The Cost of Work Performed by Software Developers for Buddy Healthcare Ltd Oy

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This bachelor thesis aimed to identify the cost of work performed by software developers for the commissioning company Buddy Healthcare Ltd Oy. The objective of the research was to investigate what are the costs of employing a software developer in-house in Finland, and what are additional costs if the software developer is employed in-house in Germany. In addition, the research identified what is the cost of work performed by a software developer in selected areas considered suitable for outsourcing as Buddy Healthcare.

The thesis consists of a theory section and an empirical section. The theoretical section provides in-depth knowledge on the topics of supply and demand of labour, employee recruitment, and the costs of in-house employment as well as outsourcing. Within the empirical section, the focus is laid on presenting the results and deliver answers to the research objective.

The research design was divided into two parts. Internal information and interviews with the company CEO and CTO provided data to address the in-house employment of a software developer for Buddy Healthcare in Finland and Germany. The second part of the research was performed as desktop study applying compiled datasets to identify suitable countries for outsourcing as Buddy Healthcare and to calculate the cost of work performed by software developers in the selected destinations.

The results of the first part of the study show, for the first year of employing a software developer in Finland, including the employee recruitment process, Buddy Healthcare incurs the cost of 120,000€. In the situation, the software developer is hired in Germany, the company faces additional overhead costs and higher salaries to be paid. In the second part of the research, Eastern Europe and Baltic countries, as well as Germany, Portugal, and the United Kingdom were identified as suitable destinations to source software developers from as Buddy Healthcare. The cost of work performed by a software developer in Eastern Europe and Baltic countries was determined as most affordable.

In the recommendations to the company, it is suggested to strongly engage in employee retention to avoid the costs of employee separation. Furthermore, it is recommended to hire a software developer in Germany if the demand for a German-speaking IT professional outweighs the high costs. In terms of sourcing software developer services, the recommendation is to receive services from Eastern Europe or Baltic countries, reasoned by the low cost.

Keywords
Cost of Work, Software development, In-house employment, Outsourcing

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1   Introduction

This is a research type bachelor thesis for the degree programme in International Business in the major specialization of Accounting and Finance at Haaga-Helia University of Applied Sciences.

In the following, the background of this thesis is stated, pursued by the research question and demarcation of this research. The international aspect is being discussed, the key concepts defined, the benefits of this study, and its risks including risk management are being listed. In addition, the case company Buddy Healthcare is introduced.

1.1   Background

Finland is globally known for its innovations and vibrant start-up scene. Especially in terms of digital solutions entrepreneurs and Small and Medium-sized Enterprises (SME's) from Finland are ranking high in worldwide comparison (Business Finland 2020). In the Digital Economy and Society Index (DESI) 2020 published by the European Commission (2020), Finland scored the highest ranking due to its high performance in the five categories, which are connectivity, human capital/ digital skills, use of internet services by citizen, integration of digital technology by businesses, digital public services, and research and development ICT.

This commissioned thesis was conducted for the Finnish health tech company Buddy Healthcare Oy. The five-year-old business is a positive example of an enterprise surviving the crucial first years since foundation. The growing company is operating globally and has set a focus on establishing operations as well as an office in Berlin, Germany, to strengthen its break into the German market.

The product sold by Buddy Healthcare is defined as care coordination and patient engagement platform, being distributed as Software as a Service (SaaS). The software development of the product is handled by in-house software developers located in Helsinki, Finland, supported by services performed by workers in Ukraine. However, the recruitment of new talents is challenging due to the shortage of software developers in Finland. In the Talent Boost Cookbook Finland published by the Ministry of Economic Affairs and Employment and Business Finland (2019), it is stated that in Finland there is a need for 10.000 software developers by 2023.

Attributable to the fact the author studies international business with a specialization in finance and accounting at Haaga-Helia University of Applied Sciences, and her position at Buddy Healthcare Ltd Oy enabling her to deep knowledge about the company, created an excellent basis to executing thesis research for the commissioning company.

1.2   Research Problem and Investigative Questions

This thesis aimed to identify the cost associated with the work of a software developer for the company Buddy Healthcare Ltd Oy, hereby, intending to answer the following research question (RQ):

RQ: What is the cost of work performed by a software developer for the company Buddy Healthcare?

For answering the research question, four investigative questions (IQ) were defined.

IQ 1: What are the costs of employing a software developer in-house in Finland?

IQ2: What are the costs incurring from the employment of a software developer in-house but located in Germany?

IQ 3: What are criteria for selecting outsourcing service providers?

IQ 4: What countries are suitable to source work in software development from?

IQ 5: What is the cost of work by a software developer in countries suitable for outsourcing?

Table 1. below presents the theoretical framework of this thesis, its research methods, and the results in chapters for each of the investigative questions.

Table 1. Overlay matrix

Results (chapter)	Investigative question	Theoretical Framework	Research Methods
4.1	**IQ 1: What are the costs of employing a software developer in-house in Finland?**	Cost of labour	Desktop study & Quantitative research: interview
4.2	**IQ 2: What are the costs incurring from the employment of a software developer in-house but located in Germany?**	Cost of labour	Desktop study & Quantitative research: interview
4.3	**IQ 3: What are criteria for selecting outsourcing service providers?**	Outsourcing	Desktop study

4.4	IQ 4: What countries are suitable to source work in software development from?	Outsourcing	Desktop study
4.5	IQ 5: What is the cost of work by a software developer in countries suitable for outsourcing?	Cost of labour	Desktop study

1.3   Demarcation

In the focus of this research stands the commissioning company Buddy Healthcare and its operations. The topic was limited to the department of software development, more specific the positions of back-end and front-end developers.

1.4   International Aspect

The international aspect of this thesis may be argued with the following factors. Firstly, the case organization is a born-global small to medium-sized enterprise. The company operates mainly in Finland and Germany but has additional projects for example in the United Kingdom, USA, and Singapore. Secondly, the field of research laid focus points on Finland and Germany, however, considered on global scale software development service providers for the research on outsourcing.

1.5   Key Concepts

For supporting the understanding of the focus areas of this thesis the following five key concepts were defined as follows:

Software development: The process of perceiving a problem statement, meaning requirements from a user, conducting analysis, and creating a problem-solving solution to be implemented to computers (Dooley & Zukowski 2011, chapter 1).

Cost of labour: The cost of employee compensation including salary and wage payments, fringe benefits like contributions to health insurance and retirement plans, payroll taxes, and paid vacation (Braun & Tietz 2015, 77).

Employee recruitment: The process of identification and attraction of talent, motivating job seekers to hand in applications, continuously keeping the applicants engaged with the

firm, and winning over the best candidates to accepting the offered position in the specific company (Stewart & Brown 2014, chapter 5).

Skills shortage: Employers face challenges in filling open positions in the organisation with suitable workers, a representation of the demand and supply imbalance on the labour market (European Commission's Directorate-General for Economic and Financial Affairs 2019, 11).

Outsourcing: A business establishes a contractual agreement with a third-party supplier to execute a specific amount of work and its management, for pre-defined time period, costs and the quality of the services performed (Oshri, Kotlarsky & Willcocks 2015, 8).

1.6 Benefits

This bachelor thesis brought primarily benefits to two key parties, the case company Buddy Healthcare Ltd Oy and the author's own academic and professional aspirations.

The commissioning company gained value by the execution of this thesis due to the fact the topic is from actual and current matters to the business. The outcome of this research may support the management of Buddy Healthcare in making strategic decisions.

Furthermore, this thesis combined the theoretical education the author receives at Haaga-Helia University of Applied Sciences with the tasks performed at Buddy Healthcare Ltd Oy in the position of Solution Manager.

With regard to further professional aspirations, this thesis enables the author to follow her desire to continue studying and allowing her to apply for a master's degree programme.

1.7 Risks and Risk Management

The main risk this thesis research process faced was the issue of successful time management due to the author working simultaneously for the case company and carrying out her responsibilities and tasks to the best extent. This risk was being managed by dedicating explicitly every week hours for the research and writing of the thesis.

Furthermore, the risk of access to necessary information and data collection may have influenced the outcome of this thesis. The Covid-19 pandemic and its implications have impact on accessing library material and organizing face-to-face interviews and consultations. However, this risk was managed by making use of online tools and services. As a matter of its uniqueness of this global crisis the outcome and return to normality are unpredictable, nevertheless more and more ways of adapting are found and implemented.

1.8   Case Company: Buddy Healthcare Oy

Buddy Healthcare Ltd Oy is a fast-growing start-up from Finland, operating in the digital health market. The business was founded in November 2015 by Jussi Määttä and the co-founder Peter Hänninen and Jukka Hassinen. The office is located in Valilla, Helsinki, Finland. The Software-as-a-Service business develops care coordination and patient engagement platform to automate and digitize processes in hospitals and clinics. Business is mainly conducted in Finland and Germany. However, international projects are executed globally. In 2019 the company size was reported at a total of 13 employees and the business was able to generate a revenue of 486 000 EUR in that year (Asiakastieto 2020). The key operations are performed in Helsinki, although, resulting from the continuous desire to expand to the German market, the author of this thesis was hired at the end of April 2018 to support the team in Helsinki as a Project Coordinator, now Solutions Manager. At the current point of time, additional team members located in Berlin have been hired on full-time basis to lead and support the operations in Germany.

Resulting from skills shortages in the IT sector and experiencing challenges in recruiting new team members for the software development department, the company saw the need for research on the matter of the labour cost of software developers. Due to the author's knowledge of the company, and her major specialization in accounting and finance, this need was developed further to now forming the topic for this bachelor's thesis.

2 The Cost of Work

This chapter introduces the key concepts and models, which are being applied in this research. By this means, the theoretical basis of this thesis is being established and builds the foundation for the following empirical section.

Figure 1 illustrates the connection of the economic theory of supply and demand of labour to the key concepts of talent recruitment and in-house employment, influenced by labour laws and collective agreements, versus outsourcing. This structure leads to the principle of the cost of labour. The linkage of components provides a comprehensive overview and thereby demonstrating a sufficient theoretical framework for this thesis topic (Figure 1).
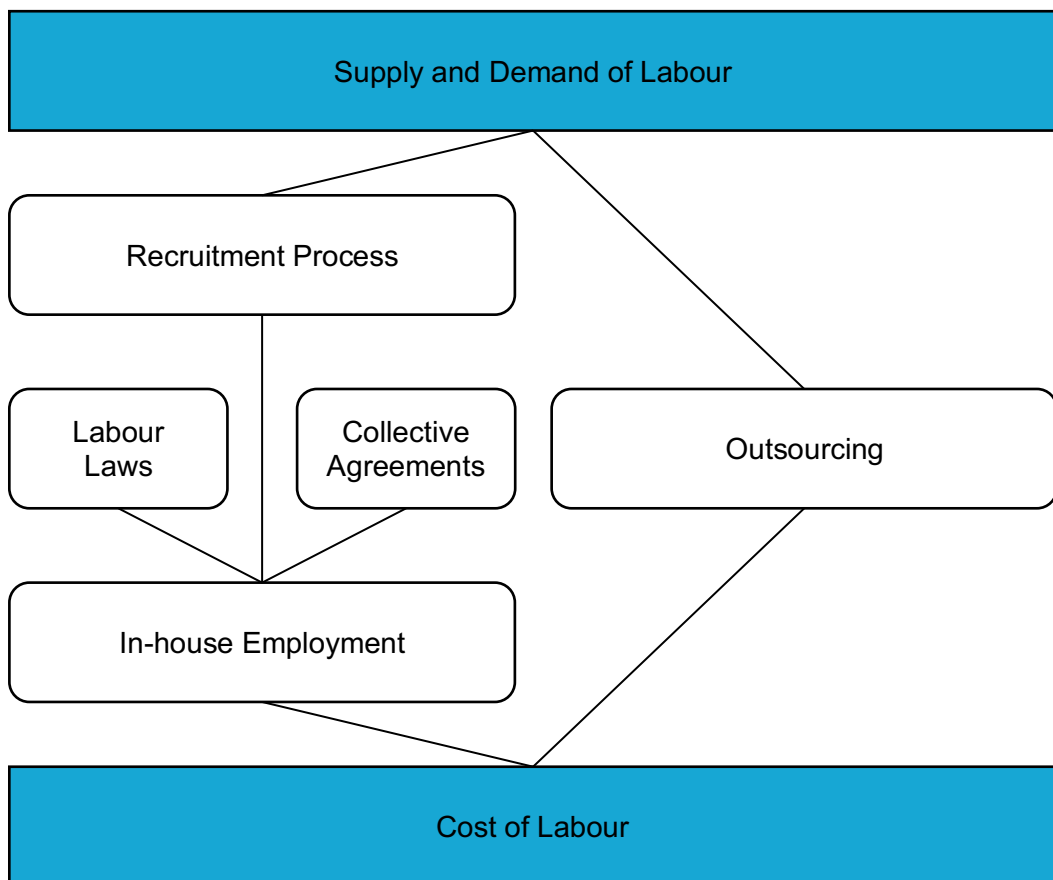
Figure 1. Illustration of Theoretical Framework

2.1 The Supply and Demand of Labour

In today's society money is the mean of being able to survive, to buy essentials for living like food, having a place to stay, and providing for one's family, while money does also give access to luxury items and increased living standards. The legal way of gaining wealth to afford living is performing work in exchange for compensation. What amount a worker earns in return for his labour, is depended on the supply and demand of labour.

