to spot eight of the most common cancers. Retrieved from: https://www.theguardian.com/science/2018/jan/18/blood-test-could-use-dna-to-spot-early-stage-cancers-study-shows

K Walley, P Custance, S Taylor, A Adam Lindgreen, M Hingley (2007), The importance of brand in the industrial purchase decision : a case study of the UK tractor market. Journal of Business & Industrial Marketing v22 n6 (2007)

K. Cecilia, M. Ladan, and R. Maiju, Customer Loyalty Research: Can customer loyalty programs really build loyalty?. Bachelor thesis, Jönköping University, 2007

K.Jennings,(1992). Benchmarking for Strategic Action.  Journal of Business Strategy v13 n3 (19920301): 22-25

Kellogg, D. L., & Chase, R. B. (1995). Constructing an empirically derived measure for customer contact. Management Science, 41(11), 1734–1749.

lapiGounaris, Spiros and Viasis Stathakopoulos (2004). Antecedents and Consequences of Brand Loyalty: An Empircal Study. Journal of Brand Management, 11 (4), 283–306

Lemon, Katherine N., Roland T. Rust, and Valarie A. Zeithaml (2001). What Drives Customer Equity?. Marketing Management, 10 (1), 20–25

Liljander, V. and Strandvik, T. (1997), "Emotions in service satisfaction", International Journal of Service Industry Management, Vol. 8 No. 2, pp. 148-169.

Lindberg, N., & Nordin, F. (2008). From products to services and back again: Towards a new service procurement logic. Industrial Marketing Management, 37, 292–300

Lindsay Hock, (2014). R&D Life Sciences Overview. R&D Magazine, Wed, 08/06/2014

Lorge, S. (1998), Better off branded, Sales & Marketing Management, Vol. 150 No. 3, pp. 39-42.

Miller, D., Hope, Q., Eisenstat, R., Foote, N., & Galbraith, J. (2002). The problem of solutions: Balancing clients and capabilities. Business Horizons, 45(2), 3–12.

Moon-Koo Kim, Siew Fan Wong, Younghoon Chang, Jong-Hyun Park, 2016. Determinants of customer loyalty in the Korean smartphone market: Moderating effects of usage characteristics. Telematics and Informatics v33 n4 (November 2016): 936-949

Oliver, R. (1997), Satisfaction: A Behavioral Perspective on the Consumer, McGraw-Hill, New York, NY

Oliver, R.L. (1993), ``A conceptual model of service quality and service satisfaction: compatible goals, different concepts'', in Swartz, T.A., Bowen, D.E. and Brown, S.W. (Eds), Advances in Services Marketing and Management: Research and Practice, 2nd ed., JAI Press, Greenwich, CT, pp. 65-85.

P. Rauyruen, K. E. Miller, M. Groth, (2009). B2B services: linking service loyalty and brand equity. Journal of Services Marketing v23 n3 (20090522): 175-186

Parasuraman, A., Zeithaml, V.A., Berry, L.L., 1994. Reassessment of expectations as a comparison standard in measuring service quality: implications for further research. J. Mark. 58, 111–124.

Peppers D, Rogers M. and Dorf B., (1999). Marketing One-to-One, Random House

Priem RL, Harrison (1994). Exploring strategic judgment: methods for testing the assumptions of prescriptive contingency theories. Strategic Management Journal **15**(4): 311–324.

R. Zallocco, E. Bolman Pullins, M. L. Mallin (2009). A re-examination of B2B sales performance. Journal of Business & Industrial Marketing v24 n8 (20091009): 598-610

Rizwan Qaiser Danish, 2018. Impact of Brand Loyalty in Assessing Purchase Intentions of a Customer: A Study of Automobile Industry in South Asian Perspective,  A Research Journal of South Asian Studies , Vol. 33, No. 2, July – December, 2018, pp. 347 – 364

Santosh Kumar Pandey, Amit Mookerjee (2018), Assessing the role of emotions in B2B decision making: an exploratory study, Journal of Indian Business Research v10 n2 (20180618): 170-192

Saunders, J.A. and Watt, F.A. (1979). Do brand names differentiate identical industrial products?, Industrial Marketing Management, Vol. 8 No. 2, pp. 114-23

Shaheen Mansori, Ling Chen Hoe 2018. The Effects of Product Quality on Customer Satisfaction and Loyalty: Evidence from Malaysian Engineering Industry. International Journal of Industrial Marketing ISSN 2162-3066 2018, Vol. 3, No. 1

Shiv, B. and Fedorikhin, A. (1999), "Heart and mind in conflict: the interplay of affect and cognition in consumer decision making", Journal of Consumer Research, Vol. 26 No. 3, pp. 278-292.

