Conversion of Performance Objectives into Operational Objectives in the nightclub industry: A dashboard design

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Abstract

As the development of Information Communication Technology (ICT) and digital tools continues to penetrate industries globally to enhance performance through different means, the nightclub industry is still in the beginning of this era of digital tools. The Swedish nightclubs have identified benefits by involving digital tools for communication with specific focus on the VIP-area and VIP-table service. To successfully implement a digital tool and optimize the effects from it the nightclub industry also needs to identify what it aims to fulfil. This study successfully identifies what the nightclubs aim to fulfill with the VIP-tables as Performance Objectives and what Operational Objectives that should be communicated to achieve enhanced performance. The results show a new improved dashboard design based on an already existing digital tool that implements the new operational objectives.

Keywords: Information and communication technology, Operations Strategy, Performance Objectives, Operational Objectives, Visual Management and Dashboard.

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Introduction

In a continuous loop of improving itself, businesses always search for ways to improve its operations performance. Operation performance is connected to how well a business's operations are performed and is measured by operational objectives (e.g. by key performance indicators, KPIs). The operational objectives stem from what strategy the business has chosen and according to Slack, Brandon-Jones & Johnston (2013) strategy is defined by the pattern of activities and decisions that are performed within the business. The day-to-day activities and decisions should reflect the chosen strategy and be aligned from the strategic goals to the operational objectives. Therefore, when formulating a strategy, it is important that performance objectives are identified and that measurements are connected towards the operational objectives to allow the business to measure its own progress (Jonsson & Mattsson, 2009). However, no matter what sectors a business operates in or what the performance objectives are, the operational objectives can always be connected to one of the five categories of performance objectives (Slack et al., 2013). The categories of performance objectives are quality, speed, dependability, flexibility and cost. Depending on what category a business focuses on, the operational objectives for each performance objective varies. According to Slack et al. (2013), the five performance objectives are also helpful when businesses are formulating its strategy due to the possibility to find what performance objective it should put focus on (i.e. what prioritization the activities in the business should have). In this way trade-offs between the performance objectives appear (e.g. prioritization on quality will affect cost) and the strategy will formulate what actions the business will prioritize (Slack & Lewis, 2002; Slack et al., 2013). If downstream communication of the strategy is done properly to operational staff, the operations will be executed with the correct performance objective in mind and in this way the business's operations will align with the strategy and each performance objective as it is prioritized (Slack et al., 2013). Doran (1981) additionally states that not only the alignment of performance objectives and operational objectives are of importance. He stresses that operational objectives should be considered as two combined parts where the first one is the objective being measured and the second one is how the process is formulated to allow it to be conducted in accordance with the correct performance objective.

Additionally, when formulating a strategy, it is important to consider contextual factors of the business's environment. A business may want to characterize itself in comparison to incumbent competition, for instance, if its market offer is high-end or a low-end (Granstrand, 2016). One approach to analyze the contextual factors is by using the competitive forces identified by Porter, M.E. (2008). The model helps businesses to evaluate where they find themselves in the context of its business environment. Porter's five competitive forces emphasize the importance of evaluating what power external actors may have on the business and according to Porter (2008) the factors can be defined as substitutes, new actors entering the market, bargaining power of buyers, bargaining power of suppliers and incumbents already operating on the market. By analyzing the five forces the business identifies what actions to take when navigating the business in its contextual environment which enhances the chance of successfully adopting an accurate strategy for the specific business (Porter, 2008).

When formulating a business strategy, the use of the five categories of performance objectives and the five competitive forces helps provide a rigid business strategy due to the dual perspective (Porter, 2008). By both reviewing the core-value in its own market offer and considering how it stands in the context of the current business environment the result will offer a strategy that sets accurate long-term goals. Besides setting the business strategy, it is important that there is consensus in the strategy within the organization (Boyer & McDermott, 1999). Boyer & McDermott (1999) states that by addressing changes in the relative importance between the five categories of performance objectives and aligning downstream to operational level, a higher level of strategic consensus can be achieved. Additionally, Doran (1981) confirms that the result of aligning the strategy downstream increases the chance of improving operations performance.

The conversion from strategic performance objectives to operational objectives downstream the business calls for effective means of communication and a rigid way of how the information is transferred (Xue, L., Ray, G., Sambamurthi, V., 2012). In recent years, the potential to increase this effectiveness has emerged due to a rapid development of ICTs (Murata, 2019). The development of digitization allows businesses to digitally automate transfer of information, which has led to an increased focus on reviewing how internal communication can help improve operations performance (Xue et al., 2012). Depending on the contextual factors, the type of information that is communicated internally varies but the final aim of increasing accuracy in decision making based on information still stands. The result of improved means of communication results in improved operations performance in accordance to (Mithas, S., Rust, R.T., 2016). However, in the presence of the emerging possibilities by ICT the risk of information overload or obsolete information increases due to lack of knowledge of how and in what way to communicate the information according to McAfee, A., Brynjolfsson, E., Davenport, T.H., Patil, D.J., Barton, D. (2012). This has led to an increased interest in evaluating how qualitative the internal communication is in assisting the operations, for instance if the information is adding value to the operators or not. Visual management has during recent years rapidly developed effective and efficient ways of communicating information throughout and between businesses as digital dashboards which is one example of an ICT tool (Tezel, Koskela & Tzortzopoulos, 2009). Although ICT may be an enabler of improving the way information is transferred, Xue et al. (2012) stresses that it is not sufficient to ensure that it will result in improved operations performance just by the implementation of it.

Industry introduction and company

An industry where the development of internal communication has taken up speed lately is the nightclub industry in Sweden, where ICT tools are used to digitize and automate transfer of information. Historically, the information has been, and many times still is, provided by other means e.g. whiteboards, digital chat-tools or com-radios. However, reading, writing, communicating and listening for information with these means is time consuming and the risk of missing out or misunderstanding information is big which leads to missed out revenue. The intention of digitization of information has been to either increase visibility or increase speed of information spread compared to older means. Still today, little is to be found regarding what the strategies are in the nightclub industry hence obstructing the identification of what to

visualize for operational staff. If strategies were identified and long-term goals could be set, the conversion into operational objectives would be possible.

An ICT tool used in the Swedish nightclub industry is Table Giantz (henceforth referred to as "the software"). A current version of the dashboard in the software is presented in appendix 1 and is developed by Ekberg Group, a management consultancy business. The software allows for management to digitally communicate information within the business, needed for decision making for operational staff during service hours. Additionally, the software aims to provide information specifically regarding VIP-tables and VIP-areas where dedicated operational staff works, and the software provides information through a digital dashboard that is visible for operational staff and operated remotely by VIP-managers. By this, the time from when a decision is made by the VIP-manger until it has been communicated to the operators is reduced which is supported by Xue et al. (2012) The input to the dashboard made by the VIP-manager provides information regarding for example what tables that is reserved and the amount of guests that have made the reservation. Ekberg Group has initiated a project where the aim is to investigate how to develop the software to not only replace old means of communication but also to help assist internal communication in order to improve operations performance. The study should provide a solution of what information to visualize and how the information should be shown to assist the operators to make more accurate decisions during service hours. The results will be used for development of the software to increase its customer value by identifying what should be measured to align the performance objectives and operational objectives in the nightclub industry.

Purpose

To help Ekberg Group successfully complete the project the purpose with this study is to develop a conceptual model of how the dashboard of the software should be visualized and what information to show. The dashboard development will be the foundation for how Ekberg Group should develop the software to achieve the highest possible value for the night clubs that use the software. The project should be considered satisfying if the study conducted by the research group defines a way to identify strategic and long-term goals, converts long-term goals into operational objectives and finds a best practice for how to develop a visualization of the needed information into the software.

Research questions

To fulfill the purpose with the project, the development of a visualization in the software, the study needs to be carried out in three steps. Identifying strategic and long-term goals, providing what objectives operational staff should work alongside and develop an approach of how to visualize the information in the software. Therefore, the study will first answer what strategy that is considered standard in the nightclub industry. The first research question is:
RQ1 - What prioritization of the performance objectives are identified in the strategic goals by top-level management and owners in the Swedish nightclub industry?

By the completion of the first research question the next part of the study can be processed. This part aims to identify what operational KPIs and activities the identified performance objectives should be converted into. The second research question is:

RQ2 - What operational objectives could the performance objectives be converted into?

The last part of this study will focus on developing ways of how operational objectives should be visualized and in what format it should be presented in order to increase operations performance. The third research question is:

RQ3 - How should the operational objectives be visualized in the software?

Scope and delimitations

As the project aims to identify what to visualize and in what format in the software, the study will focus on analyzing how strategic and long-term goals can be converted into operational objectives. The analysis will emphasize what benefits a dashboard may have on an operational level but will not include analysis of what benefits the dashboard may have on a tactical or strategic level. Due to time constraints, the study will be delimited to Swedish nightclubs operating VIP-tables with dedicated VIP-staff. The already existing measurements or KPIs visualized on the dashboard will not be further elaborated or analyzed in this study.

Supporting literature

The following section will present theories connected to relevant literature needed to fulfill the study and should be helpful in providing the reader with essential knowledge. A brief literature on process design is presented in the first subsection to introduce how the study is conducted. The first part of the study aims to identify the prioritization of performance objectives in the nightclub industry. The analysis is based on literature regarding performance objectives and five competitive forces by Porter (2008) where the latter is used to broaden the perspective and increase robustness. The second part of this study focuses on how the performance objectives can be converted into operational objectives which motivates a section of literature describing operational objectives, the relevance of them and methods of forming them. The findings from the second part will be used in the third and last part where it will be combined with visual management literature which is the last subsection in the literature section.

Engineering Design Process

To solve a problem or create a design, a design process needs to be in place that provides a solid methodology to the project and in order to obtain this a process or systematic methodology is required (Plan & Khandani, 2005). Additionally, Dieter & Schmidt (2009) stresses that a rigid design process is important to create before the project starts to define what the problem is, what should be looked for in terms of background and research and how the analysis part should be conducted. Lastly, expected outcomes should be defined which enhances the chance of successfully completing the project. In most projects, the knowledge of the specific problem is low in the beginning of the project while the freedom to design is relatively high but the further the project progresses, the knowledge increases while the

design freedom is reduced which is called the design process paradox (Ullman, 2010). Therefore, and supported by Granstrand (2016), the more rigid the design process and the planning of the project is, the more precise the expected outcome becomes. Further, Plan & Khandani (2005) states that there are multiple different design processes available since they are commonly created to be suitable for specific problems to solve or designs to create. However, the different design processes are built upon a foundation that originate from a general approach. Plan & Khandani (2005) presents a five-step approach which is usually used for problem-solving but is also suitable for design problems. The following text will shortly explain each one of these steps that Plan & Khandani (2005) includes in the general approach. First, one should define the problem in order to identify what needs to be solved, such as customer requirements. The definition of a design problem often begins quite vague but becomes clearer further into the process as the knowledge develops (Dieter & Schmidt, 2009; Ullman, 2010). The second step is to gather relevant information and functional specification that is relevant and should be included in the conceptual model or end product. The third step is to generate solutions that solve the defined problems with regards to the information and requirements gathered in the second step. The fourth step is to analyze the solutions in the third step to ensure that the solutions are fulfilling the expected outcome. The fifth step is to test and implement the solution, which is outside the scope of this study. The engineering design process is based on a defined problem that should fulfill a list of requirements and the design process does not have only one correct solution.