In terms of factor markets, labour demand is determined by the supply of a good or service in another market, the so-called derived demand. Mankiw & Taylor (2014, 355) state the example of the need for computer programmers being tightly connected to the supply of computer software. For benchmarking purposes on how labour markets work in real-life, the following assumptions are required to be taken into account: companies are operating in competitive markets, workers can trouble-free move between jobs, and employers can hire as well as let go employees according to their needs. (Mankiw & Taylor 2014, 355-356.)

The reason for companies to hire employees is for them to add their contribution to the production process of a good or service, in return for compensation like wage payments. In other words, corporations have to pay for the labour activities provided by their employees. However, hereby the corporation is enabled to produce and sell goods and services. The demand for labour is closely connected to the organisation's sales. Adding an additional unit of labour to a firm's production process, the amount of output increases, the so-called marginal product of labour. This figure is limited by the principle of diminishing marginal product. When the amount of unit labour increases, but other factors of the production are fixed, and the marginal product of labour is declining. For example, if one worker can pick 100 apples in one hour, adding a second apple picker will not double the outcome, but only increase the output by a certain percentage. This is the result of the fixed factors like the limited size of land, and the fixed amount of apple trees. (Mankiw & Taylor 2014, 356-357.)

Basing on the assumption the company in question is operating in a competitive market where the market prices are constant, the value of the marginal product decreases with every additional worker hired. The so-called marginal revenue product is the additional revenue gained by employing an extra unit of input to the production. Competitive firms with the goal of maximizing their profits determine the quantity of labour by the point when the value of marginal product equals the wage. Consequently, the value of marginal product graph is the labour demand graph. (Mankiw & Taylor 2014, 358.)

The labour market's other component is the labour supply, workers offering labour in exchange for wages or salaries. In this context, individuals are facing the decision between work and free time. A person has to decide if they spend one hour working and receive compensation for the services performed, or rather has free time incurring the opportunity cost of the same value as the compensation by not working. This trade-off decision is affected by wage. The labour supply curve shows how employees decide between work and

leisure time in response to fluctuations of the opportunity costs. (Mankiw & Taylor 2014, 360.)

Reaching equilibrium in the labour market implies the balance of supply and demand of labour, achieved by wage and quantity of labour adaptations. In this market situation and taking into account all firms follow the business strategy of profit-maximizing, organizations have hired employees at equilibrium wage until the point they no longer consider it profitable, meaning until the value of the marginal product is at the same level of wage. Any change in supply or demand has effects on the equilibrium wage and consequently, on the value of the marginal product in equal amount. Figure 2 visualizes the equilibrium in a labour market. (Mankiw & Taylor 2014, 364.)
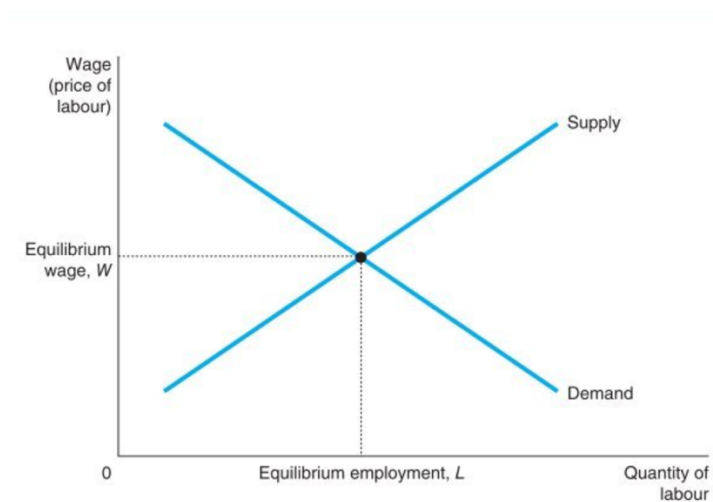
Figure 2. Equilibrium in a Labour Market (Mankiw & Taylor 2014, 364)

Certain events may cause shifts in either the labour supply or labour demand. The labour demand may be affected by fluctuations of the output price, technological inventions, and the supply of factors needed for the production (Mankiw & Taylor 2014, 359-360). On the other hand, labour supply may shift due to trends, like more working women and fewer stay-at-home mothers, availability of alternative job openings, and immigration (Mankiw & Taylor 2014, 363-364). As an example, immigration affects an increase in the number of available workers, leading to a shift of the supply curve to the right. The surplus of labour causes the lowering of wages workers receive. Hence, it is profitable for companies to employ more workers. Similarly, an increased interest in a certain product raises its price, causing an increased demand for labour. This situation would be represented by a shift of the demand curve to the right. (Mankiw & Taylor, 2014 365-366.)

Skills shortage can cause an imbalance between the labour supply and demand. Due to the fact, there is only a limited number of workers suitable to fill the open positions in organisations, the labour demand exceeds the supply. As a consequence, companies offer higher salaries to attract suitable talent to join their organisation. (European Commission's Directorate-General for Economic and Financial Affairs 2019, 11.)

The theoretical approach to the labour market misses to consider the factors of humans being individuals and jobs having distinctive characteristics. Certain jobs require little amount of training, are considered safe and the work can be executed by many individuals. On the other hand, there are professions that require years of education, expose the worker to danger, or demand a specific skill set. Only a limited number of people have the ability to work in such positions, therefore are higher rewarded and better paid. Compensating differentials describes the variation in wages that actualizes from non-monetary characteristics of diverse jobs. For example, nurses working during the night receive additional nightshift allowance, compensating for the inconveniences their working hours come along with. The human capital theory discusses the accretion of investment in individuals, like education and training. People face resource expenses for committing to high-level education, however thus they raise their personal marginal product. The investment into oneself leads to the entitlement of higher wage. Employers are ready to pay highly educated workers more believing, the higher marginal product of educated employees is increasing the productivity and profitability of the organisation. (Mankiw & Taylor 2014, 368-369.)

2.2   Employee Recruitment & the Cost of In-house Employment

The phrases "human talent" and "human capital" emphasize that employees are more than an expense for the organisation, but a strategic investment (Cavusgil, Knight & Riesenberger 2014, 524). For the best return on this investment, companies are looking into hiring the most promising applicants.

2.2.1   Employee recruitment

Strategic employee recruiting concentrates on reaching applicants who are going to be an excellent match for the positions available. Depending on the organization's needs, the recruiters may look either for candidates with specific expertise or less-skilled workers. The so-called broad scope strategy follows the approach of getting as many people as possible interested and hand in their application. Human resource departments may utilize this

strategy when they are looking into hiring workers for a job many individuals have the skill-set for. In addition, this approach can be beneficial when recruiting for a new position, where the pre-requirements and characteristics are at the point of hiring not yet outlined. On the other hand, there is the targeted skill scope strategy. Within this approach, it is paid attention to attracting a selected group of applicants fulfilling defined characteristics and requirements. Applying the targeted skill scope is beneficial when an exclusive number of individuals have the skills for successfully carrying out the job. (Stewart & Brown 2014, chapter 5.)

The terms broad and targeted skill scope are not transferrable to the geographical extension of the employee search. In the situation of an employer looking for workers to carry out low-skilled labour, they may prefer to look locally for applicants. For example, a local grocery store reaches out to job seekers within range of the store to fill open positions. However, recruiters adopting the targeted skill scope strategy are searching for candidates with specific expertise and thus are going to cover a large area, even internationally, for identifying the limited number of individuals meeting the job requirements. (Stewart & Brown 2014, chapter 5.)

In the recruitment process, human resource managers are going to consider internal and external sourcing. Firms may deliberate to fill an open position with an employee already working for the business. This decision for internal sourcing brings the benefits of knowing the employee's motivation and skills while having records of his performance and achievements. From the employees' point of view, this may bring the advantage of getting new challenges and assignments or even lead to a promotion. The risks affiliated with internal sourcing are relatively low. Alternatively, companies search for talents outside of the organization, hence applying the external sourcing strategy. These new employees may bring knowledge and skills not yet present to the team. External sourcing includes hiring temporary workers for pre-defined time periods and employing independent contractors. Hereby, the employer may flexibly increase or decrease the size of his workforce. Identifying and developing a unique competitive advantage on the basis of work conducted by temporary workers or independent contractors is going to be challenging for the firm due to their limited connectivity to the company and the ever-changing team constellations. (Stewart & Brown 2014, chapter 5.)

Especially when sourcing new talents externally, great importance lays on assessing the suitability of an applicant to the job position. The selection methods for identifying the most promising candidates are testing, gathering information, and interviewing. Employment testing is a practice to evaluate if the candidate has characteristics enabling him to

perform the tasks of the vacant position more effectively than others would. During the hiring process, applicants are asked to participate in tests examining knowledge, skills, abilities, and personality traits. Examples of such employment testing practices are the so-called cognitive ability testing, a highly valid and low-cost tool to predict a candidate's job performance, and the work sample testing, an instrument to evaluate an applicant's performance on tasks similar to the open position. The selection method of information gathering focuses on work experiences and qualifications of candidates, collected through forms and procedures such as application forms, resumes, and reference checking. At last, the practice of interviewing applicants allows company representatives to directly ask questions from the candidates, while having the opportunity to share information about the organisation and market the company to raise the interest of the candidate. Although, this selection method is considered as expensive. (Stewart & Brown 2014, chapter 6.)

Human resource planning allows companies to work more productively, as processes for the evaluation of the current employment levels, future needs for workers, and considering internal as well as external sourcing are set in place. This establishes a long-term outlook on employee recruitment and enables the development of consistent processes for acquiring skilled talents for open positions. New talent is attracted during the recruitment process through different sources such as job postings, employee referrals, print advertising, electronic recruiting, employment agencies, and campus recruiting. The methods job posting and employee referrals are associated with low cost and low employee turnover. By now a standard, recruitment through the company's website is inexpensive and the firm itself has it in their control to formulate the recruiting message. Overall, electronic recruiting is a low cost and fast mean of retaining new employees. However, private employment agencies are professional recruiters supporting organizations to find an excellent match for a particular position in exchange for a fee. This approach may be cost intensive. Same applies for on campus recruiting, even so organizations may by this mean attract talent, who is going to spend many years of their career within the firm. (Stewart & Brown 2014, chapter 5.)