Slotegraaf, Rebecca J. and J. Jeffrey Inman (2004). "Longitudinal Shifts in the Drivers of Satisfaction with Product Quality: The Role of Attribute Resolvability," Journal of Marketing Research, 41 (August), 269–80.

Spiros Gounaris (2005). Measuring service quality in b2b services: an evaluation of the SERVQUAL scale vis-à-vis the INDSERV scale. The Journal of Services Marketing v19 n6/7 (2005) 421-435

Stremersch, S.,Wuyts, S., & Frambach, R. T. (2001). The purchasing of full-service contracts: An exploratory study within the industrial maintenance market. Industrial Marketing Management, 30(1), 1–12.

T.W. Gruen, D. Corsten, (2008). A comprehensive guide to retail out-of-stock reduction in the fast-moving consumer goods industry. Grocery Manufacturers of America, Washington, 2008

Tuli, R. K., Kohli, K. A., & Bharadwaj, G. S. (2007). Rethinking customer solutions: From product bundles to relational processes. Journal of Marketing, 71(3), 1–17.

Ulaga, W. 2003. Capturing value creation in business relationships: A customer perspective. Industrial Marketing Management 32 (8)

Vinay K Garg, Bruce A Walters, Richard L Priem (2003). Chief executive scanning emphases, environmental dynamism, and manufacturing firm performance. Strategic Management Journal v24 n8 (Aug 2003) 725-744

W.D. Hoyer, S.P. Brown (1990). Effects of brand awareness on choice for a common, repeat purchase product. J Consum Res, 17 (1990), pp. 141-148

Zablah, A. R., Brown, B. P., & Donthu, N. (2010). The relative importance of brands in modified rebuy purchase situations. International Journal of Research in Marketing, 27(3), 248–260

Zeithaml, V. A., & Bitner, M. J. (2000). Services marketing. New York: The McGraw-Hill Companies, Inc

Zeithaml, Valarie A., Leonard L. Berry, and A. Parasuraman (1996), "The Behavioral Consequences of Service Loyalty," Journal of Marketing, 60 (April), 31–46.

# Appendix no. 1 – Survey

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1.intro What is your gender?

○ Male  (1)

○ Female  (2)

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2.intro What is your age?

○ 18-24 years old  (1)

○ 25-34 years old  (2)

○ 35-44 years old  (3)

○ 45-54 years old  (4)

○ 55-64 years old  (5)

○ 65-.. years old  (6)

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3.intro What is the highest degree or level of school you have completed?

○ High school graduate  (1)

○ Bachelor's degree  (2)

○ Master's degree  (3)

○ Doctorate degree  (4)

1 Please imagine situation when you  (as a dealer) have to make purchase of laboratory equipment and you are wondering which supplier to choose.  Following questions in this survey are going to ask for your opinion in these kind of situations.

---

2 Please think about situation when you have to choose supplier for laboratory equipment. How strongly you agree or disagree with following statements:

| | Strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Neither agree nor disagree (4) | Somewhat agree (5) | Agree (6) | Strongly agree (7) |
|---|---|---|---|---|---|---|---|
| Brand name is helping me to decide which supplier to choose (1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| When considering to place PO, I consider X (your certain company) first (2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My favourite supplier is brand which is easily recognised among other competing brands (3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I am interested in purchasing devices from different brands (4) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| End users prefer to have devices from brands that they are familiar (5) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

End of Block: Block 1

Start of Block: Block 2

3 Most probably you are having business with many suppliers. Please think about one certain company which you like and now are having business with. What is your position regarding following statements:

| | Strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Neither agree nor disagree (4) | Somewhat agree (5) | Agree (6) | Strongly agree (7) |
|---|---|---|---|---|---|---|---|
| I always consider this company as first choice for cooperation; (1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I will not cooperate with other brands if cooperation with X is possible; (2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I enjoy purchasing from this manufacturer; (3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I consider myself to be loyal to X; (4) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Compared to other manufacturers that have similar devices, I am willing to pay a premium (higher) price for this company (5) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