Categories of Performance Objectives

According to Slack et al. (2013) performance objectives set the fundamental ground of enabling success within businesses. The use of performance objectives creates an effective way to measure operations performance and thereby an approach of how to evaluate a business performance by its operations. The way performance objectives are presented by Slack et al. (2013) makes it available to apply to any form of business, making it possible to evaluate how efficient operations are performed in one business compared to another. The performance objectives presented below are considered the five standard areas of performance objectives although it exists more. The five areas are quality, speed, dependability, flexibility and cost and they can, according to Slack et al. (2013) be used when businesses are formulating its strategy. By using the performance objectives when formulating a strategy, the activities that should be carried out are tied to the strategy through the performance objectives which helps the business to achieve its strategic goals. This is enabled by the possibility to measure the activities towards the goals, thereby connecting the strategic, tactical and operational goals. Studies on operations strategy and performance objectives are scarce within the nightclub industry and the five performance objectives defined by Slack et al. (2013) will be used in this study to identify what prioritization between them there is in the nightclub industry. Following subsections will elaborate on each one.

Quality
The first performance objective is quality and is according to Slack et al. (2013) often used in businesses when evaluating customer experience of a product or service. By this, quality is

often considered as a grade of how the product or service meets the expected level of quality on the market. In this form the performance objective is used as an external measurement. Additionally, quality can be used for measuring internal processes such as production of a product and by increasing the level of quality in the production, cost can be reduced due to less error or wrongdoing and thereby minimizing time for corrections and re-work. Further, this leads to more stable processes that help management to focus on the right things instead of focusing on correcting what has gone wrong. The result is internal high quality which in turn maintains external high quality. In the nightclub industry this may be applied to evaluate customer experience. Lastly, quality can be defined as how qualitative a service is where the actual performance of the service at the VIP-tables can be an example.

Speed
The second performance objective, speed, has always been an important factor from a customer perspective, no matter if it is a private- or a business customer. Constantly, focus on increasing speed and shortening lead-times in every process is of interest. Business´s develops its processes to become more efficient or less time consuming. Briefly, each process from when a customer makes an order until it is delivered is of importance and in this study speed is exemplified by how fast operations are performed, thereby shortening lead-times. To achieve this, businesses have recently emphasized the importance of making faster decisions with the enabling of providing useful information complemented by ICT that is supported by Xue et al. (2012). According to Slack et al. (2013) an increase in speed may reduce risk in planning since it for example leads to shortened time-to-market which reduces uncertainty.

Dependability
Dependability, the third performance objective helps evaluate for example how accurate a service is delivered in accordance to a pre-decided time window. If the service fails to be delivered when it is expected by the customer, high speed and high quality may not any longer matter. For example, a VIP-guest making an order but having to wait longer than expected, longer than communicated by the operator or even an order being delivered too early. Further, disrupted operations by less dependable operations may cause extra costs or affect the factor speed due to time consumed by fixing a problem. However, dependable operations help operators to, instead of always being occupied with correcting errors, focusing on improving already existing activities that creates value for end customers. In that way, dependability induces stability in operations which in turn leads to reduced loss of cost, speed and quality.

Flexibility
The fourth performance objective is flexibility and it focuses on evaluating how well a business can respond when a change in demand occurs, when a certain service no longer is of interest and when a ramp up of production is required to satisfy new demand. Slack et al. (2013) mentions hospitals as an example of businesses forced to focus on its flexibility due to being forced to produce whatever is necessary at any given time, both in scale and in scope because of accidents occurring. To some extent parallels between hospitals and nightclubs operating VIP-tables can be done in terms of being forced to produce whatever is required at any given time to satisfy demand. When achieving a higher level of flexibility, the time to respond to

changes is shortened which saves time between operations which is positive to customer satisfaction due to possibilities to respond to sudden shifts in demand.

Cost

The last performance objective of Slack et al. (2013), cost, is the most frequently applied objective historically. Price-based competitive focus was until recently the most used approach when competing on the market. The mass production enabled reduction of cost per unit produced which allowed businesses to lower their market price and thereby gain bigger market shares. Today, more factors than just price matters to customers but cost still remains important as it affects the profit margin.

Competitive forces from context

When a business is formulating its strategy and identifying whether it should prioritize quality over cost or vice versa Porter (2008) states that it is important to know how its market offer is perceived by customers. Without making an extensive analysis regarding the business environment, this will be difficult and often businesses only analyze its closest environment such as existing competition. A potential threat may be found in substitutes or new entrants of competitors but knowing how far the analysis should stretch is often quite hard and threats may also exist in the power of suppliers. Porter (2008) states that the business environment is based on five parts, referred to as forces. The five competitive forces are actors of different kinds and as mentioned in the introduction they are substitutes, new actors entering the market, bargaining power of buyers, bargaining power of suppliers and incumbents already operating on the market. In the nightclub industry this would refer to nightclubs analyzing the competition as other nightclubs or venues with similar customers instead of being more holistic and analyzing multiple markets such as movie theatres, concerts or even cafés and gyms. There is potential revenue to grab on all markets which enables a bigger overall market share and thereby increased revenue. Businesses often aim to increase its profit by either increasing its revenue or margin and the better a business understands its contextual environment the better the strategy formulation will be. For instance, by identifying how the profit is distributed among stakeholders a business can better understand the power balance in its business environment and each competitive force will be explained in the following text (Porter, 2008).

When analyzing substitutes, the business should aim to identify competitors that are offering products or services that the business indirectly competes with by for example sharing the market. In the nightclub industry a substitute may be exemplified as cinemas due to the fact that potential guests may choose the cinema instead of visiting nightclubs.

The contextual analysis also involves threats of new actors entering the market and trying to gain market share and an example of this may be a new nightclub. Additionally, Porter (2008) discusses entry barriers that explain how easy it is for new entrants to enter the market such as liquor laws to obey and in Sweden the nightclubs need a permission to serve alcohol.

Porter mentions two forces in terms of bargaining power, and they are buyers and suppliers exploiting possibilities to gain more beneficial terms for themselves on the expense of the nightclub. In the nightclub industry this may appear when buyers have leverage in form a vast number of similar nightclubs to choose between which induces competitive approaches of the

nightclubs to attract the biggest market share. On the supply-side it can be exemplified in similar ways as in every other industry where a supplier may have a competitive advantage of its customers by offering a highly needed product or services where only a few suppliers offer a similar product or service.

Lastly, rivalry among existing competitors exists where businesses can be compared to each other as offerings are similar or equal to each other. In the context of this study this refers to other night clubs offering similar services. Porter (2008) stresses that although competition between incumbent actors exists and stresses a business it also triggers for example innovation in businesses.

Operational Objectives

Performance objectives are related to goals that often possess a longer horizon and connect to the strategic goals of the company, while operational objectives are connected to short-term goals and are often easier to quantify (Doran, 1981). Although dependencies exist between the two expressions, a distinct difference still exists which enables this study to separate strategic goals and operational objectives. Operational objectives are often exemplified as key performance indicators (KPIs) which according to Bourne, Mills, Wilcox, Neely & Platts (2000) has two usage areas. First, KPIs could be created to help confirm that the defined strategy is implemented correctly or that the strategy is successful. Second, the robustness of the defined strategy can be evaluated through the data and information provided by the KPIs. As mentioned in the introduction, by aligning the strategic goals and the operational objectives businesses will increase operational performance which is supported by Slack et al. (2012). By defining a strategy based on performance objectives, the business can convert the long-term goals into short-term objectives referred to as operational objectives Doran (1981). Further, Doran (1981) presents a method to convert strategic goals into objectives that is called S.M.A.R.T. and the definition is that an objective should be specified, measurable, assignable, realistic and time-related. An objective not defined in all five ways could still be a useful objective and Doran (1981) stresses that it is sometimes more beneficial not to quantify an objective in order to obtain the strength by allowing an objective to remain abstract. Doran (1981) supports this by saying: "It is the combination of the objective and its action plan that is really important". In this study, the conversion from strategic goals into operational objectives will be done by applying the S.M.A.R.T method onto the operational objectives where the realistic criteria will be excluded since it is outside the scope to investigate what specific values should be decided for each operational objective. Therefore, the fourth criteria will be excluded from here on.

An objective should be specific in order to meet the first criteria and to achieve this the essential part is that the objective delivers a clear message of what it measures and what performance objective it aims to improve. The accomplishment of this provides an increased insight of what the results are of the actions made by the operators, which is supported by the earlier citation from Doran (1981). The second criteria are measurable and is defined as satisfying if the objective is quantifiable, which helps the business to clarify what grade of success the actions have. One saying is that "You can't manage what you don't measure." by MacLeod (2012) which is very descriptive for this criterion. The third criteria are assignable

which is revealing which stakeholder that has been identified to carry out the action that is to be measured. Other researchers (e.g. MacLeod, 2012) use achievable instead of assignable which emphasizes a definition more towards the criteria realistic in the S.M.A.R.T method of Doran (1981). As mentioned above, the operational objectives in this study are not to be directly evaluated on how realistic they are hence assignable is a more accurate definition to use in this study. Lastly, the fifth criteria, the time-related criterion helps define the operational objective with respect to what timeframe it concerns, during what time it will be measured and executed. Doran (1981) describes a time-related criterion as an operational objective connected to a deadline. Table 1 illustrates what criterions that is considered adaptable for this study and a brief summary of how it will be used to assist the analysis.

Table 1 - Illustration of what question the analysis will answer based on literature on operation objectives.

Specific	Measurable	Assignable	Time-related
What is done and what performance objectives aims to be improved?	Is it possible to quantify? How?	Who performs the measurable action/process?	To what time frame is it delimited to? - Event? - Season? - Year?