The cost of recruiting consists of investments made for advertising and hiring agencies, in case of an employee referral, it may include a bonus payment to that employee. Furthermore, it covers all activities associated with the recruiting process, meaning the salary expenses for employees involved. The travel expenses of recruiters and potentially of the applicants are as well allocated to the recruitment cost centre. The cost per hire measure gives insights on what expenses a firm needs to face for finding applicants fulfilling the requirements and ultimately become employees. This measure is a combination of cost and quality analysis and it is calculated by division of the total costs of the specific recruitment

round by the number of employees hired in the same recruitment round. (Stewart & Brown 2014, chapter 5.)

2.2.2 Employee training

The successful recruitment and in-house employment of a new staff member is affiliated with costs. Expenses made for employee training is an example of such costs.

Training programs are organized by companies to support their workers in the learning process and acquiring of knowledge, attitude and skills in relation to their job. In the beginning of starting a new position, it is from importance the new employee learns about the workplace setting, the industry the business is operating in, about the business itself, and the day-to-day activities of the new position. Continuous education programs are necessary to be organized to keep staff members up to date with the company's operations. Such educational trainings may include instructions in the usage of new software, or about new products and services provided to customers. Generally, organizations are investing in employee training for three reasons. Offering training opportunities raises the employees' commitment and motivation. In addition, the overall performance of the organization may be raised by employees having the skills and knowledge to carry out their tasks more efficiently and effectively. Lastly, the investment in training supports businesses in meeting their strategic objectives, due to the employees having the skills, attitude and knowledge essential to accomplishing the appointed strategic goals. (Stewart & Brown 2014, chapter 9.)

The costs associated with training can be categorized into visible and hidden costs. The category of visible costs covers the expenses incurred by developing the training program, the costs of delivering the training to the employees, considering here the method of training such as face-to-face setting or remote teaching, and the money spent on the instructor's salary. The hidden costs include the expenses made to compensate the employees participating in the training while covering the loss of productivity resulting from the employees' attendance. Furthermore, the risk of wasted investment falls in the category of hidden costs. Meaning the organization may face expenses without the participants having gained additional knowledge or skills. (Stewart & Brown 2014, chapter 9.)

2.2.3   Cost of in-house employment

The cost of in-house employment is to a big share made out of the compensation for the employees' performance. Employee compensation implies the process of reimbursing and rewarding workers for the contributions performed and delivered to the organization. This compensation package includes the salary or wages paid to the employee, insurance and retirement plan contributions as well as paid holidays. Wages and salary payments can either be base pay, intending a fixed amount is paid each pay period, or a variable amount depending on the performance of the employee. (Stewart & Brown 2014, chapter 12.)

Organizations benefit in various ways when paying their workers good in comparison to the industry. Firstly, the company is gaining interest of more suitable applicants, while these workers, when hired, tend to stay longer within the same company and hence reduce the cost of employee turnover. Additionally, good compensation provides the employees with guidance and a set of expectations they are required to meet. The linkage of performance to the incentive system can lead to higher motivation under the staff members and encourage higher performance in producing increased numbers of goods and services. (Stewart & Brown 2014, chapter 11.) Rewarding an employee for his personal performance is called individual incentive, while group incentive describes the rewarding of a team of employees for their accomplishments (Stewart & Brown 2014, chapter 12).

In the determination of wages and salaries, companies make their decisions based on pay level, meaning the management decides on the amount an employee earns by setting it in relation to what the same employee could earn in an equal position in a different organization. Pay surveys give insights into what other companies in the industry or geographical area pay their employees. An organization may choose from three strategies of pay level to determine which amount to compensate their workers with. When using the meet-the-market pay strategy, a company evaluates the pay from a group of selected organizations and sets its pay level on average to the groups'. As the name states, the lag-the-market strategy sets the pay level of the business lower than the average pay of the organizations considered in the comparison. On the other hand, the lead-the-market strategy encourages to pay above average salaries to the employees. Even though the company faces higher expenses in terms of pay, it attracts excellent candidates to join the company, while the current staff members are encouraged to perform better and tend to stay longer with the company. Hence, the costs for employee turnover are kept low. (Stewart & Brown 2014, chapter 11.)

Furthermore, in terms of pay level, businesses have to consider governmental regulations on base pay, such as minimum wage and collective agreements. In Germany, the amount of wage employees are entitled to is regulated by statutory minimum wage, which was taken into force in January 2015. By July 2021 the minimum wage rate is going to be at 9.60€ per hour. (Eurofound 2021.) Finland, however, belongs to the group of six European Union member states not applying statutory minimum wage, but collective agreements are demarcating the minimum wages (Jokivuori 2009). According to the European Company Survey 2019 in Finland 90% of establishments have set wages for any of the employees by some type of collective agreement, while in Germany under 40% of establishment have defined their wages by collective agreements (Eurofound and Cedefop 2020).

Besides the above-mentioned governmental regulations on base pay, a share of employee benefits is enforced by law. Other employee benefits may be offered voluntarily by companies. (Stewart & Brown 2014, chapter 12.) In the German social security system, contributions are coming directly from employees and employers to finance the current costs of pension and unemployed payments, as well as the expenses for sick people and others in need of care. Contributions to pension, health, unemployment, and nursing care insurances are paid by equal shares by employers and employees, although accident insurance is to its full extent covered by the employer alone. (Germany Trade & Invest 2021.) In Finland the employer pays contributions to health insurance, earnings-related pension insurance, unemployment insurance, occupational accident and diseases insurance and if applicable by collective labour agreement group life insurance (Finnish Tax Administration 2020).

2.2.4   Employee separation

The employment of staff is associated with costs, yet the separation of employees is cost-intensive too. The company faces expenses resulting from the necessity of hiring a replacement, from decreased productiveness, and the negative effect on customer experience. Hence, organisations with a low employee turnover rate are able to focus their resources on identifying as well as strengthening their competitive advantage and increase their efficiency. The exit of a good worker may damage the organisation strongly when this worker starts employment for a competitor. Strategies for employee retention establish ways to maintain staff members once they have started their position. As it is challenging if not impossible to change the mind of an employee having made the decision to leave the organisation, it is from importance to continuously assess the employee satisfaction, invest in work environment improvements and benefit programs. Companies are

hoping to retain good employees only, due to the fact that the employment of poorly performing workers implies a loss of money. Actions taken to discipline badly performing employees are taking energy and time of managers, and thus money from the company. (Stewart & Brown 2014, chapter 7.)

Stewart and Brown (2014, chapter 7) state staff members with average performance tend to stay long-term with their employers. Whereas high performing workers are more likely to receive job offers with appealing higher salary levels and chances of more interesting and rewarding tasks. Companies are committed to keep the dysfunctional turnover rate low, meaning the goal is to have none of the good employees voluntarily leave as they bring valuable contributions to the organisation. On the other hand, the termination of unproductive workers initiated by themselves is welcome. However, in case the organisation has to lay off the employee costs in form of dismissal packages may incur. (Stewart & Brown 2014, chapter 7.)

2.3   Outsourcing

In the modern global markets with international companies operating in the same industries, organisations face challenges in competing effectively. Limited resources for development and maintenance of qualified human capital are affecting companies and how they can position themselves in the market in relation to their competitors. The increasing connectivity and other services of the internet enable even small companies to access the global competition. As a result of these advancements, organisations have established strategies utilizing outsourcing to strengthen their foothold in the global competitive market. (Oshri, Kotlarsky & Willcocks 2015, 7.)

The opportunity for global sourcing, and it becoming an increasing trend, was enabled through different changes in circumstances. Technological developments like the internet and advanced means of telecommunicating in addition to standardisation of IT processes created possibilities for companies to interact and organise their operations globally. The availability of low-cost workers in developing countries as well as improvements in their infrastructures attracted international corporations. Moreover, changes and improvements in their economic and political climates enhance the appeal of these developing countries and therefore they gained interest from foreign businesses. (Oshri, Kotlarsky & Willcocks 2015, 11.)

At the time a company looks upon the strategic decision of sourcing, the focal firm may choose from different sourcing models. The term insourcing describes the practice of utilizing the company's own resources. When utilizing domestic outsourcing, a contract between the focal firm and a third-party provider both located in the same country is established. The parties are in agreement upon what labour for a defined period of time at a pre-set price and on a certain level of quality is performed by the supplier. In comparison to domestic outsourcing, offshore outsourcing indicates the third-party service provider is not situated in the same country, but offshore in a distant location. When a firm entirely owns a subsidiary in a foreign country and establishes business functions there, captive or in-house sourcing is applied. So-called build-operate transfer (BOT) models outline the contractual outsourcing agreement of a focal firm and an either offshore or nearshore supplier. The contract states the service provider takes the responsibility of building and operating a service centre long-term. However, the focal firm continues to have certain rights in defined circumstances to intervene. Another sourcing model is the joint venture approach to outsourcing or offshoring, where focal firm and offshore service provider join a partnership, and each bring their share of resources to the new venture. (Oshri, Kotlarsky & Willcocks 2015, 31-33.) Business process outsourcing (BPO) describes the situation when companies acquire services like human resource functions, IT services and technical support by external third-party suppliers. By this means, the company may reduce the costs incurred by carrying out services non-related to its core competencies and not essential to preserving its competitive advantage in the marketplace. BPO back-office activities deal with internal, upstream business operations for example payroll, while BPO front-office activities handles external, customer-related actions like technical support. (Cavusgil, Knight & Riesenberger 2014, 473.)

According to Oshri, Kotlarsky and Willcocks (2015, 10) the most common drivers for outsourcing is cost reduction, followed by a gateway to skills unavailable inside the company, having flexibility in the utilization of human capital, accessing state-of-art business knowledge owned by distributors, and conquering internal challenges plus solving reservations towards change. Companies take outsourcing into consideration as mean to obtain cost benefits by creating an economy of scale and reducing or stabilizing the overhead costs. Hence, corporations may focus on their core business operations and on identifying exclusive competencies, thus creating a demonstrative competitive advantage. Besides cost advantages, organisations are applying sourcing strategies to access a vendor's expertise and intellectual property, which when developed by the organisation itself would incur high costs or not even be possible to develop in-house. Moreover, companies utilizing suppliers have the ability to flexibly in regard to the changing demand and at low cost upscale or downscale the production. The product or process design cycle time may

be reduced by outsourcing separate components of the system to in that field specialised suppliers. (Oshri, Kotlarsky & Willcocks 2015, 12.)

When a company makes use of outsourcing activities it is exposing itself to various risks. The firm may face untransparent value for its outsourcing investment and expensive supplier management. Outsourcing business operations may lead to losing key competencies in-house while having a strong dependence on a third party for executing the outsourced activities. An overdependence may unfold threats and endanger the company's existence, especially considering confidentiality of data and security. Missing influence in the governance and loss of control may affect the quality of the products, and potentially harm the company's image. When being exposed to one or more of the risks mentioned above, businesses may initiate backsourcing. (Oshri, Kotlarsky & Willcocks 2015, 13.) Focal firms may consider the early termination of outsourcing contracts, when the cost savings turn out to be lower than prognosed due to factors like incompatibility arising by cultural as well as organizational differences. Also, environmental factors cause unanticipated complications for buyers and suppliers of outsourcing agreements. The international partnership is mandatorily obliged to act conform tariffs and trade barriers, while facing exposure to currency fluctuations possibly leading to increased prices. With production or manufacturing abroad firms are exposed to potentially high expenses arising from energy and transportation. (Cavusgil, Knight & Riesenberger 2014, 482.) In that sense, companies are recommended to assess the benefits and risks of outsourcing and make their choice of sourcing based on their analysis.