4 How strongly you agree or disagree with statements below in situations when you have to choose supplier?

| | Strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Neither agree nor disagree (4) | Somewhat agree (5) | Agree (6) | Strongly agree (7) |
|---|---|---|---|---|---|---|---|
| Price matters when I choose supplier (1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I agree to pay more just because brand is well known (2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I agree to pay more for device with good quality, although brand is not well known (3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| My purchase decision mainly depends on offered price from supplier (4) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

End of Block: Block 2

Start of Block: Block 3

5 Please finish following statements. I find it very important that:

| | Strongly disagree (11) | Disagree (12) | Somewhat disagree (13) | Neither agree nor disagree (14) | Somewhat agree (15) | Agree (16) | Strongly agree (17) |
|---|---|---|---|---|---|---|---|
| Service employees respond to customer needs no matter how busy they are (46) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Service employees are seriously concerned about solving problems for you and customers (47) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Service employees keep their promises (48) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Service employees possess excellent professional skill (49) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Service employees explain problem with defective device professionally and upon request provide replacement (50) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

6 Would you be willing to pay more for device if thus supplier would ensure you with high quality, on time service? How many percent's that could be?
* If you are not willing to pay additionally, please choose 1.

|  | 0 | 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Additional cost for good service () | | | | | | | | | | | |

7 When you think about choosing a supplier you also might think about devices quality dimensions. Please finish following sentence.
I find it very important that device has:

|  | Strongly disagree (13) | Disagree (14) | Somewhat disagree (15) | Neither agree nor disagree (16) | Somewhat agree (17) | Agree (18) | Strongly agree (19) |
|---|---|---|---|---|---|---|---|
| Good and precise performance (1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Reliability (2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Durability (3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Easy modification and installation with many accessories (4) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

11 Manufacturers sometimes offer additional device features or upgraded devices with new features. Regarding these features please finish the sentence.
I find very important that device has:

|  | Strongly disagree (13) | Disagree (14) | Somewhat disagree (15) | Neither agree nor disagree (16) | Somewhat agree (17) | Agree (18) | Strongly agree (19) |
|---|---|---|---|---|---|---|---|
| Extended warranty (1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Small size (2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Additional functions (e.g. centrifuge has also vortexing mode) (3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Modern design (4) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

8 Please think about one of your best suppliers.  Assess following statements:

| | Strongly disagree (1) | Disagree (2) | Somewhat disagree (3) | Neither agree nor disagree (4) | Somewhat agree (5) | Agree (6) | Strongly agree (7) |
|---|---|---|---|---|---|---|---|
| Company is contributing for good relationships (e.g. personal visits, congratulate on important events) (1) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| The relationship with this partner is more valuable than just profit making (2) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| It creates more value to my business, when comparing all costs and benefits (3) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I can trust this partner (4) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Company makes an effort to understand my company needs (5) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| It is always ready to discuss any issues or new projects (6) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| I am committed to maintaining my professional relationship with my supplier (7) | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

9 Imagine that you have two suppliers offering the same product under the same conditions. The only difference is that with one company you have much better relationships.  Would you be willing to pay more for device which is  supplied from supplier with whom you are having good relationships?  How many percents that could be? *If you are not willing to pay higher price, please choose 1.

0    10    20    30    40    50    60    70    80    90    100

| Premium cost to device () | |
|---|---|

10 Imagine that one of suppliers with whom you have business started to provide bad service, relationships worsened and you don't feel so loyal to this company. What is the possibility (in percentage) that you would: *Please choose 100% if it is completely in line with you; 1 if you would not do that; ** Please don't choose 0 (it has to be at least 1).