Visual Management

The historical background of visual management is long but the development of it really took speed in the years between 1940s-1970s where methods such as Toyota Production System (TPS), lean-production, Kanban, risk analysis and 5s got developed and implemented (Tezel et al., 2009). Despite its long historical background, visual management is rapidly evolving in both manufacturing and service companies and the usage of visual management is becoming more and more effective (Tezel et al., 2009). Increasing amounts of data is now being collected by businesses but the question of why and how to use it is trending among performance literature (Ballard, 2020).

Visual management is a management tool that suits any type of business who aims to improve the business's performance by visualizing or communicating information throughout the business to focus on, commonly on a dashboard (Liff & Posey, 2004). Further, Liff & Posey states that it adds a new dimension to the process, systems and structures and enhances them by using visualization techniques to focus on highlighted performance areas. Thereby, visual management aims to improve a business's performance by connecting and aligning important areas such as businesses core values, visions, goals and work processes to one or more of the human senses (Tezel et al., 2009). From the findings in the literature review made by Tezel et al. (2009), key functions that contribute to increase a business's performance with visual management can be defined such as creating shared ownership, unification, job facilitation and transparency.

According to Yigitbasioglu & Velcu (2012), a dashboard can be defined as an interactive tool where important information to accomplish the goals that has been set up by the company is presented. The value of the dashboard is depending on how well the information is presented

in relation to its users. To utilize the dashboard in the best possible way, it should visualize information that enhances decision making or actions of processes (Yigitbasioglu & Velcu, 2012). In the nightclub industry this is exemplified as information presenting how many VIP-table guests that are currently checked in to know how many more places that are left before it is considered full. Therefore, it is important that the way a dashboard is designed and the information that is shared ensures that value is created and increases the business performance instead of doing the opposite. However, when designing a dashboard there are various things that need to be considered and these will change depending on factors such as the purpose of the dashboard, what features to include and who the user of the dashboard is (Yigitbasioglu & Velcu, 2012).

As in many other areas, effectiveness and efficiency are areas that want to be maximized in order to enhance the product, process or service. In the case of dashboards and visualizations, effectiveness is measured depending on how accurate the actual data is translated or decoded into the dashboard whereas efficiency is defined by Yigitbasioglu & Velcu (2012) as "Visualization is efficient if the maximum of data is perceived in a minimum amount of time.". The effectiveness and efficiency are important to consider when designing a dashboard.

Further, in order to enhance the performance and decision making within a business, the purpose of the dashboard can be at least one of the following four; consistency, monitoring, planning and communicating (Pauwels, 2009). Further, the four main parts are described by Pauwels (2009) as follows. First, consistency implies that the dashboard enforces a consistency in measures and measurement procedures within the different departments and units of the organizations (e.g. when operating on different geographical locations). Second, monitoring means that the dashboard should help to monitor the performance and can be both evaluative (e.g. what went well?) and developmental (what have we learned?). Third, planning focuses on the fact that the dashboard can be used for planning the future strategies or the future goals. Lastly, communicating implies that the dashboard can be used to communicate information between different stakeholders, for example communicating the strategic goals down to the operational level and vice versa. For this study, the two main areas of purpose to focus on are monitoring and communication hence consistency and planning are from here on not considered.

The next step is to analyze how the dashboard should be designed in order to fulfill its purpose. As earlier mentioned, there are various factors that need to be considered when deciding the design of the dashboard. Yigitbasioglu & Velcu (2012) choses to divide the purpose into two main categories to consider, functional features and visual features and these two needs to be aligned with the purpose of the dashboard to obtain a so-called functional fit. However, it can be hard to obtain functional fit since the goal with the dashboard might be unclear which may cause problems when deciding what features to include. Hence, this could lead to an implementation of far too many features or features that does not serve a purpose in the dashboard and in this way the dashboard risks to lose its strengths (Yigitbasioglu & Velcu, 2012).

Functional features

The functional features focus on what and to whom the information will be communicated, meaning what the dashboard can do (Yigitbasioglu & Velcu, 2012). It is important that the functional features match the purpose of the dashboard so the state where the dashboard no longer increases performance can be eliminated. In the article from Yigitbasioglu & Velcu (2012), the functional features are divided into four main categories, dashboard purpose, tasks, knowledge and cognitive style & personality (Yigitbasioglu & Velcu, 2012). In this project, the primary focus will be on dashboard purpose (as elaborated above) and tasks. Knowledge and cognitive style are two important factors for the functional features when developing a dashboard, but these deal with the fact that the dashboard has a higher level of interactivity and is personally customized for each user of the dashboard depending on the knowledge and personality of the user. Therefore, since it is outside the scope of this study the knowledge and cognitive style will not be considered in the analysis.

Four features are found as functional features that contribute to fulfilling the purpose of the dashboard. First, it should be a U-relationship between the information load and decision making (Yigitbasioglu & Velcu, 2012). This tells that at a certain level of information load, the decision making will be optimal and a decrease or increase of information would impair the decision making. Exactly where this point is located will most likely depend on various factors such as business, user and goal, but it is important to have this in mind when designing the dashboard. Second, altering the display format can facilitate better decision making by making it easier for the user to focus on the information that is relevant at that specific moment or for one specific task (Dilla & Steinbart, 2005). For the development of the dashboard in this project, this could for example mean that all financial information is presented as bars and all guest-related information is presented as circle diagrams. The third functional feature connected to the dashboard purpose area is to include performance markers (e.g. =/-/+) which has proven to give more weight into the category of information, even if it is financial or non-financial (Cardinaels & van Veen-Dirks, 2010). Fourth, alert indicators and automated alerts that allow the dashboard to highlight what operators should pay extra attention to such as performance targets that are missed (Yigitbasioglu & Velcu, 2012).

Moving on to the task category that is dealing with the complexity of the task, if it is spatial or symbolic information and the uncertainty of the information (Yigitbasioglu & Velcu, 2012). Decisions to be made within this area can be whether the information should be visualized as tables or graphs. Strengths with both tabular and graphical forms are found and Yigitbasioglu & Velcu (2012) presents them in a table. Strengths with graphs are that graphs make it easier to correlate information and reduce time on tasks, better evaluations for holistic decision strategies, reduce negative effects on information overload and they are suitable for spatial tasks. On the other hand, tabular form helps to create consensus among the decision makers, better decision in selective tasks and are more suitable for symbolic tasks (e.g. collecting specific values). As mentioned before, altering the display format is proven to have benefits on information communication and a combination of graphs and tabular visualization may therefore be preferable.

Although the tasks in this study are rather spatial a combination of graphs and tables will be considered in accordance to literature. Since the complexity and uncertainties are hard to

distinguish and the scope of this study does not include an evaluation of the operator's tasks in detail the factors will not be further considered.

Visual features

The visual features focus on how the information should be presented for the user. According to Yigitbasioglu & Velcu (2012), the visual features are important to fulfill in order to obtain a dashboard that is both effective and efficient and ensures that the purpose with the dashboard is reached. Following visual features are considered to be key features according to Yigitbasioglu & Velcu (2012) and will therefore be further elaborated; the dashboard should fit on a single page, it should be a frugal use of colors, high data-ink ratio and usage of grid lines for displayed graphs.

According to Few (2006), the dashboard should be able to fit on a single computer screen and also give possibilities to obtain additional information. This will mainly affect the efficiency of the dashboard since the time for the user to progress and obtain information will be shortened if everything is visualized on one single screen. The current version is already developed to fit a single screen hence further analysis regarding this feature will not be conducted.

Moving on, Goldstein (2007) is stating that use of colors can help the user to recognize information and also distinguish the difference between the information. However, excessive use of colors can cause distractions for users and thereby turn into a negative effect on decision making. The use of colors should therefore be frugal (Yigitbasioglu & Velcu, 2012) meaning that it is preferable to have a limited amount of different colors.

Tufte (2001) is defining the data-ink ratio as the amount of ink used to present the information divided by the total amount of ink used to print the graphic. One should strive to have this ratio as high as possible since that implies that the graphic contains the maximum amount of information that the ink used to provide the graphic is effectively used.

Lastly elaborated will be the reason to add grid lines to the graph. Grid lines are added into the graphics in order to erase the so-called Poggendorff illusion which leads to misinterpretation of data which could lead to bias and misjudgments in decision making (Amer, 2005).

Summary of literature to highlight what questions to answer in the analysis

As argued in the text above, the purpose of the dashboard is to monitor and communicate the tasks performed by the operators. Table 2 presents a summary of the findings in the literature that are considered relevant for this study. Functional- and visual features are presented in table 2 and are identified in the literature as key features, meaning that they should be applied at all times.

Table 2 - Literature summary presenting the relevant feature of visual management.

Summary of visual management literature	
Functional Features	**Visual Features**
U-relationship Altering the display format Performance markers Alert indicator & automated alerts	Frugal use of colors High- data ink ratio Gridlines

Methodology

In this study, an engineering design process was applied which stems from the general approach presented in the literature by Plan & Khandani (2005). The first step of Plan & Khandani's (2005) approach was conducted in this study and presented as the introduction and contextual background that leads to the research questions. The second step is gathering relevant information as ground for what solutions to create and in this study the second step was conducted in two parts. Part 1 consisted of interviews with owners and top-level management as background research where a qualitative analysis was conducted to answer research question one. Part 2 was accomplished through a workshop with operational personnel and was based on the results of the first part to convert the strategic goals into operational objectives. Additionally, part 2 fulfils the second step of Plan & Khandani's (2005) approach by the conduction of a workshop and analysis of the results into operational objectives that specified the requirements. The requirements were created to be used in part 3 where the design of the visualization was conducted and was formed in part 2 as the results of the analysis of the empirical data. Part 3, dashboard design used the results from part 2 and incorporated literature on visual management to create a framework of how to construct a visualization of the result from part 2. The workshop also provided input on what format the workshop participants desired and was used to argue in the analysis in part 3. Part 3 fulfilled the third step through creating solutions based on the specified requirements in part 2 and part 3 additionally fulfils the fourth step. The last subsection of this section describes how the literature study was conducted. Additionally, each part argues why the specific approach was chosen, weaknesses and strengths are discussed and an elaboration on how the weaknesses were handled. Finally, each subsection elaborates on what environmental and social impacts they have had.
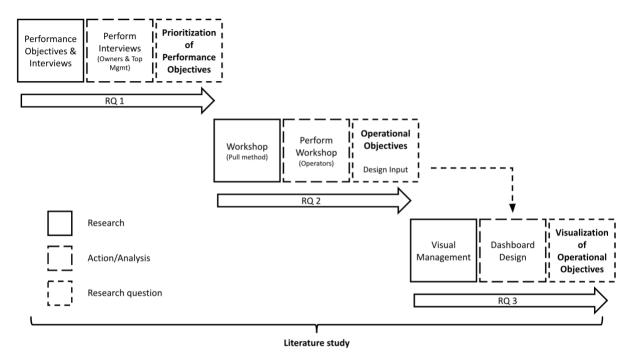
Figure 1 - Process flow of methodology presenting the three main parts of this study.