Another aspect to be evaluated in the decision-making process for outsourcing is the location where the service provider is situated because this may be crucial for the success of the outsourcing strategy. The 2019 Kearney Global Service Location Index (GSLI) report assesses 50 countries in their capacity to perform business process outsourcing and information technology outsourcing (ITO). In the evaluation, the categories financial attractiveness, people skills and availability, business environment and digital resonance are applied. Digital resonance is a newly introduced category due to automation and cybersecurity becoming of increasing importance in outsourcing choices. Low-cost labour is facing replacement by automation, while the need for high-expertise workers educated in automation is increasing. The significance of cybersecurity enlarges due to sensitive data and essential business information being shared with service providers. (Kearney 2019.)

The 2019 Kearney GSLI ranks India in first place, followed by China and Malaysia. Another three Asian countries are listed in the top seven of the ranking and clearly shows the strong dominance of Asian countries in being attractive locations for offshoring. Brazil

(9th), Mexico (11th) and Colombia (13th) are representing the competitiveness of Latin American countries, whereas European countries are represented with United Kingdom (8th), Estonia (12th), and Germany (15th). The United States ranks 6th, showing a strong improvement since 2017's 22nd place. The reason therefore is the US' strength in the newly introduced category of digital resonance. (Kearney 2019.) Figure 4. in subchapter 4.4 shows the complete 2019 Kearney GSLI ranking.

A company's strategic choice for global sourcing is influenced by its company goals and the benefits gained. Through outsourcing and by this mean accessing low labour cost markets, a firm may follow its objective of improving the profitability of the business. Besides cost efficiency, outsourcing decisions may result in rapid corporate growth, faster and overall access to new markets. Challenges of attracting high-educated human capital domestically can be overcome by sourcing globally for qualified personnel. In proportion with the firm's goals, utilizing outsourced vendors may improve the productivity as well as enhance technological flexibility. (Cavusgil, Knight & Riesenberger 2014, 480-482.) These potential advantages companies may achieve are drivers for the decision to outsource.

3 Research Methods

The following chapter introduces the research design and research methods applied. In addition, the data collection as well as the data analysis methods are explained in detail. The connection between the data sources and the investigative questions, as introduced in chapter 1.2, is established.

3.1 Research Design

The research design for this thesis was divided into two phases. The first phase of the research identified the costs associated with the work performed by a software developer employed in-house located either in Finland or Germany for the commissioning company Buddy Healthcare Ltd Oy. This phase aimed to answer the investigative questions 1 and 2. Moreover, the second phase of the research investigated criteria for selecting outsourcing services providers, which were applied to narrow down the list of potential countries from which to seek software developer services. The costs of receiving such services from selected countries suitable for outsourcing were identified. In this manner, the investigative questions 3, 4 and 5 were addressed. Figure 3. illustrates the connection of all elements forming the research design.
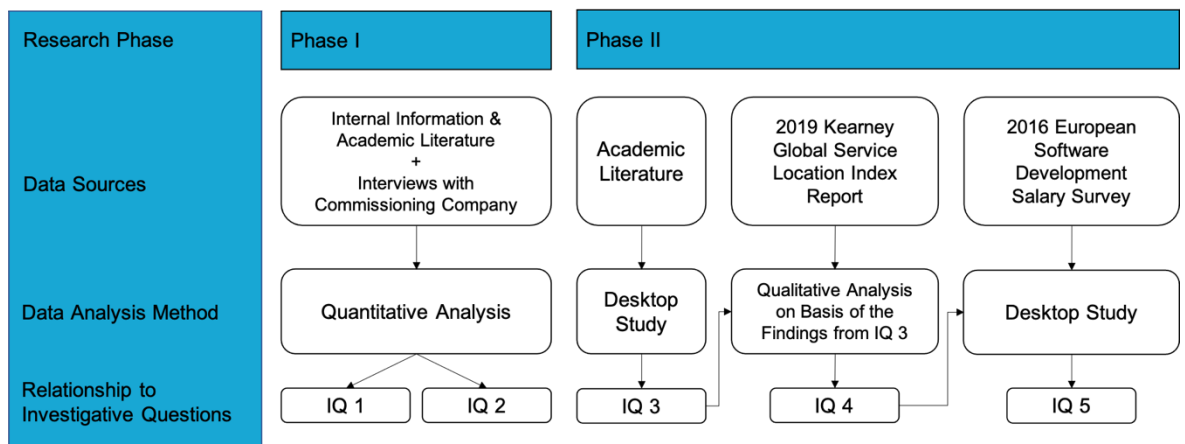
Figure 3. Research Design

The data sources applied in this research vary but can generally be divided into primary data and secondary data. According to Saunders, Lewis and Thornhill (2019, 316) secondary data includes raw data as well as summarized data, which was initially collected for some purpose, but is now used specifically for another research. On the other hand, primary data is collected explicitly for the purpose of the ongoing research. (Saunders, Lewis & Thornhill 2019, 316.)

When utilizing secondary data sources, these are needed to be evaluated based on three criteria. First, the data must be assessed on the overall suitability as of providing answers to the research objectives. Next, the information must be obtained from reliable and valid sources. At last, the evaluation considers if the benefits of the secondary data in question outweighs the costs of acquiring and accessing the data. (Saunders, Lewis & Thornhill 2019, 335-342.) An analysis of the secondary data used in this research on the basis of the three criteria has been executed by the author.

3.2 Data Collection and Data Analysis Methods

In phase I of this thesis, the data collection included primary and secondary data. Primary data was obtained during the interviews with the CTO and CEO of the commissioning company. In addition, secondary data was applied in form of academic literature, publicly available governmental publications including statistical data as well as internal information the author has access to due to her employment within the commissioning company.

Considering the collection of primary data through interviewing, either an objective or subjective approach may be selected. The objective approach focuses on collecting data based on facts. Whereas the subjective approach takes the views and the culture of the interviewee into account. (Saunders, Lewis & Thornhill 2019, 388-389.)

For the separately conducted semi-structured interviews with Jukka Hassinen, CTO of Buddy Healthcare, and Jussi Määttä, CEO of Buddy Healthcare, the objective approach was chosen. The interview questions were submitted to both respondents in advance. The interview with Jukka Hassinen took place on May 4th 2021 and lasted for 27 minutes. The interview with CEO Jussi Määttä was held on May 5th 2021 and lasted for 33 minutes. The meetings were conducted online through the zoom.us platform due to the still valid governmental Covid-19 regulations encouraging employees to work remotely. The platform has been in use at Buddy Healthcare even before the Covid-19 outbreak, and the interviewer as well as the respondents are deeply familiar and confident in using the service. With the permission of the interviewees the conversations were recorded. The style of the interview was professional, but informal due to the interviewer and respondents being colleagues for several years and the company culture being a start-up environment.

The interview framework may be reviewed from the appendices (Appendix 1). The information gained through the interview was brought into context with the secondary data. By

the means of quantitative analysis answers to the investigative questions 1 and 2 were provided (Figure 3).

Phase II of the research applied secondary data. Information was collected through desktop study of academic literature to set criteria for selecting outsourcing service providers in the field of software development for the commissioning company Buddy Healthcare Ltd Oy. This approach led to answering the investigative question 3 (Figure 3).

Secondary data is differentiated into different types. Raw secondary data is information with little to no processing, while on the other hand, compiled data has been processed and potentially been summarised or sorted. (Saunders, Lewis & Thornhill 2019, 318.)

The knowledge acquired in the first step of phase II was used in combination with the 2019 Kearney Global Service Location Index Report, which is available for free online and has been published by the global management consulting firm Kearney (Kearney 2021). The compiled data of the Kearney report was analysed based on the criteria established earlier in the research. Consequently, specific countries were identified considered suitable for Buddy Healthcare to source software developer services from. The results are addressing investigative question 4 (Figure 3).

On the basis of the results of investigative questions 3 and 4, the research identified the cost of work by a software developer in the selected countries considered suitable for outsourcing by the commissioning company Buddy Healthcare. The publisher O'Reilly Media performed in 2016 the O'Reilly Software Development Salary Survey, where in a time period of five months more than 5,000 individuals participated. Data was received from 51 countries. The primary data was utilized in the 2016 Software Development Salary Survey written by John King. However, the collected data included 1,353 responses from European countries. The authors Andy Oram and John King saw the potential of creating a report focusing on Europe, the so-called 2016 European Software Development Salary Survey report. The data source here fore is considered secondary data. (Oram & King 2016.)

The 2016 European Software Development Salary Survey report presents a full model with coefficients, allowing software developers to calculate the value of their annual salary in USD on the basis of the criteria they fulfil (Oram & King 2016). Hence, the investigative question 5 is addressed.

In this thesis, the European version of the salary survey report was applied, due to the fact, the outcomes of the investigative question 4 showing only European countries as

suitable as outsourcing locations for Buddy Healthcare. In addition, the European report analyses in more detail different regions in Europe, which provides more informative insights on the total annual salary of software developers in specific countries and thus, is of great interest in regard to this thesis.

4   Results

This chapter presents the results of the research in subchapters according to the five investigative questions, which were introduced in chapter 1.2 Research Problem and Investigative Questions.

4.1   The cost of employing a software developer in Finland as Buddy Healthcare

The costs associated with the employment of a software developer in Finland cover expenses incurred by the company starting from the recruitment of the employee to the years of employment until the employee leaves the firm.

Buddy Healthcare follows the strategy of attracting new talents through its Careers-website, publishing open positions on digital media platforms, and encouraging employee referral. The Careers-website is hosted by Teamtailor, an applicant tracking system. This platform offers various recruitment features supporting the hiring process and allows Buddy Healthcare to run its external Careers-page in its company colours and design. (Teamtailor 2021.) Through this tool the hiring managers are enabled to publish open positions to different free job advertisement sides, like Google careers, Facebook jobs and the Finnish website bolt.fi, but also publish automatically paid advertisings to for example LinkedIn. When attracting software developers, the CTO spends time on writing the job advertisement, while the CEO utilizes the Teamtailor tool to publish it on different channels. Besides the expenses for hosting the Careers-website, the time spent by management must be taken into account. Additional costs may arise in case the company wants to utilize paid advertising for reaching a greater pool of talents. On the other hand, employee referral is associated with no expenses. By these means, Buddy Healthcare is hoping to attract suitable candidates for the positions web front-end developer and back-end software developer.

In terms of costs, according to Jussi Määttä, CEO, Buddy Healthcare covers a yearly fee of 2000 € for the usage of the Teamtailor platform. After the time spent on the initial setup, the tool enables the hiring managers to save time in attracting talent and publishing open positions on various channels. If utilizing paid advertising on LinkedIn, the minimum fee for sharing a job advertisement is at around 400 €. Buddy Healthcare spends on average 600 € on publishing job openings.

Due to the fact, attracting suitable and committed talents has proven difficult, Buddy Healthcare has utilized head-hunters for finding new additions to the technology and prod-

uct team. These applicants are still required to participate in the standard recruitment process of Buddy Healthcare. However, the process is considered faster, and the leads are of higher quality as a pre-screening and a suitability assessment was done by the headhunter. According to the interviewees, these recruitment consultants are paid on success fee basis. Meaning after successful recruitment of an employee found by the head-hunter, the head-hunter receives a payment in the amount of two months' salary of the new hire.

The company Buddy Healthcare reserves its right to perform an extensive and formal hiring process for recruiting new software developers. This recruitment process consists of several steps. Firstly, the applications received are evaluated on the basis of expertise gained through work experience, education or projects done in free-time and the submitted motivation letter. A shortlist of suitable candidates for further consideration is established. Next, these candidates are invited to participate in a face-to-face interview. Here, the interviewer from Buddy Healthcare, CTO Jukka Hassinen, is going to introduce the company as well as the position the candidate has applied for. The company representative is going to ask questions regarding the applicant's motivation and wishes and is interested in getting an insight into the technical capabilities and communication style of the candidate. In the following, the documents of the applicants are reviewed and evaluated on work history or attended educational programs. Usually, a second-round interview between the applicant, the CTO and a member of the technology and product team is scheduled. Occasionally, more detailed assessments are organised by Buddy Healthcare to determine the applicant's technical skills and motivation. The applicant may be asked to carry out a test assignment or technical test with approximate workload of up to 8 hours. The performance is going to be evaluated and scored. The applicant is asked to join a final interview with Jukka Hassinen, CTO, and Jussi Määttä, CEO. As a last step before the decision making, Buddy Healthcare carries out background verification by calling references provided by the applicant and checks the security clearance with the Finnish Security Intelligence Service (Supo). On the basis of the performance of the candidate throughout the employee recruitment process, the management team of Buddy Healthcare is going to make its hiring decision. (Buddy Healthcare Careers 2021.) The time-consuming recruitment process is a mean to ensure highly talented employees are found, with commitment to their new position and fit within the team. Buddy Healthcare aims to find great matches, who stay for a long period of time with the company.