0    10    20    30    40    50    60    70    80    90    100

| | Decrease amount of purchases () | |
|---|---|---|
| | |  |

| | Immediately start to look for new supplier () | |
|---|---|---|
| | |  |

| | Would give them time to fix issues, leave all as it is () | |
|---|---|---|
| | |  |

**End of Block: Block5**

## Appendix no. 2 - Cronbach's alpha

| | Scale Mean if Item Deleted | Scale Variance if Item Deleted | Corrected Item-Total Correlation | Squared Multiple Correlation | Cronbach's Alpha if Item Deleted |
|---|---|---|---|---|---|
| A2_1 | 187,38 | 269,404 | 0,412 | | 0,896 |
| A2_2 | 187,54 | 265,446 | 0,436 | | 0,895 |
| A2_3 | 187,62 | 264,120 | 0,470 | | 0,895 |
| A2_4 | 188,10 | 277,944 | 0,059 | | 0,906 |
| A2_5 | 187,06 | 269,698 | 0,374 | | 0,896 |
| A3_1 | 186,97 | 267,910 | 0,578 | | 0,894 |
| A3_2 | 187,71 | 262,927 | 0,406 | | 0,896 |
| A3_3 | 186,96 | 267,595 | 0,543 | | 0,894 |
| A3_4 | 187,26 | 265,511 | 0,535 | | 0,894 |
| A3_5 | 188,28 | 267,786 | 0,337 | | 0,897 |
| A4_1 | 187,25 | 273,683 | 0,294 | | 0,897 |
| A4_2 | 188,32 | 266,640 | 0,341 | | 0,898 |
| A4_3 | 187,40 | 273,765 | 0,243 | | 0,899 |
| A4_4 | 188,26 | 281,183 | 0,008 | | 0,905 |
| A5_1 | 187,00 | 267,910 | 0,506 | | 0,894 |
| A5_2 | 186,79 | 268,076 | 0,526 | | 0,894 |
| A5_3 | 186,68 | 266,759 | 0,515 | | 0,894 |
| A5_4 | 186,79 | 268,464 | 0,512 | | 0,894 |
| A5_5 | 186,75 | 266,519 | 0,610 | | 0,893 |
| A7_1 | 186,72 | 265,458 | 0,729 | | 0,892 |
| A7_2 | 186,69 | 267,381 | 0,655 | | 0,893 |
| A7_3 | 186,78 | 266,951 | 0,634 | | 0,893 |
| A7_4 | 187,15 | 267,202 | 0,471 | | 0,895 |
| A11_1 | 187,34 | 267,720 | 0,452 | | 0,895 |
| A11_2 | 188,25 | 264,071 | 0,459 | | 0,895 |
| A11_3 | 187,49 | 265,836 | 0,493 | | 0,894 |
| A11_4 | 187,59 | 261,022 | 0,527 | | 0,893 |
| A8_1 | 187,00 | 267,731 | 0,572 | | 0,894 |
| A8_2 | 187,29 | 269,076 | 0,336 | | 0,897 |
| A8_3 | 187,18 | 268,177 | 0,529 | | 0,894 |
| A8_4 | 186,60 | 266,780 | 0,656 | | 0,893 |
| A8_5 | 186,85 | 268,456 | 0,573 | | 0,894 |
| A8_6 | 186,75 | 267,951 | 0,584 | | 0,894 |
| A8_7 | 186,76 | 269,048 | 0,593 | | 0,894 |