Figure 1 describes how the three parts were carried out and how the result of part 1 contributed to part 2 and the results from part 2 were used in part 3. The dashed arrow from the end of part 2 to the middle of part 3 reveals that "Design Input" was collected in the workshop and used for the "Dashboard Design". Each part was conducted in a similar way and in figure 1 the stepwise progress for each part is shown as boxes with different styles of lines. Each step will be further described below in regard to how the research for each part was conducted, how each performance was carried out and what approaches that were used in each analysis.

Besides part 1, 2 and 3 a literature study was conducted and is elaborated in the last subsection of this section.

Part 1 - Identifying performance objectives on a strategic level

To answer the first research question, relevant literature was collected. The collected literature forms a frame of reference which created a ground for the study to perform an analysis on. The data to be analyzed will be collected through interviews.

Semi-structured interviews and preparations

To identify the performance objectives on the strategic level, semi-structured interviews were conducted on owners and top-level management of nightclubs in Sweden. Semi-structured interviews are a strong and common tool to use when the researcher wants to cover a theme, issue or questions rather than test a specific hypothesis (Kajornboon, 2005). Further, according to Adams (2015), semi-structured interviews are especially beneficial in situations where information can be enhanced by open-ended questions or follow-up questions. The purpose of the interviews was to collect information about the importance of the different performance objectives, how the nightclubs are working to stay competitive and how the performance objectives are communicated to operational level. In total, nine interviews were planned but

due to Covid-19 and the global effect it had on businesses four interviews were cancelled. The remaining five interviews were conducted face to face but when not possible, Skype was used to minimize the risk of spreading Covid-19 through physical meetings and to reduce environmental impact due to long travelling distances and time constraints. As the answers of the interviews were used to analyze what prioritization the nightclub industry has of the performance objectives, six questions were formulated to help the interviewees to provide answers helpful for the analysis. The questions can be found in appendix 2 and they were formulated to give space for open and reflective answers and the possibility for the interviewees to exemplify is mentioned as a strength by Kajorboon (2005). The blend of open-ended and closed-ended questions where follow-up questions were used provided a variation in the interviews which is a preferable way to structure the question guideline according to Kajorboon (2005) and Adams (2015). To connect the answers to the literature areas of interest, the first three questions were specifically designed to highlight the five performance objectives. The first question was direct on topic whereas the two following questions were designed as complements to the first question with the aim to provide validation and broadness. Question number four and five were aimed to induce additional perspectives regarding the performance objectives from a broader business context-perspective. These two questions emphasized the five competitive forces by Porter (2008), which gave the interviewee a chance to elaborate on how their business's strategy was managing any of these forces. Question number four and five was formulated to give the researcher answers where a broader perspective was forced upon the interviewee. This was used for validation towards the identified prioritization of the performance objectives and to increase robustness. The sixth and last question was made open and was not exclusively focusing on the financial factor. Thereby, the question created space for the interviewee to openly speak about what additional focus areas the nightclub was focusing on within the environmental and social factors.

According to Adams (2015), the interviews should not exceed 60 minutes to ensure high focus during the whole session. In this case, each interview lasted between 40-50 minutes which both led to a high focus during the whole session and time for reflections and discussion between the researchers and respondents, all the interviews were conducted on a time period of two weeks. Since the interviews were conducted within a condensed time window of two weeks, the empirical data from the first interview to the last interview could be considered equally fresh which was positive when conducting the analysis. During the interviews, one of the researchers was designated to lead the interview, asking the questions while the other was taking notes. However, both were present and active during the interviews to ensure that each question got a comprehensive answer covering expected areas.

Compilation of results and method for analysis
When finalizing each interview, the researchers conducted an analysis where the written notes to each answer were connected to the one or more categories of performance objectives. The connection was made by drawing a line between the answer to each question and the identified performance objective using a whiteboard. By this, keywords and quotes mentioned in the interviews were compiled into a table where each column represented a performance objective with corresponding keywords and quotes written below.

The researchers finalized the individual analysis by ranking each category of performance objective, where the highest prioritized performance objective was given the value five and the least prioritized performance objective was given the value one. When all interviews were analyzed, a value to each performance objective was set in order to enable a visualization of the results on an accumulated level as a summary of each performance objective's value. The total value of each performance objective made it possible to conclude how the performance objectives were prioritized on strategic level. As an outcome of this, the results provided an overview of how owners and management is prioritizing the performance objectives.

Part 2 – Finding requested information on an operational level

The second research question will be answered by an analysis of results from a workshop where the aim was to identify what information operational staff considered important to make decisions aligned with the performance objectives.

Benefits of conducting workshops

According to Ørngreen & Levinsen (2017), a workshop can be defined as "...an arrangement whereby a group of people learn, acquire new knowledge, perform creativity problem-solving, or innovate in relation to a domain-specific issue". Further, they are defining three different types of workshops; workshop as a mean, workshop as a practice and workshop as a research methodology where the last type is most relevant for this study. When workshops are used as research methodology it focuses on domain-related cases and is specifically designed to gather data or answer questions for the researchers. However, to ensure an acceptable level of authenticity it is important that the workshop also fulfill the participants expectations and interests. Ahmed & Asraf (2018) highlights a few challenges that need to be attended to in order to successfully complete a workshop. First, a challenge when conducting a workshop is that the activities or tasks within the workshop must induce engagement of the participants hence it is important to include the participants in order to complete the workshop wholeheartedly. Second, a comfortable environment where the participants feel listened to and are encouraged to speak freely needs to be created. Third, the activities conducted during the workshop must be relevant to the main purpose of the workshop.

Preparations and execution of workshop

The pull approach by Ericson Öberg, A., Almström, P., Landström, A. (2019) provides a framework of how to design a workshop to efficiently define operational objectives. As the name reveals, the workshop uses a pull approach instead of the traditional Push approach. According to Ericson Öberg (2016), differences between the novel pull approach and the traditional Push approach is that the latter one uses existing measurement tools that may be cost efficient but not always sufficiently fulfill the purpose that the tool is expected to fill. Instead, the pull approach allows the individual business to first identify what it needs to measure to provide useful information for decision making to the stakeholders (Ericson Öberg, 2016). Due to the benefits of using a pull approach when developing operational objectives, the workshop was conducted by the pull approach of Ericson Öberg et al. (2019) which also has been successfully used in previous cases. Additionally, the pull approach meets the

requirements of this study as it allows operational staff to engage in converting the identified prioritization of performance objectives on a strategic level into operational objectives.

Ericson Öberg et al. (2019) suggests three preparatory steps before conducting a workshop. First, define the area of decision making that the workshop should focus on improving and in this study the area is identified to be the section of VIP-tables. Second, identify what specific problem that should be solved, namely that operational decisions in the section of VIP-tables should align with the prioritized performance objectives. Third, what stakeholders should participate in order to optimize the outcome of the workshop and which was identified as operators working with the VIP-tables and supervisors. With respect to the Covid-19 situation the workshops were affected in the way that we had to split from one workshop with twelve participants into two identical workshops where six participants were planned. However, additional restrictions resulted in cancellation of the second workshop. This resulted in one workshop with a total of six participants that lasted for two and a half hours which is supported in the framework of the pull approach (Ericson Öberg et al., (2019).

The conduction of the pull approach workshop by Ericson Öberg et al. (2019) consists of seven main steps that are illustrated in table 3 where only the first four steps were used in this workshop and will be elaborated in the following text. The second and third step were merged since scenarios were used as main activities in this workshop which connects to the purpose of the participants and simultaneously involves the conduction of the third step.

Table 3 - The seven main steps of the pull approach of Ericson Öberg et al. (2019) The fifth, sixth and seventh step is highlighted in grey and were excluded for this workshop.

1. Create a common understanding of the problem.
2. Identify what purpose each participant has.
3. Identify what information that is required for decision making.
4. Decide in what way the required information should be presented.
5. Define in detail what measurement that should be used.
6. Decide how the data should be gathered and transformed into measurements.
7. Compile what actions that needs to be done to implement the measurements.

First step

The first step was conducted by presenting the prioritization of the performance objectives identified in part 1 that communicated in what way operations should be performed according to owner and top-level management. Additionally, a pentagon was presented to the participants to communicate in a pedagogical way how trade-offs between the performance objectives could occur when prioritizing them. The prioritization of the performance objectives was discussed with the participants to create a common understanding by letting them elaborate on the definitions of each performance objective and thereby converting the perspectives of the performance objectives from a strategic level to an operational level.

Second and third step

The purpose was identified when the presentation of the scenarios was made by activating the participants' involvement in the workshop. The scenarios are presented in table 4 and enable

the participants to have a discussion about what information that was required to increase their chances to make more accurate decisions during service hours. The main focus in these discussions was to identify information that aligned the decision making with the prioritized performance objectives. The participants were divided into groups of three where one group was given the first scenario and the other group was given the third scenario. Each group discussed for 20 minutes and came up with suggestions of how they would solve the scenario combined with what information they addressed as necessary to have. Each group presented their solution to the other group where the opponent group was asking questions to better understand any uncertainties which allowed for further development of each solution. The second scenario was performed by the groups together since scenario one and three were attached to the second scenario. The results from the scenarios were summarized on a whiteboard and the solutions were verified to align with the prioritization of the performance objectives.

Table 4 - Scenarios used in the workshop.

Scenarios		
1. Start of event	2. Middle of event	3. End of event
- Few or no guests has arrived. - Reserved tables are visible. - Preparations and greeting of guests. - Available/Free table are visible.	- Most tables have arrived. - Peak hour of event. - Most crowded time of event.	- Status on individual tables are visible. - Every reserved table has checked in. - Tables may be finishing up and leave. - Guests with no reservation book tables.
What information is required to fulfill strategic goals?		

Fourth step
The fourth step involved how the required information should be visualized in order to ease the processing of the information for the operators. Areas discussed in this step was for example what format, what color and how often the information should be presented.

Throughout the whole workshop session, a whiteboard was used, and notes were continuously taken from the discussions and reflections being made. The whiteboard was also used for presenting the solutions to each scenario where additional discussions contributed to its development of what information should be considered as required information. As for the interviews, the same approach was adopted in the workshop, one researcher leading the workshop and the second researcher was taking notes of observations needed for the analysis.