In regards of employee recruitment, the Teamtailor platform allows the hiring managers to manage the process and use the tool for screening applicants. According to Jukka Hassinen, setting up the test assignment was initially time intensive, but it may be reused. This comes along with the advantage the evaluation can be completed faster, as the ones

assessing the test can spot the differences between developers easier. The CTO estimated, he spends less than five hours on each candidate during the hiring process. Set into financial context, the CEO stated the cost for the employee recruitment is less than 1000 €, included here are job advertisings.

At the point a software developer joins the Buddy Healthcare team, an employee training is organized. Both Jussi Määttä and Jukka Hassinen agree the training has potential to be improved. However, the human resource platform Personio is utilized providing an onboarding checklist for all new employees. This checklist provides topics which shall be addressed to provide the new employee with enough information to sufficiently start working, but also asks from the new hire to submit certain HR information to the company. Jussi Määttä estimated the introduction to the company and the industry, setting expectations for the new software developer and other administrative as well as HR related tasks take a few manhours. The cost of work is the only expense faced in terms of employee training.

According to Jukka Hassinen, besides the formal part of the employee training, the software developer is mainly trained by the learning-by-doing approach. Depending on the field of work, a front-end developer is going to be able to work quickly independently, while for back-end developers training sessions for introducing the infrastructure are organized. The CTO as well as the technology and product team offer support during the first weeks and months of employment according to the needs of the software developer.

In general, the work for employees at Buddy Healthcare Ltd Oy is organised that working remotely is possible. This working structure had been established before and therefore independently from the Covid-19 outbreak. The headquarters in Helsinki are the office space which may freely be used by all employees and offers various features to support the daily work. Employing an additional worker does not affect the costs incurred by renting the office space.

However, in terms of equipment software developers need high performing computers for performing their duties. If the developer does not have or not want to use their own device, Buddy Healthcare offers to buy a laptop of their choice. Jussi Määttä follows the principle to provide workers with the tools and equipment they need as this leads to increased productivity. The approximate amount of money spent on equipment for software developers is at 2000 €.

Considering the employment relationship, in Finland the Employment Contracts Act published by the Ministry of Employment and the Economy (2014) defines the minimum terms of employment, based on provisions such as labour legislation and collective agreements. If a firm is organised in compliance with the Collective Agreements Act, the employees working conditions are determined by the collective agreement applicable for the profession s/he is performing. (Ministry of Employment and the Economy 2014.)

At Buddy Healthcare, employment terms for software developers are according to the collective agreement of the IT service sector. Within the collective agreement, the salary is determined according to the competence classification model. If a workplace-specific salary scheme is applied, the minimum wages stated must at least be paid. (YTN 2021, 14-15.) Table 2. below shows the minimum salaries as of 1st of February 2021, for the task category Design/ Development for the salary level indictors Level 1 to Level 3A (YTN 2021, 18). The salary level indicators table as presented in the collective agreement of the IT service sector by YTN is attached in appendix 2 (YTN 2021, 16).

Table 2. Minimum salaries for the task category Design/Development, 1 February 2021 (YTN 2021, 18)

Task Category	Level 1	Level 2	Level 3	Level 3A
Design/ Development Such as programming, data processing, application and system design, and specialist tasks	2321	3026	3800	3987

The actual pay a newly hired front-end or back-end software developer is going to receive depends on the negotiations taking place between the Buddy Healthcare management team and the candidate before signing the employment contract. However, according to Statistics Finland (or in Finnish Tilastokeskus) application designers, including job titles software developer, senior software developer, software designer, application specialist, and software engineer earned in 2019 a salary at a median of 4291 € per month (Tilastokeskus 2020). This amount may be seen as a guideline.

In conclusion, Jussi Määttä estimated a new hired software developer costs Buddy Healthcare in the first year of employment, including all the recruitment costs, 120,000 €. In case of involving a head-hunter to identify suitable talents for the company, this expense may be increased by 10,000 € to 15,000 €.

Considering the possibility of employee separation, employers face costs when a worker leaves the company. The amount of expenses incurred depends on the type of job the departing employee performed. If the worker held a position which may be filled again in reasonable time and on low cost with considerably short employee training, the expenses of the employee turnover are relatively low. On the other hand, if the employee leaving is a high-skilled worker, with expertise and knowledge potentially gained on expense of the employer, the organisation faces great costs as a result of the employee separation. The costs associated with the employee turnover may be calculated by applying different methods. The first approach calculates the sum of the apparent direct costs, such as recruitment of a replacement and the training of that newly hired employee. Secondly, the costs may be identified by considering all indirect costs around the resignation such as the costs of administration dealing with the employee separation, and the coverage of the open position for the time of vacancy. Additionally, the lost productivity and unrealised opportunities are taken into account. Quantifying all elements of employee retention has proven demanding, hence the estimation of the total cost of employee turnover in an organisation is considered very difficult. According to Taylor (2002, 41) academic researchers and consultants estimate the costs of employee turnover at the lowest at 50 % of the annual salary for the position, and at the highest at 200 % to 250 % of the annual salary. (Taylor 2002, 40- 41.)

The various positions around software development at Buddy Healthcare are considered to be held by high-skilled employees. Filling any of these positions has proven to be challenging. It may be assumed, that if an employee in the technology and product team leaves Buddy Healthcare, it is to great expense for the company.

4.2   The cost of employing a software developer in Germany as Buddy Healthcare

The previous chapter laid focus on the cost of employing a software developer in Finland, considering here the costs of the hiring process and of the period of employment, in addition to the expenses associated with the employee leaving the company. This chapter identifies additional costs the company Buddy Healthcare may face when hiring a software developer in Germany.

In regard to attracting talent in Germany, Buddy Healthcare would make use of the same strategy and publish the job advertisement on the same media channels, but with the focus area Germany. A translation of the job advertisement is not considered necessary as proficiency in English language is a must for an applicant. Jussi Määttä, CEO, sees attracting suitable talents as even more challenging in Germany, as in Finland the company

does have a good reputation and interested individuals are able to check information about the company and its references online. On the other hand, Germany's size in terms of inhabitants is many times bigger than Finland's population, and brings the advantage of having a bigger talent pool to source from.

Moreover, the employee recruitment process would be the same in Germany as for candidates being hired in Finland. However, different type of questions or test assignments may be used in case the German employee would be assigned different responsibilities. Potentially that employee would work on local German projects and integration projects, which require different skill sets and capabilities. The assessment during the hiring process would be adapted to be able to find a suitable match for the different job description. As a result of the governmental regulations on preventing the spread of Coronavirus, Jukka Hassinen has conducted video job interviews online and sees that generally suitable for when hiring in Germany.

When considering the costs of the recruitment process, Jussi Määttä shared the insight that in Germany the notice period with employers is longer than what is usual in Finland. In the situation, a currently employed software developer decides to apply to work for Buddy Healthcare, and he is hired, after the decision making there is a waiting period of up to couple months for the new hire to be able to start the work for Buddy Healthcare. In addition, due to the fact employment contracts in Germany are more complex, Buddy Healthcare would involve a lawyer and face the expenses for that consultation.

After the successful hire of a software developer in Germany, the new employee would be offered to visit the Helsinki office for a one to two weeks stay for employee training and team building. The company would carry the expenses for the flights, the cost of the accommodation, and daily allowance payments to the employee. The CEO estimated the total cost of such employee training is at around 2500 €, consisting of 400 € expense for flights, 1000 € for accommodation, and 1000 € for daily allowance payments. Considering the on-going Covid-19 restrictions, and the work environment for software developers being nevertheless online, Jukka Hassinen, CTO, believes the employee training could be organised fully remotely.

In terms of equipment, there is no need seen for additional purchases to set up the software developer in Germany.

In Germany the Act Regulating a General Minimum Wage defines that every worker is entitled to remuneration by their employer of at least the amount of the minimum wage (Bundesministerium der Justiz und für Verbraucherschutz 2020). The minimum gross wage is since 1st of January 2021 at 9.50 € per hour (Mindestlohn Kommission 2021). Due to the fact software developers are highly educated workers, and there is a shortage of such, the minimum wage requirement is in essence always met.

On average a software developer in Germany earns 5.149€ per month. Interestingly, the monthly pay for a software developer varies by each German state. Software developers in Bavaria (5.615 €), Baden-Wuerttemberg (5.604 €), Hesse (5.258 €) and Berlin (5.078 €) earn the most, while the least is paid in Saxony-Anhalt (3.802 €), Mecklenburg-Western Pomerania (3.910 €) and Thuringia (4.001 €). The numbers are the median monthly gross pay for full-time employees, including all gender, and all age groups. (Bundesagentur für Arbeit 2019.)

Considering the first year of employment, Jussi Määttä assessed a software developer in Germany would cost the company 10,000 € more than if employed in Finland, due to the additional overhead costs. Not respected here is that the salary standards for software developers in Germany seem to be higher than in Finland.

In concluding, Germany is considered an attractive location for hiring software developers due to the bigger talent pool. Furthermore, Buddy Healthcare sees the need for having a German speaking IT professional in their team, who would be able to lead client projects in German. The different set of tasks for the German employee, and therefore different requirements in capabilities, justify the higher costs associated with the employment of a software developer in Germany.

4.3 The criteria for selecting outsourcing service providers

This subchapter is the beginning of the presentation of the outcomes from the second phase of the research. In the following, criteria were identified according to which outsourcing service providers suitable for Buddy Healthcare Ltd Oy may be selected. The commissioning company is considering to source software developer services in other countries besides Finland, where currently the product development operations are established. The consideration of this strategic move originates from trying to overcome the high costs of employing software developers and the shortage of available workers in the countries of operation.

When a company is in deliberation about making a strategic decision towards outsourcing, these discussions come along with questions such as where to source the services from. By establishing certain factors which are beneficial to the company, the list of suitable outsourcing providers can be narrowed down to specific locations. This ensures the company minimizes the risks it is facing by choosing to outsource business functions.

Oshri, Kotlarsky and Willcocks (2015, 81) identified on the basis of several offshore location evaluation frameworks six factors for assessing a country's attractiveness in regards of outsourcing. The six factors are costs, skills, business and living environment, market potential, risk profile, and quality of infrastructure. (Oshri, Kotlarsky & Willcocks 2015, 81-83.) In the following, each factor is introduced, and applied to Buddy Healthcare's business operations.

Costs:
Companies debating outsourcing are going to set the factor cost into comparison to various possible outsourcing locations. The costs include labour costs, infrastructure cost such as expenses incurred to have internet access, office space, and corporate taxes. (Oshri, Kotlarsky & Willcocks 2015, 81.)

Buddy Healthcare values high quality work and due to the fact, the business handles sensitive data, the labour sources must be trustworthy and reliable. These requirements come with a certain price. However, the company seeks to contract with an already established software development service provider and avoids dealing with infrastructure costs.