# Appendix no.3 - Principal components analysis (PCA)



# Appendix no.4. - Communalities

| Communalities | | |
|---|---|---|
| | Initial | Extraction |
| A1.intro | 1,000 | 0,503 |
| A2.intro | 1,000 | 0,660 |
| A3.intro | 1,000 | 0,738 |
| A2_1 | 1,000 | 0,750 |
| A2_2 | 1,000 | 0,767 |
| A2_3 | 1,000 | 0,793 |
| A2_4 | 1,000 | 0,782 |
| A2_5 | 1,000 | 0,795 |
| A3_1 | 1,000 | 0,813 |
| A3_2 | 1,000 | 0,889 |
| A3_3 | 1,000 | 0,752 |
| A3_4 | 1,000 | 0,699 |
| A3_5 | 1,000 | 0,650 |
| A4_1 | 1,000 | 0,804 |
| A4_2 | 1,000 | 0,716 |
| A4_3 | 1,000 | 0,804 |
| A4_4 | 1,000 | 0,782 |
| A5_1 | 1,000 | 0,710 |
| A5_2 | 1,000 | 0,806 |
| A5_3 | 1,000 | 0,842 |
| A5_4 | 1,000 | 0,793 |
| A5_5 | 1,000 | 0,866 |
| A6_1 | 1,000 | 0,828 |
| A7_1 | 1,000 | 0,807 |
| A7_2 | 1,000 | 0,867 |
| A7_3 | 1,000 | 0,830 |
| A7_4 | 1,000 | 0,700 |
| A11_1 | 1,000 | 0,789 |
| A11_2 | 1,000 | 0,744 |
| A11_3 | 1,000 | 0,762 |
| A11_4 | 1,000 | 0,803 |
| A8_1 | 1,000 | 0,754 |
| A8_2 | 1,000 | 0,647 |
| A8_3 | 1,000 | 0,774 |
| A8_4 | 1,000 | 0,841 |
| A8_5 | 1,000 | 0,811 |
| A8_6 | 1,000 | 0,737 |
| A8_7 | 1,000 | 0,776 |
| A9_4 | 1,000 | 0,767 |
| A10_1 | 1,000 | 0,634 |
| A10_2 | 1,000 | 0,710 |
| A10_3 | 1,000 | 0,794 |
| Extraction Method: Principal Com |  |  |

# Appendix no.5 – Total vaiance

| | Initial Eigenvalues | | | Loadings | | | Loadings | | |
|---|---|---|---|---|---|---|---|---|---|
| Compone nt | Total | % of Variance | Cumulativ e % | Total | % of Variance | Cumulativ e % | Total | % of Variance | Cumulativ e % |
| 1 | 10,151 | 24,168 | 24,168 | 10,151 | 24,168 | 24,168 | 4,576 | 10,896 | 10,896 |
| 2 | 2,886 | 6,872 | 31,040 | 2,886 | 6,872 | 31,040 | 3,967 | 9,446 | 20,342 |
| 3 | 2,797 | 6,660 | 37,700 | 2,797 | 6,660 | 37,700 | 3,655 | 8,702 | 29,043 |
| 4 | 2,441 | 5,811 | 43,511 | 2,441 | 5,811 | 43,511 | 3,114 | 7,414 | 36,458 |
| 5 | 2,227 | 5,301 | 48,812 | 2,227 | 5,301 | 48,812 | 2,684 | 6,391 | 42,849 |
| 6 | 2,130 | 5,072 | 53,884 | 2,130 | 5,072 | 53,884 | 2,223 | 5,292 | 48,141 |
| 7 | 1,818 | 4,330 | 58,214 | 1,818 | 4,330 | 58,214 | 1,998 | 4,758 | 52,899 |
| 8 | 1,546 | 3,681 | 61,895 | 1,546 | 3,681 | 61,895 | 1,814 | 4,320 | 57,219 |
| 9 | 1,458 | 3,472 | 65,367 | 1,458 | 3,472 | 65,367 | 1,766 | 4,205 | 61,425 |
| 10 | 1,338 | 3,185 | 68,552 | 1,338 | 3,185 | 68,552 | 1,704 | 4,056 | 65,481 |
| 11 | 1,156 | 2,752 | 71,304 | 1,156 | 2,752 | 71,304 | 1,560 | 3,714 | 69,195 |
| 12 | 1,130 | 2,690 | 73,994 | 1,130 | 2,690 | 73,994 | 1,523 | 3,627 | 72,822 |
| 13 | 1,013 | 2,411 | 76,405 | 1,013 | 2,411 | 76,405 | 1,505 | 3,583 | 76,405 |
| 14 | 0,914 | 2,176 | 78,581 | | | | | | |
| 15 | 0,868 | 2,067 | 80,648 | | | | | | |
| 16 | 0,838 | 1,994 | 82,643 | | | | | | |
| 17 | 0,724 | 1,723 | 84,365 | | | | | | |
| 18 | 0,630 | 1,500 | 85,865 | | | | | | |
| 19 | 0,608 | 1,447 | 87,313 | | | | | | |
| 20 | 0,586 | 1,396 | 88,709 | | | | | | |
| 21 | 0,511 | 1,218 | 89,927 | | | | | | |
| 22 | 0,490 | 1,167 | 91,095 | | | | | | |
| 23 | 0,442 | 1,052 | 92,147 | | | | | | |
| 24 | 0,371 | 0,884 | 93,031 | | | | | | |
| 25 | 0,359 | 0,854 | 93,885 | | | | | | |
| 26 | 0,332 | 0,791 | 94,676 | | | | | | |
| 27 | 0,317 | 0,755 | 95,431 | | | | | | |
| 28 | 0,281 | 0,670 | 96,101 | | | | | | |
| 29 | 0,261 | 0,622 | 96,723 | | | | | | |
| 30 | 0,214 | 0,508 | 97,232 | | | | | | |
| 31 | 0,196 | 0,467 | 97,698 | | | | | | |
| 32 | 0,184 | 0,438 | 98,136 | | | | | | |
| 33 | 0,165 | 0,394 | 98,530 | | | | | | |
| 34 | 0,133 | 0,316 | 98,846 | | | | | | |
| 35 | 0,102 | 0,244 | 99,090 | | | | | | |
| 36 | 0,088 | 0,210 | 99,300 | | | | | | |
| 37 | 0,080 | 0,189 | 99,489 | | | | | | |
| 38 | 0,070 | 0,166 | 99,656 | | | | | | |
| 39 | 0,055 | 0,132 | 99,787 | | | | | | |
| 40 | 0,034 | 0,080 | 99,868 | | | | | | |
| 41 | 0,033 | 0,078 | 99,945 | | | | | | |
| 42 | 0,023 | 0,055 | 100,000 | | | | | | |