Method for creating operational objectives
The obtained result from the workshop provided what information the participants identified as required information (RI) to solve the problems found in each scenario. The obtained results were compiled into a table presenting each RI, which scenario it was identified in and what performance objective the problem affected. Based on the table, each RI was individually described, for contextual understanding, and analyzed to show if and how it could be presented as an operational objective. The analysis was based on literature from the operational objectives section where four criterions were used to systematically establish if and how an operational objective could be presented. By answering each criterion, a systematic approach could be conducted, and it was ensured that each operational objective was supported with literature and

thereby created in a rigid way. The analysis of part 2 resulted in a table presenting the operational objectives and four columns, one for each criterion, consisting of the findings in the analysis. The table is presented in the analysis part of this report. The table concludes the findings in part 2 of this study and answers the second research question of which were used as empirical findings in part 3 and provided specified requirements to the study.

Part 3 – Visual management to visualize requested information

To answer the third research question, the operational objectives identified in part 2 was used as empirical data. Following text will elaborate on how the analysis was conducted.

Method for analysis of operational objectives with visual management
The findings from part 2 were used as empirical data for the analysis in part 3 where the operational objectives were examined with respect to the literature of visual management. The aim was to find how each of the operational objectives should be visualized based on the functional- and visual features. First, an individual analysis of each operational objective with respect to the four functional features was conducted. Second, the answers to the four functional features of each operational objective was analyzed on the basis of the visual features to find how the operational objectives should be visualized with respect to the three key features of visual features. The outcome from the analysis of functional- and visual features was compiled into a table where keywords and key findings were summarized to provide an overview of the results of part 3 which also is the answer to the third research question.

Literature study

Throughout the study, literature was read in the same order as the succeeding parts of this study that is presented in figure 1 and the literature study was divided into two parts, one major and one minor. The major part covered literature regarding the scope of the study and was needed to fulfill the purpose with this study where the minor part covered literature to adopt for the methodology of this study. More in depth, the major literature study covered areas within business strategy, performance objectives, performance management and visual management while a minor literature study covered interviews and workshops.

As the study was conducted in three succeeding parts, the literature needed for each part were therefore prioritized in the identical order. Table 5 presents what search phrases that were used to find relevant literature within each research area and the databases used in this study are: Scopus, Google Scholar and Web of Science.

For the first part of this study the literature study focused on business strategy, performance management and interviews for collection of empirical data in part 1. The second part emphasized performance management to connect part 1 and part 2 and additional literature on operational objectives and workshops were read to prepare and execute the workshops from where empirical data was collected. Lastly, part 3 of the study focuses on visual management where dashboard design was the main research area and operational objectives were used to connect part 2 and part 3.

Literature related to previous courses attended by the researchers were used when needed. The snowball effect was adapted where articles collected from the databases or when articles found from previous courses could generate additional literature of relevance. Additionally, a process design was found that helped the development of designing the process of how this study was conducted.

Table 5 - Presentation of what search phrases that were used for each part of this study.

	Literature study			
	Major		**Minor**	
	Research area	**Search phrase**	**Research area**	**Search phrase**
Part 1	**Business Strategy**	"Performance objectives" AND "Service management"	**Interviews**	"Semi-structured interview"
		"Communication" AND "Improving operational performance"		
	Performance Objectives	"Strategy formulation" AND "Impact on performance"		"Interviews" AND "Research methodology"
		"Strategic objectvie" AND "Business performance"		
Part 2	**Performance Managements**	"Operational objectvies" AND "KPIs"	**Workshops**	"Workshop" AND "Research metodology"
		"Operational Performance" AND "Service Performance"		
Part 3	**Visual Management**	"Design KPIs" AND "Design performance objectives"	**Dashboard design**	"Performance management" AND "Visual management"
		"Visual management" AND "Service"		

Analysis

This section presents the analysis of the empirical data that has been collected throughout the three parts. The first part, where the interviews were held, presents keywords and quotes given by the interviewees to highlight how the performance objectives that were emphasized by the interviewees. An analysis of interviews follows that results in a table with values between one

and five to rank the performance objectives which is the answer of research question one and enables the study to proceed with the analysis of the second part.

The workshop conducted in part 2 used the answer to research question one as a base for identifying problems on an operational level to address in the workshop. The results from the workshop to each scenario will be presented in columns below to highlight what information operational staff requested. The analysis of the requested information will follow and be presented as the answer to the second research question. Additionally, the workshop also provided valuable input for the third part of this study regarding the desired format of presenting information to enhance processing of information.

Lastly, the analysis will present the dashboard design conducted in the third part of this study. Literature regarding dashboard design was used in this part and answers from the second research question was used as data to analyze and design into a dashboard. The "desired format" from the workshop in the second part was considered in the third part in relation to the framework to optimize the outcome for this study.

Part 1 - Prioritization of Performance objectives on strategic level

Following text will start by presenting the results from every interview as a table showing boxes, each one dedicated to a performance objective. The boxes will contain the keywords and quotes taken from the answers in interviews. The analysis is conducted on the performance objective where the answers and quotes will be used as ground to evaluate how each performance objective is valued. The analysis of the interviews will result in a table showing how each interview valued the performance objectives in relation to each other where the table also will reveal the sum of value for each performance objective, leading to the final result of the first part of this study.

Keywords and Quotes emphasizing the performance objectives
Quality, speed, dependability, flexibility and cost were all discussed in every interview and will separately be analyzed in the following subsections. Table 6 presents related keywords that will be highlighted in the analysis.

Table 6 - Compilation of keywords and quotes from interviews.

Keywords & quotes for Performance Objectives	Quality	Speed
	"#1" Continous improvement "Be the best" High-end service Quality leads to revenue Brand recognition Uniqueness	"Be effective. Be prepared" High internal prioritization "Execute with speed"
Dependability	**Flexibility**	**Cost**
"Resource staff with care" Benchmarking "Reliable and qualitative key-actors" Be dependable, and fast Knowledge leads to dependability	Creativity "Sense & Respond" "Produce what is needed exactly when needed" "A key to achieve uniqueness" Responsiveness	"If not risking quality" "Important but not prioritized"

Quality

Each interviewee emphasized quality as the most important performance objective when operating VIP-tables in nightclubs and the reason for this was given by the interviewees as examples such as bringing a high-end service to customers willing to pay for a more exclusive service. The nightclub owners and top-level managers elaborated on this and explained that guests interested in VIP-tables during their stay at nightclubs expects a higher level of service and examples as offering customer oriented solutions, quick responds to whenever guests had a demand, maximizing the customer experience by having the best location in the nightclub, offering more space than regular nightclub guests and offering an exclusive area where only VIP-guests are allowed. The interviewees also expressed examples in other performance objectives where the final aim was to increase the overall quality. One example here was a quote in the flexibility-box that says; "A key to achieve uniqueness" where the interviewee explained that by being flexible the nightclub can always offer whatever is demanded whenever it is needed which increases the quality in terms of delivering a unique solution for each VIP-guest. An additional example is presented in the cost-box where the interviewee emphasized the importance of cost but not if risking quality.

Speed

Execution was considered very important but not only providing a qualitative execution but execution with speed. This was mentioned by several interviewees as important, but it was also highlighted that there exists internal and external speed. The internal speed is referred to as operations behind the scenes where customers cannot see what happens and the external speed is referred to as operations that are visual to the customers. Although speed was considered more important to achieve in internal operations it should not be neglected in the external operations. This was exemplified as delivering service to a VIP-table should be foremost done qualitatively but should still not take longer time than necessary. A quote made by an interviewee highlighted that speed could be enhanced both internally and externally by preparations that shortens lead-time in the process of performing a service (found in the speed-box as; "Be effective. Be Prepared").

Dependability

An answer in one interview highlighted that dependability in the operations can be enhanced by increasing the operator's knowledge, allowing them to make more accurate decisions. An example of knowledge in this sense was given as the more identical the operations were and how well knowledge about how to perform the operations was communicated to the operators, the more dependable the operations became. One interviewee highlighted that the recruitment of staff is important to find capable operators that can be used as "key-actors" since they are providing the actual customer experience that is significant for the VIP-tables.

Flexibility

This performance objective was highly emphasized by all interviewees and also mentioned to be important to achieve quality where the quote: "A key to achieve uniqueness" confirms this. The interviewees highlighted the need to be able to customize the service on an operational level to fit whatever a customer values as good service that increases the customer satisfaction.

Besides being flexible on an operational level the interviewees mentioned that they continuously evaluate their VIP-table offer to match what the current market is demanding, and a quote taken from this answer is "Sense & Respond". Creativity was considered a crucial skill to possess among operators to be able to match customer needs on a satisfactory level.

Cost
The lowest prioritized, almost on the edge to be forgotten in the context of VIP-tables, but still a performance objective that needs to be attended to. The interviewees explained the reason that cost is low in prioritization is due to the fact that it is an offer that has the fundamental feeling to deliver extraordinary solutions to customers that are willing to spend more money if the experience in the product is qualitatively delivered. Additionally, the focus on cost should not risk deteriorating any of the other performance objectives, especially not quality.

Evaluation of interviews to rank Performance Objectives
The value for each performance objective that is based on the analysis of the answers is presented in table 7 and indicates how the performance objectives are ranked in each interview.

Table 7 - Compilation of results showing how the performance objectives were valued based on the analysis of the interviews.

Interview object	Performance Objective				
	Quality	Speed	Dependability	Flexibility	Cost
1	5	2	3	4	1
2	5	2	4	3	1
3	5	3	2	4	1
4	5	2	4	3	1
5	5	1	3	4	2
Sum	25	10	16	18	6

The rank will reveal in what order they are prioritized in comparison to each other and should not be interpreted as a quantitative measure of how important they are. The analysis of each performance objective above creates a foundation upon where the value of each performance objective is validated against. Since the number used to rank the performance objectives on an individual level only shows the mutual order of performance objective, the sum shown in table 7 cannot be interpreted as how much focus each performance objective should get. Therefore, the final result of part 1 and also the answer to the first research question is that the identified prioritization of the performance objectives is:
- Quality
- Flexibility
- Dependability
- Speed
- Cost

With this information in hand, the first research question could be answered, and these results were used to answer the second research question.

Part 2 – Conversion of Performance Objectives

The analysis of what operational objectives the performance objectives could be converted into was enabled by the workshop. The results of the workshop are presented below and followed by an individual analysis of each results from the workshop. The participants argued what information they found relevant to have that would assist to solve the problems in the scenarios. This section will end by presenting a compilation of what operational objectives that have been found based on the RIs and the answer to the second research question.