Skills:
In the evaluation process of attractive locations for outsourcing, a company must examine the options based on the availability of desired skills. One country is more attractive than another if the talent pool includes the skills needed by the focal firm. In addition, it shall be taken into consideration if the outsourcing activities are planned to be short-term or long-term, as the latter requires scalability of labour resources. Especially in the process of outsourcing IT, the supplier landscape is needed to be assessed on three key areas of competencies: relationship, transformation, and delivery. Relational competency describes the supplier's willingness to align its business models with the one of the focal firm. Next, transformation competency implies the ability of the supplier to drastically improve its quality and costs. Lastly, delivery competency means the ability of a supplier to deliver goods or services according to the needs of the focal firm. (Oshri, Kotlarsky & Willcocks 2015, 85-86.)

Due to the fact, Buddy Healthcare is trying to compensate for the vacant positions of front-end and back-end developers, the skillsets of staff members employed by the outsourcing service providers must include quality education in the field of information technology, programming, or software development. Additionally, a mandatory requirement for an outsourcing service provider is proficiency in the English language. Receiving services in Finnish language is desired, however the company is aware finding this skill outside of Finland is very rare. (Buddy Healthcare Careers 2021.) The size of the talent pool in a country is of interest to Buddy Healthcare as potentially more services may be sought from the same service provider in the future.

Business and living environment:
The factor business and living environment allows a company to differentiate potential outsourcing destinations on the basis of the governmental situation, business environment, living circumstances and accessibility. The attractiveness of a country to be considered for outsourcing is influenced by governmental aspects like the country's policies on foreign investment, labour laws and level of corruption. In regard to business environment, an outsourcing provider is more likely to be chosen if the work ethics and company culture is in line with the focal firm. Moreover, the accessibility as of travel time and time difference affects the appeal of one outsourcing destination over the other. (Oshri, Kotlarsky & Willcocks 2015, 89-90.)

In terms of Buddy Healthcare, the time difference is a key defining criteria. The in-house employed members of the technology and product team are located in Helsinki, Finland. Workers are not required to be physically close thanks to the connectivity of the internet. However, teamwork, cooperation and communication must take place between the employees and the outsourcing service provider. Therefore, a time difference of plus or minus 2 hours to Helsinki Time, Eastern European Summer Time (EEST), can be considered feasible. Buddy Healthcare takes business ethics and conduct according to law seriously and requires the same from its partners and service providers.

Quality of infrastructure:
For countries to be considered as appealing as an outsourcing destination, infrastructure must be well established. This addresses telecommunication and IT concerning connectivity, network speed or network downtimes, but also real estate, transportation, and power supply. (Oshri, Kotlarsky & Willcocks 2015, 91.)

Due to the fact, Buddy Healthcare is looking for software development services performed by an outsourcing provider, infrastructure around telecommunication and IT are especially

important. Access to high-speed internet connections and reliable power supply is obligatory.

Risk profile:

The attractiveness of a country to be considered as location to gain outsourced services from is influenced by its risk profile. A destination where one needs to be concerned about personal security or property, and has high rates on fraud schemes, crime or terrorism is unappealing for companies looking for outsourcing locations. Disruptive events like political unrest and natural disasters, intellectual property (IP) risk in terms of strength of data and IP protection regime and macroeconomic factors such as cost inflation and currency fluctuations are evaluated by companies when selecting outsourcing providers. (Oshri, Kotlarsky & Willcocks 2015, 92.)

Buddy Healthcare seeks to contract with a software developer service provider in a low-risk area to achieve best possible outcome from the outsourcing activities.

Market potential:

Market potential describes how attracting is the local market regarding current gross domestic product (GDP) and its growth rate in an outsourcing destination. The assessment also considers the potential of entering close by markets. (Oshri, Kotlarsky & Willcocks 2015, 94.)

This factor is not valid for Buddy Healthcare due to the fact there are no intentions of setting up selling operations in the outsourcing destination. Buddy Healthcare is looking for receiving software development services from an established provider.

The following chapter states the further processing of the information collected in the first step of part two of the research.
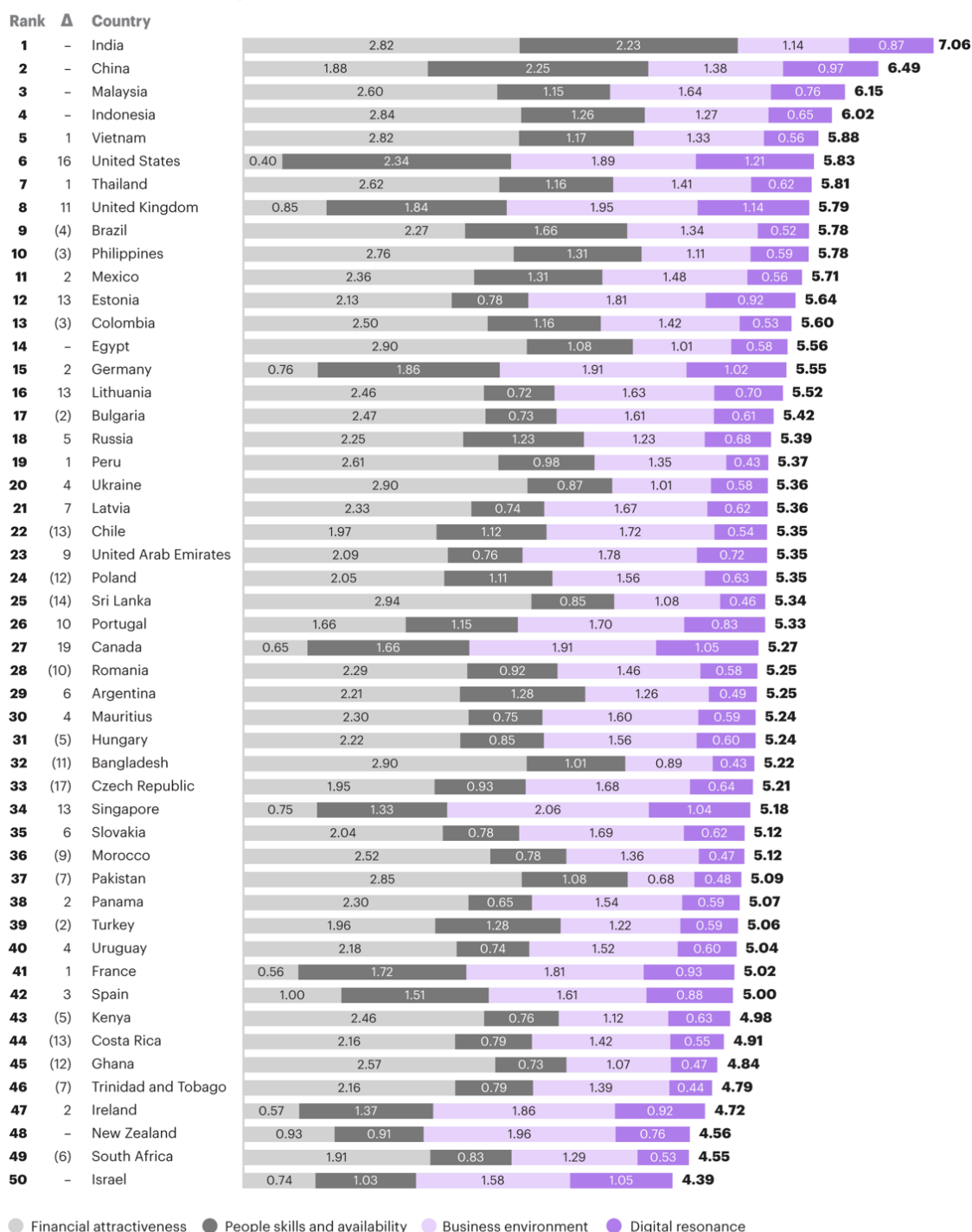
4.4 Suitable countries for sourcing software development services as Buddy Healthcare

In the following, the data from the 2019 Kearney Global Services Location Index is set in context to the criteria identified in subchapter 4.3. The Kearney GSLI report was introduced earlier in this thesis.

The GSLI report provides a list of 50 countries ranked on the basis of each country's performance in four categories. Figure 4. shows the GSLI overall country ranking for the year 2019, published by Kearney.

The top three remain the same, while the United States, United Kingdom, and Germany perform well in the top 15

GSLI overall country rankings

Rank	Δ	Country	Financial attractiveness	People skills and availability	Business environment	Digital resonance	Total
1	–	India	2.82	2.23	1.14	0.87	**7.06**
2	–	China	1.88	2.25	1.38	0.97	**6.49**
3	–	Malaysia	2.60	1.15	1.64	0.76	**6.15**
4	–	Indonesia	2.84	1.26	1.27	0.65	**6.02**
5	1	Vietnam	2.82	1.17	1.33	0.56	**5.88**
6	16	United States	0.40	2.34	1.89	1.21	**5.83**
7	1	Thailand	2.62	1.16	1.41	0.62	**5.81**
8	11	United Kingdom	0.85	1.84	1.95	1.14	**5.79**
9	(4)	Brazil	2.27	1.66	1.34	0.52	**5.78**
10	(3)	Philippines	2.76	1.31	1.11	0.59	**5.78**
11	2	Mexico	2.36	1.31	1.48	0.56	**5.71**
12	13	Estonia	2.13	0.78	1.81	0.92	**5.64**
13	(3)	Colombia	2.50	1.16	1.42	0.53	**5.60**
14	–	Egypt	2.90	1.08	1.01	0.58	**5.56**
15	2	Germany	0.76	1.86	1.91	1.02	**5.55**
16	13	Lithuania	2.46	0.72	1.63	0.70	**5.52**
17	(2)	Bulgaria	2.47	0.73	1.61	0.61	**5.42**
18	5	Russia	2.25	1.23	1.23	0.68	**5.39**
19	1	Peru	2.61	0.98	1.35	0.43	**5.37**
20	4	Ukraine	2.90	0.87	1.01	0.58	**5.36**
21	7	Latvia	2.33	0.74	1.67	0.62	**5.36**
22	(13)	Chile	1.97	1.12	1.72	0.54	**5.35**
23	9	United Arab Emirates	2.09	0.76	1.78	0.72	**5.35**
24	(12)	Poland	2.05	1.11	1.56	0.63	**5.35**
25	(14)	Sri Lanka	2.94	0.85	1.08	0.46	**5.34**
26	10	Portugal	1.66	1.15	1.70	0.83	**5.33**
27	19	Canada	0.65	1.66	1.91	1.05	**5.27**
28	(10)	Romania	2.29	0.92	1.46	0.58	**5.25**
29	6	Argentina	2.21	1.28	1.26	0.49	**5.25**
30	4	Mauritius	2.30	0.75	1.60	0.59	**5.24**
31	(5)	Hungary	2.22	0.85	1.56	0.60	**5.24**
32	(11)	Bangladesh	2.90	1.01	0.89	0.43	**5.22**
33	(17)	Czech Republic	1.95	0.93	1.68	0.64	**5.21**
34	13	Singapore	0.75	1.33	2.06	1.04	**5.18**
35	6	Slovakia	2.04	0.78	1.69	0.62	**5.12**
36	(9)	Morocco	2.52	0.78	1.36	0.47	**5.12**
37	(7)	Pakistan	2.85	1.08	0.68	0.48	**5.09**
38	2	Panama	2.30	0.65	1.54	0.59	**5.07**
39	(2)	Turkey	1.96	1.28	1.22	0.59	**5.06**
40	4	Uruguay	2.18	0.74	1.52	0.60	**5.04**
41	1	France	0.56	1.72	1.81	0.93	**5.02**
42	3	Spain	1.00	1.51	1.61	0.88	**5.00**
43	(5)	Kenya	2.46	0.76	1.12	0.63	**4.98**
44	(13)	Costa Rica	2.16	0.79	1.42	0.55	**4.91**
45	(12)	Ghana	2.57	0.73	1.07	0.47	**4.84**
46	(7)	Trinidad and Tobago	2.16	0.79	1.39	0.44	**4.79**
47	2	Ireland	0.57	1.37	1.86	0.92	**4.72**
48	–	New Zealand	0.93	0.91	1.96	0.76	**4.56**
49	(6)	South Africa	1.91	0.83	1.29	0.53	**4.55**
50	–	Israel	0.74	1.03	1.58	1.05	**4.39**

○ Financial attractiveness ● People skills and availability ○ Business environment ● Digital resonance

Notes: For France, Germany, the United Kingdom, and the United States, Tier II locations are assessed. Numbers may not resolve due to rounding.
Source: Kearney GSLI 2019

Figure 4. Kearny GSLI Overall Country Ranking (Kearney 2019)

The four categories of the Kearney GSLI are financial attractiveness (with a share of 35%), people skills and availability (25%), business environment (25%) and digital resonance (15%). The criteria financial attractiveness includes the aspects of compensation costs, infrastructure costs as well as tax and regulatory costs. The category people skills and availability considers the dimensions ITO/BPO experience and skills, labour force availability, educational skills and language skills. The factor business environment covers the country environment, country infrastructure, country adaptability and security of intellectual property. Lastly, the digital resonance entails the dimensions digital skills, legal and cybersecurity, corporate activity and outputs. (Kearney 2019.) The established categories address the in subchapter 4.3 identified criteria costs, skills, business and living environment, and infrastructure.