Extraction Method: Principal Component Analysis.

# Appendix no.6 – Model summary

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | ,389[a] | 0,151 | 0,052 | 16,68962 | 0,151 | 1,529 | 7 | 60 | 0,175 |

a. Predictors: (Constant), Device Features, Price, Brand equity, Loyalty, Device Quality, Personal Relationship, Perceived

b. Dependent Variable: Purchase

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regressio n | 2980,788 | 7 | 425,827 | 1,529 | ,175[b] |
| | Residual | 16712,610 | 60 | 278,543 | | |
| | Total | 19693,398 | 67 | | | |

a. Dependent Variable: Purchase

b. Predictors: (Constant), Device Features, Price, Brand equity, Loyalty, Device Quality,

# Appendix no. 7 - Kolmogorov – Smirnov test

| | | N | Normal Parameters | | Most Extreme Differences | | | Test Stat | Asymp. Sig |
|---|---|---|---|---|---|---|---|---|---|
| | | | Mean | Std. Dev | Absolute | Positive | Negative | | |
| Laboratory equipment | Brand name is helping me to decide which supplier to choose | 68 | 5,54 | 0,984 | 0,267 | 0,189 | -0,267 | 0,267 | ,000$^c$ |
| | When considering to place PO, I consider X (your certain company) first | 68 | 5,38 | 1,185 | 0,228 | 0,139 | -0,228 | 0,228 | ,000$^c$ |
| | My favourite supplier is brand which is easily recognised among other competing brands | 68 | 5,31 | 1,188 | 0,249 | 0,163 | -0,249 | 0,249 | ,000$^c$ |
| | I am interested in purchasing devices from different brands | 68 | 4,82 | 1,602 | 0,191 | 0,108 | -0,191 | 0,191 | ,000$^c$ |
| | End users prefer to have devices from brands that they are familiar | 68 | 5,87 | 1,050 | 0,285 | 0,185 | -0,285 | 0,285 | ,000$^c$ |
| Suppliers | I always consider this company as first choice for cooperation; | 68 | 5,96 | 0,800 | 0,301 | 0,243 | -0,301 | 0,301 | ,000$^c$ |
| | I will not cooperate with other brands if cooperation with X is possible; | 68 | 5,22 | 1,423 | 0,252 | 0,130 | -0,252 | 0,252 | ,000$^c$ |
| | I enjoy purchasing from this manufacturer; | 68 | 5,97 | 0,863 | 0,322 | 0,236 | -0,322 | 0,322 | ,000$^c$ |
| | I consider myself to be loyal to X; | 68 | 5,66 | 0,987 | 0,325 | 0,219 | -0,325 | 0,325 | ,000$^c$ |
| | Compared to other manufacturers that have similar devices, I am willing to pay a premium (higher) price for this company | 68 | 4,65 | 1,290 | 0,240 | 0,128 | -0,240 | 0,240 | ,000$^c$ |
| Supplier choice | Price matters when I choose supplier | 68 | 5,68 | 0,937 | 0,311 | 0,233 | -0,311 | 0,311 | ,000$^c$ |
| | I agree to pay more just because brand is well known | 68 | 4,60 | 1,362 | 0,276 | 0,138 | -0,276 | 0,276 | ,000$^c$ |
| | I agree to pay more for device with good quality, although brand is not well known | 68 | 5,53 | 1,085 | 0,285 | 0,229 | -0,285 | 0,285 | ,000$^c$ |