Obtained results from workshop

By conducting the workshop with the Pull approach as described in the methodology the RIs is compiled in table 8. The table illustrates what information the participants of the workshop identified as necessary for each scenario to make decisions aligned with the prioritization of performance objectives. VIP-wristbands were identified in all scenarios hence the three rows were merged into one covering what effect the RI had during the whole event. Additionally, the workshop helped connect each RI to what performance objective(s) it contributed to and is illustrated in table 8 with an "X"-mark if a contribution could be identified. Although the table shows that the RIs most frequently affected the quality- and dependability objectives it cannot be concluded that these objectives were the most prioritized by the participants.

Table 8 - Presents how the required information was connected to the performance objectives.

Scenario	Required Information	Quality	Speed	Dependability	Flexibility	Cost
1	Card & Identification	X		X		
1	Greet of guests	X	X	X		
2	Presence at table	X				
2	Liquor - law			X	X	
3	Champagne > Liquor	X				
Entire event	VIP - wristbands	X	X			

*(Header spanning columns Quality, Speed, Dependability, Flexibility, Cost: **Performance Objective**)*

Conversion of performance objectives into operational objectives

Following text will individually present each RI followed by an analysis of what operational objective(s) the RI can be formed into. Succeeding the presentation of the RIs, an analysis will be conducted and presented in table 9 that illustrates if and how the RI can be converted into an operational objective.

Card & Identification

The first required information from the workshop describes a situation occurring at each arrival of guests who have made a reservation or intend to reserve a table. The card and identification of the guest that has made the reservation is collected as a safety issue to ensure that guests do not just leave without completing the payment of what has been ordered during their stay. This

process was highlighted as crucial by the participants of the workshop and in order to minimize the risk of missing out on payments which induced uncertainty for which the action to collect a card and identification had been made. Henceforth, the operators called for a process to minimize the risk of not performing the action which would result in more dependable processes where the operators, instead of being uncertain about whether card and identification has been collected, could focus on maximizing the customer experience to increase quality. Further, the participants did not consider it a sufficient solution to just delegate the responsibility of the process to someone at the nightclub hence the participants urged that they in addition need to be informed when the process is completed.

Suggestions to solve this issue should aim to create a stable process and a way to communicate this throughout the business. The software could communicate when a card and identification had been collected to let operators know. However, this requires that operators could read the information before they greet the guests which is not always the case. In order to assist in communicating and ensuring that the process is completed, a solution is by collecting the card and identification at the entrance. The collected items are put into an envelope dedicated to the table of the guest which is conducted by the entry host and physically handed to the operator simultaneously as the operator greets the guest. The operator puts the envelope in a safety locker in a restricted staff-area after the guest has been greeted.

How the RI can be converted into operational objective(s) will follow by analyzing the four criterions by Doran (1981). First, the RI is possible to specify as the process intends to collect card and identification from guests before the operator greets the guest and this aims to improve dependability which will lead to increased time to improve quality. Second, quantifying the operational objective is possible and is most sufficiently done as a binary measurement that communicates whether the action has been made or not. Third, by implementing the process and assigning the entry host to it, the binary confirmation can be done by the same person when the action has been made. If an additional process would be implemented, such as putting a card and identification in an envelope dedicated to the specific table of the guest the transfer of information would also physically confirm that the action has been performed. The fourth criteria could be connected to a deadline which depends on what restrictions the nightclub sets on how long a table can be reserved before being sold to a new guest. However, the objective is achieved at the moment the action is performed and it has been confirmed in the software.

The analysis of the first RI reveals that the performance objectives quality and dependability can be converted into an operational objective.

Greet of guests
The second RI from the workshop identified that arriving guests often have to wait longer than necessary due to poorly planned processes for transporting the guest from the entrance to their respective tables. Seldom, the designated operator would be prepared to greet the guest at the entrance and therefore the entry host guided the guests towards the table hoping that the operator would be ready to serve the guest. This was argued to impact speed negatively due to waiting time which affected the customer experience connected to quality.

Suggestions were presented and one suggestion was to let the guest wait at the entrance until the operator was available and a second suggestion was to have each operator stationed by or close to, their respective table assigned to them. The first suggestion called for a means of

communication that informed the operator that the guest had arrived, and an example mentioned was that the operator's mobile phones were connected to the software and received push-notifications when guests arrived. However, by enabling this function of sending push notification from the software to operator's mobiles it would affect quality due to increased risk of distracting moments by non-related push notifications sent to the operators' mobile phone. By implementing the second suggestion it was argued that speed would improve and at the same time increase dependability due to internal operations being standardized when it comes to greeting the guests at respective tables.

The analysis of the four criterions reveals that the first criteria is fulfilled since it can be stated that operators should be ready at the table when guests are arriving and that it aims to improve quality, speed and dependability which results in increased customer satisfaction. By measuring the time between when the guest is checked in by the entry host in the software and when the first order is placed into the system by the operator the RI is measurable. However, no value for this measurement can be bound that enhances the decision making for the operators during service hours. Thirdly, the process is assigned to both operators and the entry host where the entry host is responsible for guiding the guest to its respective table and the operator is responsible to be ready to greet the guest when the guest arrives at the table. Lastly, the time-related criteria are not connected to any time frame but are rather connected to the process itself.

The second RI converts quality, speed and dependability into an operational objective.

Presence at table

The third RI connected to the problem of not being present enough at the tables during service hours to increase customer experience and maximize the quality. The participants identified a challenge to decide at what table presence was most urgent since each operator often was assigned more than one table each. During peak hours where the VIP-area was crowded with guests and at the same time the most intense service hours due to orders being placed frequently. When delivering an order to a table the operator often needed assistance by other operators to complete the orders effectively which induced the challenge of what table to serve first thereby prioritizing them.

A suggestion made by the participants was to incorporate supportive staff to help reduce workload during peak hours, but the problem remained due to the prioritization issue where a solution would require information presenting what table should be prioritized.

The analysis of the third RI will follow to answer the four criterions by Doran (1981). First, the RI is specified due to the process where operators should serve the highest prioritized table and that it aims to improve quality. The second criteria can be quantified by applying the information of current spend of a table, number of guests checked in at the table due to the fact that the bigger these values get the more frequent presence at the table is required to maintain a good quality. The process is assigned to the operators foremost, but potential supportive staff should be able to read the information as well in order to better know where assistance is most needed during peak hour. The time-relation should be restricted to each event since a "hot" table one event is not influenced by a precious event and should not influence a future table.

The third RI enables us to convert quality into operational objective(s).

Liquor - law

The fourth RI describes a problem that is connected to Swedish law and covers the restriction of leaving bottles of liquor on VIP-tables unattended by operators past 01:00 am. Events that close later than 01:00 am therefore need to handle this by a process where they remove liquor bottles from the tables prior to 01:00 am. The workshop revealed this scenario as problematic as it risked creating confusion for guests when their liquor is removed from the table before they have finished the bottle. The deadline occurs during peak hours of the events which increases the risk of forgetting about the time and thereby risking not to obey the law which cannot be tolerated. The risk of confusion jeopardizes the customer satisfaction and any small misunderstanding may amplify into an argument between guests and operators where the guests often are intoxicated to some level and the operators are stressed. The solution would help the operators to increase a more dependable and stable process which would help induce trust to guests and also increase flexibility due to enabling preparations to better plan for the upcoming process.

The participants highlighted a notification in good time prior to 01:00 am that indicated it was time to remove the liquor which would assist the operators to communicate to the guests in advance that the liquor soon would be removed and also explain the reason briefly. This would reduce the risk of creating confusion and jeopardizing the customer satisfaction.

The analysis of the fourth RI answers the four criterions by first specifying that removal of liquor from table will be done and by improving preparations due to a reminder it aims to improve dependability and flexibility. The second criteria are hard to define as measurable since the solution is not to improve a process but rather assist the operators in preparation for the process. However, the measure can be defined as an alert that notifies operators it is time to start the process. The process is assigned to the operator and the process is related to each event ending later than 01:00 am.

The performance objectives of dependability and flexibility are converted into an operational objective by the analysis of the fourth RI.

Champagne > Liquor

The fifth RI is related to the fact that guests become more affected by the intoxication of liquor than any other alcohol such as champagne, beer, cider and wine. Although beer, cider and wine are less intoxicating beverages, they are not further considered in the analysis due to the relatively small part of the total revenue that is represented by these beverages on VIP-tables. The participants highlighted this as a problem and argued that it reduces the total customer satisfaction if a guest gets too intoxicated which may increase risk of conflicts in one way or another between guest and operator or between guests. Quality to other guests are reduced by too intoxicated guests and the operators are affected by not being able to fully focus on providing service to guests by instead attending to helping guests who have gotten too intoxicated.

The participants suggested a system assisting operators how to steer guests into ordering alternatives to liquor to reduce risk of too high intoxication among guests. The operators argue that this problem is urgent to solve to become better to control guests in order to help them not to over consume alcohol.

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The fifth RI is specified to reduce consumption of liquor among guests and aims to improve quality. A way of measuring is by collecting sales data and setting up goals of what amount of liquor that should be sold. The third criteria are fulfilled by assigning the task to the operators that communicate with guests and handles the orders and management since they design the menus. Lastly, the process can be connected to time frame on any level due to the possibility to evaluate the sales at any given time and set up goals on event-basis, seasons-basis, year-basis etc.

The quality is converted into operational objectives by the fifth RI.

VIP - wristbands

Lastly, the required information was identified in all scenarios and concerned the distribution of VIP-wristband. More specifically, the operators were concerned by this matter due to the inconsistency in distribution of the VIP-wristband. When VIP-guests asked their operators for more VIP-wristbands to allow more guests to join them at their table and access the VIP-area the operators must ask for additional VIP-wristbands from a manager responsible for the VIP-wristbands who decides to allow additional VIP-wristbands or not. The centralized structure wastes valuable service time in several ways due to the need for the operators to locate the person responsible for the VIP-wristbands and return back to the guest which reduces speed. Historically, the centralized structure of distributing VIP-wristband stems from the results of previous structures where no one controlled the distribution, leading to overcrowding in the VIP-area. The result was reduced customer experience for the initial VIP-guests paying additional money to specifically enjoy the VIP-experience at the nightclub which directly affected quality.

A more decentralized structure was suggested by the participants of the workshop to be implemented, meaning that each operator controlled its own tables and distributed the VIP-wristbands as they seemed fit best. However, a pre-set number of VIP-Wristbands is kept by management to distribute during events where additional VIP-wristbands are needed. Discussion on this topic developed into what information that was required to make it work and the result was that increased transparency on how to distribute the VIP-wristbands was needed. Increased transparency was defined as management providing guidelines such as how many VIP-wristbands that should be considered maximum at each table and what factors that should contribute to additional VIP-wristband being handed out or not. By this, the speed and quality would gain positive effects due to enforcing the operators by a decentralized structure that allows them to make faster decisions, deliver the VIP-wristband rapidly and by increasing transparency each operator would be better prepared to respond to a request and simultaneously handle guest's expectations to reduce risk of disappointment.