The ranking by Kearney provides a foundation in the matter of a list of countries potentially suitable for the commissioning company to source software developer services from. The category digital resonance provides to some extent insights about the countries potential in respect to software development.

As identified in the previous subchapter under the factor business and living environment, for the company Buddy Healthcare the time difference between the headquarters in Finland and a potential outsourcing service provider is of high importance. Hence, the limitation of a time zone difference of plus and minus 2 hours to the UTC +3 time, meaning Helsinki, Finland, was established.

Figure 5. shows a time zone map. The author has edited the image of the time zone map to visualize the area of potential locations for outsourcing service providers for Buddy Healthcare better. Helsinki, Finland, is set as focal point indicated by the pinpoint stating A. In the following, the colour indications are referring to the area which is not greyed out. The blue coloured section shows the time zone UTC +3. Countries in the time zone UTC +1 are highlighted in yellow colour, while destinations in time zone UTC +2 in green colour. The purple colour represents time zone UTC +4, and red colour UTC +5.
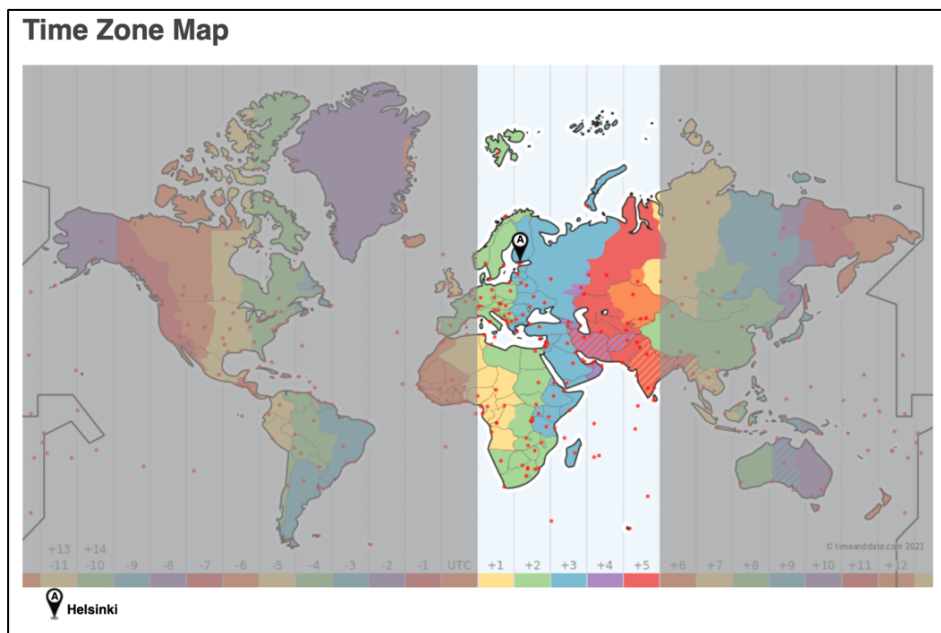
Figure 5. Time Zone Map, with editing by the author (Time and Date 2021)

By applying the factor time zone to the 2019 GSLI overall country ranking, a total of 23 countries fulfil the criteria. Table 3 lists all these countries sorted by the GSLI rank. Destinations which ranked lower than rank 35 were excluded in the further assessment, due to their low performance in the GSLI categories.

Table 3. Complete list of countries with time zone, ranked according to 2019 GSLI

	Country	GSLI Rank	Time Zone
1	United Kingdom	8	UTC +1
2	Estonia	12	UTC +3
3	Egypt	14	UTC +2
4	Germany	15	UTC +2
5	Lithuania	16	UTC +3
6	Bulgaria	17	UTC +3
7	Ukraine	20	UTC +3
8	Latvia	21	UTC +3
9	United Arab Emirates	23	UTC +4
10	Poland	24	UTC +2
11	Portugal	26	UTC +1
12	Romania	28	UTC +3
13	Hungary	31	UTC +2
14	Czech Republic	33	UTC +2
15	Slovakia	35	UTC +2
16	Pakistan	37	UTC +5
17	Turkey	39	UTC +3
18	France	41	UTC +2
19	Spain	42	UTC +2
20	Kenya	43	UTC +3
21	Ireland	47	UTC +1
22	South Africa	49	UTC +2
23	Israel	50	UTC +3

The company language at Buddy Healthcare is English. Especially in the technology and product team, all meetings are held in English. Hence, a software developer performing work for Buddy Healthcare is required to have satisfying English language skills. As a result of this criteria, the list of countries as of table 3. was evaluated according to the EF English Proficiency Index (EPI). The United Arab Emirates and Egypt were eliminated from the list due to the fact these two countries ranked in the proficiency categories low and very low. (EF Education First 2020.) The complete list of countries fulfilling the time zone criteria ranked according to the EF EPI can be reviewed in appendix 3.

In conclusion, thirteen countries suitable for Buddy Healthcare to source software developer services from were identified. All destinations are in Europe. Countries from Eastern Europe are represented by high numbers: Bulgaria, Ukraine, Poland, Romania, Hungary, Czech Republic and Slovakia. This region represents great potential for outsourcing. The Baltic countries Estonia, Lithuania and Latvia are ranking in the top seven of the final list of suitable countries for sourcing software development services as Buddy Healthcare. The list is led by the United Kingdom, Germany ranks third and Portugal ninth.

Table 4. Complete list of suitable countries for sourcing software development services as Buddy Healthcare

	Country
1	United Kingdom
2	Estonia
3	Germany
4	Lithuania
5	Bulgaria
6	Ukraine
7	Latvia
8	Poland
9	Portugal
10	Romania
11	Hungary
12	Czech Republic
13	Slovakia

4.5 Cost of work performed by software developers in selected areas suitable for outsourcing for Buddy Healthcare

This subchapter focuses on investigative question 5, meaning the costs of software development services in the selected areas were identified. The 2016 European Software Development Salary Survey report conducted by O'Reilly Media and written by Andy Oram

and John King (2016) introduces a model to make salary estimations on the basis of the study data.

The study included 1,353 submissions from 27 European countries, mostly from software developers and other professionals with programming capabilities. The data was initially collected for the 2016 Software Development Salary Survey. This included 5,000 respondents from 51 countries answering to 72 questions. Due to the initial global approach, answers regarding salary were recorded in US dollars (USD). (Oram & King 2016.) The full model as stated in the 2016 European Software Development Salary Survey report may be reviewed from appendix 4.

From the answers of the survey respondents, specific patterns were observed and hence variables established. These variables may affect the salary to be paid positively or negatively, or no effect is associated. As an example, the study showed the age of the software developer has no influence on the salary. However, if a software developer is located in Switzerland, s/he is going to receive more money for the services performed, than a worker in Estonia performing the same services. The variable location is defining the amount of salary to be paid to the IT professional. Thus, a connection between the variations of salaries and variables is seen. On the basis of the correlation between the two factors, for each variable was a coefficient established. A linear equation is used to calculate the salary level of a software developer, meaning the sum of all the coefficients of each variable addressing the IT professional is calculated. (Oram & King 2016.)

In Europe the median annual salary of the respondents was 56,000 USD, with the interquartile range spanning from 35,000 USD to 80,000 USD. This means the leftmost 25% and rightmost 25% of the normal distribution is ignored, and only the middle 50% considered. However, geography has a significant effect on the salary. Coefficients, meaning in this context a positive or negative US dollar amount, may be assigned to single countries, or regions covering more than one country. (Oram & King 2016.)

The full model covers the following categories: Geography, company types, team structure, individual background, title, role and tasks, tools, programming languages, work week, and bargaining and ease of finding work (Oram & King 2016). The most applicable coefficients of every category were used and applied in respect to the commissioning company Buddy Healthcare. Figure 6. provides a summary and calculations.

In terms of geography, the outcomes of subchapter 4.4 are taken into account. The countries identified are group by regions, which are assigned to one of four different coefficients. For the countries Lithuania, Bulgaria and Latvia no coefficient is stated, implying none or not enough responses to the survey were submitted. (Oram & King 2016.) Figure 6. presents the geography factor in relation to the coefficient.

The survey found that in terms of team structure, there is an interrelation between team size and salary. This leads to the coefficient of +184 USD per each team member. The work with other programmers is associated with a positive coefficient of + 5,332 USD. Teamwork with professionals in other roles did not show a positive coefficient. (Oram & King 2016.) Figure 6. includes the team size, and the coefficient was multiplied by the factor 9, representing the size of Buddy Healthcare's technology and product team.

In terms of a software developer's individual background, the years of experience are associated with a value of + 1,257 USD per year of experience. The participation in meetings is valued with + 151 USD for each hour per week spent in meetings. Work not including communication with people outside of the company is granted the coefficient of + 4115 USD. (Oram & King 2016.) Figure 6. considers five years of experience as a factor and six hours per week spent in meetings by a software developer employed through an outsourcing service provider. These factors are estimates made by the author of the thesis.

Each hour worked by the software developer during the work week is given the coefficient of + 988 USD (Oram &King 2016). At Buddy Healthcare the work week is set at 37.5 hours for software developers. This factor was accordingly respected in figure 6.

The survey assessed the negotiations skills of software developers. The respondents were asked to evaluate themselves on a rating scale from 1 to 5 points. This subjective approach showed most employees gave themselves 3 to 4 points. Each point is in the full model associated with the value of +4290 USD. (Oram & King 2016.) In the following the factor 3.5 in terms of bargaining skills was taken into account.

Figure 6. shows the variables applicable for the situation of Buddy Healthcare in regard to outsourcing service providers. The coefficients were multiplied by the stated factor. If no factor is relevant the multiplication was completed with the factor 1. The figure includes outcome calculations for each of the geographic regions. When set into context to the median annual salary in Europe of 56,000 USD, the results show software developers in United Kingdom are earning above average with an annual salary of 64,846 USD. Employees in software development located in Germany receive slightly above annual salary

payments of 57,864 USD. Portugal with an annual salary of 34,448 USD for software developers is below median annual salary in Europe. The value is right below the starting point of the interquartile range of 35,000 USD. Software developers in Estonia, Ukraine, Poland, Romania, Hungary, Czech Republic, and Slovakia are receiving significantly below median European annual salary. The annual salary was by 27,765 USD in these countries.