| | My purchase decision mainly depends on offered price from supplier | 68 | 4,66 | 1,452 | 0,195 | 0,120 | -0,195 | 0,195 | ,000$^c$ |
| Importance | Service employees respond to customer needs no matter how busy they are | 68 | 5,93 | 0,903 | 0,297 | 0,218 | -0,297 | 0,297 | ,000$^c$ |
| | Service employees are seriously concerned about solving problems for you and customers | 68 | 6,13 | 0,862 | 0,248 | 0,179 | -0,248 | 0,248 | ,000$^c$ |
| | Service employees keep their promises | 68 | 6,25 | 0,952 | 0,314 | 0,215 | -0,314 | 0,314 | ,000$^c$ |
| | Service employees possess excellent professional skill | 68 | 6,13 | 0,862 | 0,233 | 0,179 | -0,233 | 0,233 | ,000$^c$ |
| | Service employees explain problem with defective device professionally and upon request provide replacement | 68 | 6,18 | 0,828 | 0,239 | 0,187 | -0,239 | 0,239 | ,000$^c$ |
| Bet supplier | Company is contributing for good relationships (e.g. personal visits, congratulate on important events) | 68 | 5,93 | 0,816 | 0,286 | 0,229 | -0,286 | 0,286 | ,000$^c$ |
| | The relationship with this partner is more valuable than just profit making | 68 | 5,63 | 1,196 | 0,268 | 0,159 | -0,268 | 0,268 | ,000$^c$ |
| | It creates more value to my business, when comparing all costs and benefits | 68 | 5,75 | 0,853 | 0,277 | 0,208 | -0,277 | 0,277 | ,000$^c$ |
| | I can trust this partner | 68 | 6,32 | 0,762 | 0,283 | 0,194 | -0,283 | 0,283 | ,000$^c$ |
| | Company makes an effort to understand my company needs | 68 | 6,07 | 0,779 | 0,286 | 0,243 | -0,286 | 0,286 | ,000$^c$ |
| | It is always ready to discuss any issues or new projects | 68 | 6,18 | 0,791 | 0,294 | 0,235 | -0,294 | 0,294 | ,000$^c$ |
| | I am committed to maintaining my professional relationship with my supplier | 68 | 6,16 | 0,725 | 0,279 | 0,265 | -0,279 | 0,279 | ,000$^c$ |
| a. Test distribution is Normal. | | | | | | | | | |
| b. Calculated from data. | | | | | | | | | |
| c. Lilliefors Significance Correction. | | | | | | | | | |

# Appendix no. 8 – Model 1-6 outputs

| Model | | Unstandardized Coefficients | | Stand. Coef. | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 0,139 | 0,771 | | 0,180 | 0,858 |
| | Perceived Service Quality | 0,400 | 0,113 | 0,378 | 3,527 | 0,001 |
| | Brand equity | 0,082 | 0,092 | 0,088 | 0,889 | 0,777 |
| | Personal Relationship | 0,410 | 0,127 | 0,354 | 3,220 | 0,002 |

a. Dependent Variable: Loyalty

## Coefficients<sup>a</sup>

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 3,931 | ,435 | | 9,032 | ,000 |
| | Extended Warranty | ,058 | ,096 | ,081 | ,600 | ,551 |
| | Small size | -,001 | ,087 | -,001 | -,007 | ,995 |
| | Additional functions | ,096 | ,099 | ,139 | ,975 | ,333 |
| | Modern design | ,191 | ,088 | ,328 | 2,174 | ,034 |