The following part analyzes each criterion and the first criteria is fulfilled as the specification of distributing VIP-wristbands to guests is conducted by the operators. The process aims to improve quality and speed due to reduced lead-times and an increased transparency allowing operators to operate more autonomous. The second criteria could be fulfilled due to the possibility to put in numbers in the software of how many VIP-wristbands that have been pre-decided as a guideline for each table combined with input of the number of VIP-wristbands actually handed out. The relation between these numbers could be used as a measurement. Thirdly, the assignment in this case goes to operators of distributing a pre-

decided share of VIP-wristbands where the VIP-manager still possesses a holistic view of distributing the last share of VIP-wristband. The measurement may be helpful to guide in decision making where the last part of VIP-wristbands should be handed out if any at all is to be handed out. The time-relation for this operation objective is event-based which means that previous or future events should not influence the pre-decided number of VIP-wristbands.

By the analysis of the second RI, quality and speed is considered to be possible to convert into an operational objective.

Compilation of operational objectives

Table 9 compiles the analysis of each RI and the conversion of performance objectives into operational objectives. The columns in the table summarize the results from the analysis based on each criterion and provide the empirical data for the last part of this study which is the specified requirements used for the development of the operational objectives into the software and visualization in the dashboard.

Table 9 - Compilation of the results in part 2 analysis.

Operational Objective	Required Information	Specific	Measurable	Assignable	Time-related
1	Card & Identification	Collect card and identification of arriving guests. Aims to improve **quality** and **dependability**.	A binary value.	Performed by entry host.	Instant when guests arrives hence not "*related*" to time.
2	Greet of guests	Operators ready at tables when guests are guided to tables. Aims to improve **quality, speed and dependability.**	Time between check in and placement of first order.	Entry host assigned to guide guests to table. Operators to be present at table.	Need of internal targets.
3	Presence at table	Focus on most prioritzed tables first to improve **quality**.	Measurable with table related information (current spend on table and no. of guests).	Operators and potential supportive staff.	Restricted to event.
4	Liquor - law	Remove liquor bottles at 01:00 am latest. Aims to improve **dependability** and **flexibility**.	Alert connected to the time.	Operators.	Restricted to events open after 01:00 am.
5	Champagne > Liquor	Reduce consumption of liquor to improve **quality**.	Relate sales data of champagne and liquor to each other.	Operators.	Available for all time relations.
6	VIP - wristbands	A more decentralized distribution of VIP-wristbands. Aims to improve **quality** and **speed**.	Total no. of VIP-wristbands, divide them equally to each table. Measure against how many VIP-wristbands that are handed out to each table.	Operators and VIP-manager.	Restricted to event.

The first column presents what operational objective it is and is followed by a second column presenting what RI it is developed from. The third column in the table presents what actions the operational objective consists of and what performance objective it aims to improve. The fourth column describes on a conceptual level how the operational objective could be quantified when developed into the software. The fifth column reveals who the analysis resulted in to be assigned to carry out the actions. The sixth column describes what time-window the operational objective is connected to.

Part 3 - Dashboard design

The last part of this study will be to conduct an analysis of the findings from part 2. The analysis will aim to evaluate how each operation objective could be developed into visual features visualizing the information that enhances decision making or actions for the processes. The main approach for designing the features into the dashboard will be based on the purposes of the dashboard as a monitoring tool and a communication tool emphasizing incremental progress and operational objectives. This helps the operators as the dashboard interactively assists them to optimize their decision making with the prioritization of strategic goals in focus. First, an individual analysis for each operational objective will be done where functional features of the operational objectives will be developed that helps to fulfill the purpose of the dashboard. Second, a general analysis of how the operational objectives should be implemented and combined in order to align with the literature about visual features and thereby enhancing performance and decision making.

Individual analysis of operational objectives on functional features
Each operational objective will be analyzed in this subsection with respect to the four features presented in the literature which are the U-relationship, altering of display format, performance markers and alert indicators & automated alerts.

Card & Identification
The solution for this operational objective is to have a checkbox on each table on the dashboard that is checked when card and identification is collected. This solution can be combined with an automated alert that activates after the guests have been checked in a certain time without the card and identification has been collected.

   For the functional feature of U-relationship, there will be an increased decision making for the operators and the risk of information overload with this solution is minimal meaning that it does not jeopardize the U-relationship. Furthermore, it is hard to use altering display format and performance markers since this information is collected once and after that you just want to have it confirmed and the visualization will be hard to relate with earlier events or seasons. This solution will mainly take away the uncertainty for the operator since the risk of missing out on payments is more connected to the fact that the process is executed and hard to support with a visualization.

Greet of guests
To solve the visualization for this operational objective an alert communicating when guests arrive contributes to the effectiveness of the dashboard by notifying operators immediately when guests arrive and is checked in by the entry host. The visualization should be presented as a reserved table switching color from yellow to green.

   When analyzing this operational objective from a U-relationship perspective the information needed for this operational objective satisfies the feature due to the minimal amount of visualization that helps to optimize the performance. The visualization should not be displayed in altering format during the event since the visualization is rather static as from when the guests are checked in when the tables turn green. As for performance markers no additional

value can be identified by adding such markers to the dashboard. The alert indicator is how the solution is designed since the table as a whole turn green and should therefore be considered as satisfied. However, as the operator cannot constantly see the dashboard and every update immediately an alert for when a guest arrives might not be effective but by checking in the guests in the software and visualize this as a table changing its color it can be seen by the operator when passing by the dashboard which indicates to them that their table has arrived.

Presence at tables

A solution to this is to add "hot tables" to the dashboard that are connected to table related information. This would work as frames in the dashboard highlighting tables that should be prioritized or will need additional attention from the operators. For example, a big group of people has reserved a table and the current spend is high which should indicate that the table is in bigger need of service than a table of a smaller group and lower current spend. When this information is added into the software, the table should be marked with a red frame to indicate to the assigned operator that the table is highly prioritized and will require service.

With respect to the U-relationship, the solution adds value to this feature as it assists operators to better know what tables are in more urgent need of service than others. This enables operators assigned to less "hot" tables to quickly identify where their assistance is most needed. A risk of overload can be identified if too many tables turn red simultaneously whereas it is important that the tables are internally ranked towards each other and a maximum number should be allowed simultaneously. The altering of display should in this case not be used since a mix of formats in addition to the dynamic tables that gets a red frame when "hot" conflicts with the U-relationship since the dashboard risks becoming too dynamic. Since the red frame is used, performance markers would increase the amount of information without affecting the performance and although performance markers could be used instead of red frames it is not considered to be equally intuitive as a red frame. By adding the red frame to tables on the dashboard, it satisfies the feature of automated alerts since it assists the operators to enhance decision making during events.

Liquor-law

The solution is an alert indicator on the dashboard with a timer counting down from 15 or 20 minutes before the clock reaches 01 am where the automated alert that appears in a pre-set time prior to the clock turns 01:00 am to assist operators not to forget to remove bottles of liquors from the VIP-tables. Additionally, the alert indicator should have a minus sign (-) prior to 01:00 am and a plus sign (+) past 01:00 am. To stop the alert and make the timer disappear, the VIP-manager gives an input to the software to assure that the process is executed.

The feature of U-relationship can be considered as optimal since only one alert serves every operator's decision making and since the simple design of this visualization is obtained, no altering of formats is needed to enhance the U-relationship. For this solution, performance markers can be used by a minus sign (-) at the beginning of the countdown until 01:00 am and a plus sign (+) when the time has passed 01:00 am. It is important that this indicator easily grabs attention from the operators so even if the operator is looking at the dashboard for other reasons, the indicator will still be noticed and attended to. Due to this, the visualization can be considered to be an alert indicator. Since this is an additional feature appearing on the

dashboard, it should be carefully designed to not take too much attention of the operator and increase the risk of missing out on additional important information.

Champagne > Liquor

A solution to this problem is to implement a visualization showing the current status of the ratio between sold champagne and liquor. In this case, a two-colored bar connected to each table showing the ratio between champagne and liquor.

The U-relationship is in this visualization satisfying on table level but for the entire dashboard showing load bars could make the dashboard heavy, since it shows ratios on the same terms but one for each table. Although the existence of information overload is present, the U-relationship should still be considered as satisfying due to the fact that the amount of information to operators helps optimize decision making. It can be argued that the altering of display format could enhance the efficiency of the dashboard by altering the load bar with performance markers. The performance markers could be displayed when the ratio is far from switching level to reduce attention from the operator. Although an alert should attract attention, the risk of information overload is high if tables send alerts when the ratio is too low.

VIP - wristbands

The analysis revealed that the sixth operational objective should be presented as heated zones highlighting guest-intense areas. The heated zones should be based on the number of guests connected to the table it surrounds and the corresponding budget. A pre-set number of VIP-wristbands should be dedicated to each table by management and those pre-set numbers of VIP-wristbands are distributed by the operator to each table. If the last additional VIP-wristband, kept by the VIP-manager, are handed out it should be added to the corresponding tables in the software by the VIP-manager. An example of this could be that the pre-set number of VIP-wristbands is ten which would mean that the table visualizes the amount of checked in guests in relation to the pre-set amount. If six guests have arrived at the table, the operator has four additional VIP-wristbands to distribute to the guests. When tables are fully checked in and the value of the ratio is one, that could be visualized as an orange zone that indicates that every pre-set VIP-wristband has been handed out. Additionally, one condition to determine if the zone should be evaluated as a red zone by the software can be the budget for the table. If the budget for that table is high as well, that should imply that an extra amount of service will be required at this table and should therefore be evaluated as a red zone, illustrating a "hot" zone. If the additional VIP-wristbands kept by the VIP-manager is set to four per table that would give the VIP-manager four times the number of tables in the VIP-area and the distribution of these last VIP-wristbands can then be decided depending on what zones that are "hot" or not. By using visual management, it increases the internal transparency and provides a clear definition of how the VIP-wristbands should be distributed. The dashboard can be used to assist operators in decision making, such as not asking the VIP-manager for additional VIP-wristbands if guests at a table in a "hot" zone ask for additional VIP-wristbands.