Variables	Coefficient	Factor	
Work week, per hour	$988	37,5	$37 050
Experience, per year	$1 257	5	$6 285
Bargaining skills, per point (scale 1 to 5)	$4 290	3,5	$15 015
Team size, per team member	$184	9	$1 656
Works with (other) programmers	$5 332	1	$5 332
No communication with people outside of the company	$4 115	1	$4 115
Hours spent in meetings, per hour/week	$151	6	$906
		Total	$70 359
Geography	Coefficient	Factor	
United Kingdom	-$5 513	1	-$5 513
Germany	-$12 495	1	-$12 495
Portugal	-$35 911	1	-$35 911
Estonia, Ukraine, Poland, Romania, Hungary, Czech Republic, Slovakia	-$42 594	1	-$42 594
Outcome	Annual Salary		
United Kingdom	⬆ $64 846		
Germany	⬆ $57 864		
Portugal	⮕ $34 448		
Estonia, Ukraine, Poland, Romania, Hungary, Czech Republic, Slovakia	⬇ $27 765		
Median annual salary European sample	$56 000		

Figure 6. Overview of variables with assigned coefficients relevant for Buddy Healthcare, including outcome calculations for specific geographic locations

The cost of work performed by a software developer in the countries Estonia, Ukraine, Poland, Romania, Hungary, Czech Republic, and Slovakia is thought as most affordable. In view of receiving software developer services from Germany or the United Kingdom, Buddy Healthcare is going to face higher costs for the work performed.

5   Conclusions

The following presents the key findings of this thesis research, thereby answer to the research question. Thereafter, the reliability and validity are discussed. Next recommendations to Buddy Healthcare Ltd Oy are given. Lastly, the author provides reflection on the own learning during this research process.

5.1   Key Findings

The objective of this research was to find out the cost of work performed by a software developer for the commissioning company Buddy Healthcare Ltd Oy. The research question was addressed by identifying the costs of in-house employment of a software developer located in Finland, and in Germany. Criteria for selecting outsourcing service providers were established, a list of countries suitable for sourcing software services identified, and the cost of work performed by software developers in the selected areas suitable for Buddy Healthcare calculated.

The cost of employing a software developer in-house includes the expenses the company faces for attracting the talent, the hiring process, employee training, equipment needs, and salary as well as social security payments during the employment period, in addition to the costs of employee separation. Based on internal information and interviews with the CEO and CTO of Buddy Healthcare, the cost of a software developer located in Finland is estimated to be 120,000 € for the first year of employment, including the employee recruitment process. The cost of employee turnover is estimated to be at least 50% of the annual salary, but it may be up to 250%.

The investigation of the costs associated with the employment of a software developer in Germany is higher than when employing in Finland. The company faces higher overhead costs of approximate value of 10,000 € due to different factors, such as involvement of a lawyer to provide consultation in the setting up of the employment contract, as well as on-site employee introduction and training. Furthermore, the salary levels for software developer are on average higher in Germany than in Finland.

By the means of academic literature criteria for selecting outsourcing service providers were identified. For Buddy Healthcare the criteria of costs, skills, business and living environment and infrastructure are from importance. The limiting factors as the geographic location, hence the time zone of outsourcing service providers and their English proficiency levels were announced to be crucial for the commissioning company.

The analysis of the 2019 Kearney GSLI report data on the basis of the criteria identified, yielded thirteen European countries are considered suitable for Buddy Healthcare to source software developer services from. Bulgaria, Ukraine, Poland, Romania, Hungary, Czech Republic and Slovakia represent Eastern Europe by high numbers. Other countries determined as suitable include the Baltic countries of Estonia, Lithuania and Latvia and Western Europe countries as of United Kingdom, Germany, and Portugal.

On the basis of the model introduced in the 2016 European Software Development Salary Survey report the cost of work performed by software developers located in countries considered suitable for outsourcing as Buddy Healthcare was calculated. The results showed software developers in the United Kingdom and Germany are paid above European annual salary levels. On the other hand, the software development work in Baltic countries, and Eastern European is paid significantly below the European average.

5.2   Reliability and Validity

Saunders, Lewis and Thornhill (2019, 218) define validation as the procedure of verifying research data to assess the validity and credibility of the data. This may be done by the means of triangulation or by participant or member validation. (Saunders, Lewis and Thornhill 2019, 218.)

For this thesis, the participant or member validation approach was chosen. The research was executed for the commissioning company Buddy Healthcare, and hence the thesis was sent to CEO Jussi Määttä to assess and confirm the accuracy of the information.

The author ensured the academic literature and secondary datasets applied came from reliable and well-established sources. However, the empirical study faced certain limitations. In view of the 2019 Kearney GSLI data, the report evaluates countries in their capacity to perform business process outsourcing and information technology outsourcing and does not assess the IT service sector exclusively. This aspect may affect the outcomes of the research and is needed to be taken into consideration. Furthermore, the data of the 2016 European Software Development Salary Survey may be questioned as accurate at present time, as Jussi Määttä reported in his interview to have seen an increase of salaries for professionals in the IT industry over the last two years.

5.3 Recommendations for Buddy Healthcare Ltd Oy

In the following, recommendations to the commissioning company Buddy Healthcare are made. These recommendations are based on the results of the thesis research.

The first recommendation for Buddy Healthcare is to invest in employee retention, and continuously pay attention to the fact that employees feel strongly committed to the company. Thereby, high costs of employee separation can be avoided. The human capital, in particular the software developers, are the resources behind the success of the company.

The second recommendation for Buddy Healthcare is to hire a software developer in Germany if the expansion to the German market and customer base grows further. The software developer in Germany would be dealing different tasks and responsibilities in comparison to the colleagues located in Finland, who are mainly working on the platform development and maintenance of such. Already now Buddy Healthcare has a demand for a German speaking IT professional to participate in discussions and manage time-intensive projects with the German clients and partner companies. In that sense, the position is having a different job description and hence requires specific skills and knowledge about the German market. Although, the hire in Germany is associated with higher costs than in Finland, the benefits of the employment of a software developer in Germany would outweigh the costs.

The last recommendation for the commissioning company is to source software developer services from the countries identified with low cost for such work, meaning Eastern European countries and Baltic countries.

5.4 Reflection on Learning

The author experienced the thesis process as interesting and to great extent educational. Due to her responsibilities as Solutions Manager, previously Customer Success Manager, the balance between work and writing has been difficult. However, the thesis writing process taught the author to set priorities and work effectively.

Within the research the author expanded her understanding in regard to the topic, developed advanced researching skills and was able to apply the theoretical knowledge acquired at Haaga-Helia University of Applied Science in practice.

As a result of the study the author feels even more connected and aware of the business processes of the commissioning company, which simultaneously is her workplace already for three years. The author learned more about the software development department of the company and hence the work settings of her colleagues.

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Appendices

Appendix 1. Interview framework

Interview themes

1. Attracting talent
2. Hiring process
3. Employee training
4. Equipment
5. Total cost in first year

Part 1: Finland
1. Attracting talent
    a. What are the costs and time spent by Buddy Healthcare in terms of attracting talents for the positions front-end and back-end software developer?
2. Hiring process
    a. What are the resources spent on the hiring process?
        i. Human resources
        ii. Financial resources
3. Employee training
    a. What are the resources spent on employee training?
        i. Human resources
        ii. Financial resources
4. Equipment
    a. What kind of equipment is acquired for a newly hired software developer?
    b. What is the approximate amount of money spent for setting up the software developer?
5. Total cost in first year
    a. What is the approximate cost of a software developer for the first year from the start of employment?

Part 2: Germany
1. Attracting talent
2. Hiring process
    a. In the situation a software developer is hired in Germany, to what extent would the hiring process change?
3. Employee training
    a. How would the employee training be organised for a newly hired software developer based in Germany?
4. Equipment
    a. In terms of equipment, how would setting up a software developer in Germany differ from setting up a software developer in Finland?
5. Total cost in first year
    a. What is the approximate cost of a software developer for the first year from the start of employment in Germany?

Appendix 2. Salary Level Indicators of the Collective Agreement of the IT Service Sector by YTN

SALARY LEVEL INDICATORS

Level 1	Level 2	Level 3	Level 3 A
General description			
These tasks are professional tasks typical of the group	These tasks are more demanding or versatile than the previous tasks.	These tasks are expert tasks typical of the group, or tasks that involve supervision duties.	Compared to the previous tasks, this task involves a significant amount of financial, operational and supervision work.
Competence, freedom, responsibility and interaction required for the work			
Competence required for independently carrying out tasks in one's area of competence.	Competence requiring knowledge and skills in different competence areas of work, or work requiring the profound command and application of knowledge and skills in the areas of competence.	Competence requiring knowledge and skills in different areas; requires a comprehensive view or profound knowledge of the competence areas.	See level 3
The task requires conventional interaction and co-operation skills, in compliance with the general guidelines.	The task may require co-operation skills in varying situations requiring interaction and consideration.	The task requires the creation of independent solutions/models in situations requiring consideration. The task requires co-operation skills in varying situations requiring interaction.	See level 3

(YTN 2021, 16)

Appendix 3. Complete list of countries fulfilling the time zone criteria, ranked according to EF English Proficiency Index

	Country	EF Rank	Proficiency
1	United Kingdom	0	Official de facto native language
2	Portugal	7	Very high
3	Germany	8	Very high
4	Hungary	14	High
5	Poland	16	High
6	Romania	17	High
7	Czech Republic	19	High
8	Bulgaria	20	High
9	Slovakia	22	High
10	Lithuania	24	High
11	Estonia	25	High
12	Latvia	29	High
13	Ukraine	44	Moderate
14	United Arab Emirates	66	Low
15	Egypt	83	Very low

Appendix 4. 2016 European Software Development Salary Survey Full Model

General	Coefficient
Work week, per hour	+ 988 USD
Experience, per year	+ 1,257 USD
Bargaining skills, per point (scale 1 to 5):	+ 4290 USD
Geography	
Switzerland	+ 19,161 USD
United Kingdom, Ireland, Norway, Denmark	- 5,513 USD
Germany, the Netherlands	- 12,495 USD
France, Sweden, Belgium, Finland, Austria	- 22,283 USD
Spain, Italy, Greece, Portugal, Turkey:	- 35,911 USD
Poland, Romania, Czech Republic, Ukraine, Hungary, Slovenia, Slovakia, Estonia, Bosnia and Herzegovina	- 42,594 USD
Russia	- 45,224 USD
Company types	
Industry = Banking/Finance	+ 16,260 USD
Industry = Consulting (IT)	+ 8,419 USD
Industry = Education	- 6,438 USD
Company size = 1	+ 8,832 USD
Company size = 10,000 or more	+ 5,156 USD
Team Structure	
Team size, per team member	+ 184 USD
Works with (other) programmers	+ 5,332 USD
Titles, Roles, Tasks	
PhD	+ 7,906 USD
Title = Architect	+ 10,990 USD
Title = Principal/Lead	+ 6,254 USD
No involvement in back-end web development	+ 3,606 USD
Major involvement in mobile development	- 3,593 USD
Minor involvement in hardware development	- 4,595 USD
Major involvement in teaching/training others	+ 3,499 USD
No communication with people outside of the company	+ 4,115 USD
Hours spent in meetings, per hour/ week	+ 151 USD
(the table continues on the following page)	
Tools	
Cluster 4 (Unix tools)	+ 2,636 USD
Cluster 5 (Cloud)	+ 698 USD
Cluster 6 (Python)	- 1,234 USD
Cluster 7 (.NET)	- 1,114 USD
Cluster 8 (LAMP)	- 2,206 USD
Cluster 10 (Editing 1)	- 3,485 USD
Cluster 11 (Distributed computing)	+ 173 USD
Cluster 12 (Editing 2)	+ 3,149 USD
Cluster 13 (Scala)	+ 1,112 USD
Cluster 14 (Apple)	+ 2,262 USD
Cluster 15 (Clojure)	+ 945 USD
Programming Languages	
Past language, Bash	+ 6,422 USD
Past language, Clojure	+ 12,549 USD
Future language, Objective-C	- 3,869 USD
Future language, Perl 6	- 13,743 USD

(Oram & King 2016)