a. Dependent Variable: Loyalty

## Coefficients<sup>a</sup>

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 2,634 | 0,704 | | 3,741 | 0,000 |
| | Price | 0,250 | 0,127 | 0,223 | 1,972 | 0,053 |

a. Dependent Variable: Loyalty

## Coefficients<sup>a</sup>

| Model | | Unstandardized Coefficients | | Standardized Coefficients | | |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | t | Sig. |
| 1 | (Constant) | 2,235 | ,696 | | 3,213 | ,002 |
| | Device Quality | ,535 | ,113 | ,502 | 4,710 | ,000 |

a. Dependent Variable: Loyalty

| Model | | Coefficients^a | | | | |
|---|---|---|---|---|---|---|
| | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1,024 | 0,839 | | 1,221 | 0,227 |
| | Perceived Service Quality | 0,447 | 0,135 | 0,422 | 3,309 | 0,002 |
| | Device Quality | 0,282 | 0,147 | 0,264 | 1,915 | 0,06 |
| | Moderator1 | 0,023 | 0,055 | 0,049 | 0,426 | 0,672 |
| 1 | (Constant) | 2,216 | 0,814 | | 2,722 | 0,008 |
| | Device Quality | 0,471 | 0,121 | 0,442 | 3,906 | 0 |
| | Brand equity | 0,081 | 0,112 | 0,087 | 0,724 | 0,472 |
| | Moderator2 | -0,083 | 0,069 | -0,139 | -1,205 | 0,233 |
| 1 | (Constant) | 0,979 | 0,878 | | 1,115 | 0,269 |
| | Device Quality | 0,27 | 0,136 | 0,253 | 1,985 | 0,051 |
| | Personal Relationship | 0,478 | 0,152 | 0,413 | 3,139 | 0,003 |
| | Moderator3 | 0,001 | 0,046 | 0,002 | 0,02 | 0,984 |

a. Dependent Variable: Loyalty

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | R Square Change | F Change | df1 | df2 |
|---|---|---|---|---|---|---|---|---|
| | | | | | **Change Statistics** | | | |
| 1 | ,736[a] | 0,542 | 0,443 | 0,53897 | 0,542 | 5,433 | 12 | 55 |

**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 18,938 | 12 | 1,578 | 5,433 | ,000[b] |
| | Residual | 15,977 | 55 | 0,290 | | |
| | Total | 34,915 | 67 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients B | Std. Error | Standardized Coefficients Beta | t | Sig. | Collinearity Statistics Tolerance | VIF |
|---|---|---|---|---|---|---|---|---|
| 1 | (Constant) | -3,208 | 4,700 | | -0,683 | 0,498 | | |
| | Perceived Service Qua | -2,576 | 1,212 | -2,432 | -2,126 | 0,038 | 0,006 | 157,341 |
| | Brand equity | 1,649 | 0,773 | 1,778 | 2,133 | 0,037 | 0,012 | 83,527 |
| | Personal Relationship | 2,376 | 1,007 | 2,054 | 2,360 | 0,022 | 0,011 | 91,042 |
| | Extended Warranty | -0,021 | 0,085 | -0,030 | -0,252 | 0,802 | 0,599 | 1,669 |
| | Small size | -0,019 | 0,091 | -0,026 | -0,205 | 0,839 | 0,528 | 1,893 |
| | Price | 0,098 | 0,139 | 0,087 | 0,702 | 0,486 | 0,539 | 1,854 |
| | Additional functions | -0,031 | 0,096 | -0,043 | -0,326 | 0,746 | 0,468 | 2,136 |
| | Modern design | 0,179 | 0,096 | 0,247 | 1,860 | 0,068 | 0,471 | 2,124 |
| | Device Quality | 0,736 | 0,812 | 0,691 | 0,906 | 0,369 | 0,014 | 69,820 |
| | M: DeviceQuality_Perc_Serv_Qual | 0,466 | 0,195 | 4,627 | 2,396 | 0,020 | 0,002 | 448,369 |
| | M: DeviceQuality_BrandEquity | -0,274 | 0,132 | -2,539 | -2,083 | 0,042 | 0,006 | 178,629 |
| | M: DeviceQuality_PersRelationship | -0,330 | 0,171 | -3,066 | -1,929 | 0,059 | 0,003 | 303,663 |