The solution contains a weakness due to the fact that guests will not be entirely static to one table and might move around in the VIP, but the U-relationship is still considered as satisfying since the solution provides an improvement on decision making for a relatively low amount of information. Additionally, the U-relationship is good since it provides what the current status

is in a zone and not the underlying factors or conditionals that are set up in the software. As the visualization is rather static and only switches colors between different modes, altering the display format is not considered necessary to enhance decision making. Performance markers are not needed due to the visualization of zones switching colors depending on how "hot" it is and an alert indicator should not be needed since the information is only needed when the operator needs it to make decisions.

General analysis of operational objectives on visual features
The visual features of frugal use of colors, high data-ink ratio and usage of grid lines for displayed graphs, will be used to analyze how the operational objectives should be designed into the dashboard. In the following subsections, the visual features will highlight how it may contribute to the design of the dashboard.

Frugal use of colors
The current version of the dashboard presented in appendix 1 illustrates how the usage of colors is set to a minimum by having shades of grey to represent tables and information not active. Yellow tables presenting reserved tables including information regarding the guest's name, number of guests that have made the reservation, what the budget is and what operator that is dedicated to the table. With respect to the current version of the dashboard and the fact that this study does not include an analysis of what colors to actually use, the current theme will be used as ground for this analysis.

Although the use of colors should be kept at a minimum, colors for alert indicators & automated alerts will be in more contrast to the frugal colors to direct attention to the operator. Such colors are red, that typically indicates information that requires attention, and green, that often refers to information such as achieving objectives.

For the operational objectives of card & identification, the checkbox itself should be homogenous to the current colors of the tables but the alert could be designed to switch the checkbox to red if the process has not been conducted within a pre-set time.

The second operational objective concerning the greeting of guests should be visualized as the yellow table switching its color to green to indicate to operators that the guests have arrived. The table remains green for as long as the guests are present at the table to help operators to allocate where reserved tables are that have not yet checked in.

To assist the operators to enhance decision making regarding what table to be present at the frame highlighting a table should be read since this directs the attention of the operators and communicates urgency.

For the fourth operational objective, the pop-up timer counting down to zero am should be visualized in green prior to 01:00 am to direct attention but not to stress the operators while the pop up should turn red a pre-set number of minutes prior to 01:00 am to increase directed attention. Past 01:00 am the pop-up should pulse in a red color to alert that the process needs to be fulfilled.

The colors of the load bar should be frugal and homogenous to the current version of the tables not to attract attention to the operators but if the ratio drops below what is considered to be the minimum value the load bar should switch to red. The color of the load bar should be

presented in one color, homogenous to the current version of the dashboard, with a line moving along the load bar as a gauge that illustrates the ratio.

Lastly, the operational objective aims to illustrate if additional VIP-wristbands may be handed out to a certain table or not depending if the table is in a "hot" zone or not. The color of a zone that is evaluated to be a "hot" zone should naturally be red whereas another color, potentially orange or a color close to the current version of the dashboard, should be used for visualizing that all the pre-set VIP-wristbands have been handed out to the table. However, if the zone is not yet full in terms of the pre-set number of VIP-wristbands or not even booked the color of the zone should be homogenous to the background of the entire screen. Worth noting, the color of the frame needs to be differentiated from the red color visualizing a "hot" table.

High- data ink ratio
In this study, and in accordance to the literature, the ink used on the dashboard should as far as possible only be used for value adding information which in this study refers to information that helps communicate the functional features of each operational objective.

In the third operational objective, presence at table, the frame of tables in urgent need of service should not affect a zone rated as a "hot" zone in the sixth operational objective, to minimize the risk of blinding the operator. The solution is to highlight the red frame with a black border that helps the operator to identify if the table in a "hot" zone is only hot or also in need of service. The thickness of the frame should be distinct to direct attention but not being excessively thick.

Alerts, such as the one in the first, second and fourth operational objective should be relatively ink heavy since they communicate more urgent actions. For the first operational objective the solution is to mark the checkbox with a bold tick while the second operational objective should be a deep color. The fourth operational objective should be presented with relatively big text size in relation to the dashboard to communicate urgency. The fifth operational objective will by default be heavy on ink but as stated in the frugal use of colors the homogenous set of colors will not take on unnecessary attention.

Finally, unnecessary words and letters should be removed to not disturb the operator when processing the relevant data from the dashboard.

Grid lines for graphs
To assist and enhance the perception of the operators, grid lines may be used to help the operator to better relate to what the figures illustrate and one example in this study is in the load bar in the fifth operational objective. Depending on internal goals of what is considered a successful ratio between champagne and liquor, a dashed line should visualize the value of this ratio and a filled line should be used to assist the operators to know how far below or above they are in relation to the internal goal.

However, it is important that these grid lines do not interfere with the operator's ability to read the dashboard efficiently in relation to the previous visual feature.

Key finding on visual management features

The findings in part 3 of this study shows that the functional features help to define how each operational objective should be visualized into the software combined with the visual feature that helps to develop the design of the operational objectives with respect to the operational objectives combined with the current version of the dashboard. Table 10 presents how each operational objective should be designed in the dashboard and provides the answer to the third and last research question of this study.

Table 10 - Compilation of key findings identified in the analysis of part 3.

		Key findings	
Operational Objective	**Required Information**	**Functional features**	**Visual features**
1	Card & Identification	**Checkbox** communicating when collected. **Alert indicator** if checkbox is not filled.	**Frugal use of colors** - Minimal set of colors. - Use of red color to visualize urgent information. - Use of green color to visualize achieved goals. - Homogenous colors for less urgent information. **High- data ink ratio** - Black borders to distinguish differences. - Text size in relation to urgency to direct the right amount of attention. **Grid lines for graphs** - In load bar.
2	Greet of guests	**Alert** that communicates arriving guests by switching color of the table.	
3	Presence at table	**Highlight** tables in most need of service with a frame.	
4	Liquor - law	**Alert** as a timer counting down. **Performance markers**: (-) Before 01:00 am (+) Past 01:00 am	
5	Champagne > Liquor	**Load bar** presenting ratio between champagne and liquor.	
6	VIP - Wristbands	**Highlight** guest-intense zones as "hot" for crowded tables.	

Suggestions of design based on the result of this study

Suggested designs as a result of this study are presented below and are the product of all three research questions that have been answered to fulfill the purpose with this study.

How to visualize the operational objectives
The suggested designs are presented in figures where the operational objectives have been incorporated into the current version of the software to represent the suggested designs. Each figure will be elaborated above and explain what operational objective it concerns and how it is visualized.

Design of Liquor-law and VIP-wristband
Figure 2 illustrates the design for these two operational objectives where the timer counting down is placed on the top of the dashboard with the text: "Remove bottles in:" and the current time remaining is twelve minutes and 48 seconds until the clock turns 01:00 am. The text is relatively big in relation to other text in the dashboard and color is green to direct attention but not red yet. Further, the "hot" zones are illustrated in the dashboard as rectangular areas highlighting those tables that are considered as hot with respect to pre-set budget and the amount of checked in guests. More specifically, the area covering table number two is orange due to that all guests are checked in at the table, but the budget is normal while table seven and ten are highlighted in red due to that the pre-set budget is high respectively thirteen guests are checked in.
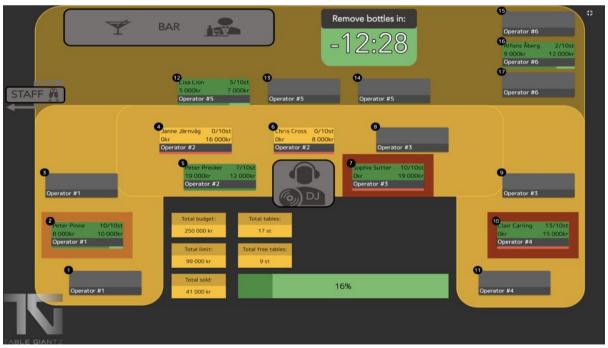

Figure 2 - Dashboard design illustrating Liquor-law and VIP-wristbands.

Design of Card & Identification and Greet of guests

The checkbox that was presented as the solution for the card & identification has been designed into the dashboard in figure 3 and is illustrated at table five and twelve that the process has been conducted. Additionally, if the card & identification have not been collected a specific time after checking in, the square is not ticked, and the table will pulse with a red color. Green tables are visualized for guests that have been checked in and thereby communicates to the operator that guests are to be greeted at the table. In the scenario in figure 3, the green tables have both been checked in, card & identification have been collected and orders have been placed which implies that the guests have been greeted.

Figure 3 - Presentation of suggested design to Card & Identification and Greet of guests.

Design of Presence at table and Champagne > Liquor

Figure 4 illustrates the two last operational objectives in this study where the suggested design for presence at table is illustrated as a red frame surrounding table number five, that the software has evaluated to be in more urgent need of service than others, in accordance with the analysis in part 3. Lastly, the operational objective for champagne > liquor is visualized at table twelve and is zoomed in to enhance the visual perception in the report, since the usual size of a screen at the nightclubs are bigger than the page-sizes in this report. The dashed line represents the pre-set ratio decided by each nightclub and the filled line represents the current ratio. The filled line moves along the load bar as a gauge whenever orders are placed in the software. The dark green part of the load bar illustrates how much of the budget that has been reached where the brighter green illustrates the remaining amount to be spent on the budget. Meanwhile orders are being placed the dark green grows which entails that the dashed line moves as well. The operational objective for champagne > liquor is only visualized at table twelve.
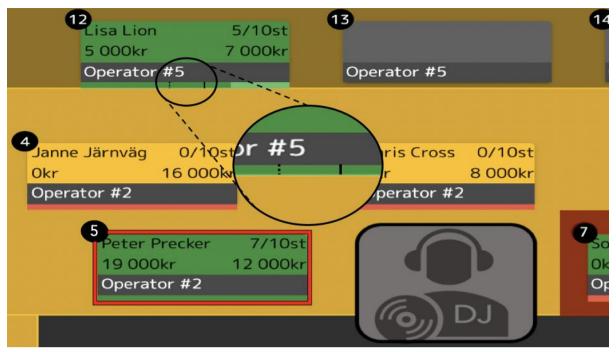
Figure 4 - An illustrating design of Presence at table and Champagne > Liquor.

Potential effects of suggested designs

Figure 2, 3 and 4 illustrate how each operational objective could be designed in the dashboard to visualize the required information given by operators in part 2 which are based on the prioritization of performance objectives identified in part 1. The designs provide information to enhance more accurate decision making for operators during service hours that are aligned with the performance objectives set by owners and top-level management. The fulfillment of the purpose with the dashboard, which in this study was monitoring and communicating, is considered fulfilled and is elaborated as follows.

By this, the project initiated by Ekberg Group can continue and use the results of this study when developing the software and designing the dashboard.

Discussion

The methodology for this study was based on a general engineering design process to ensure that the study was conducted in a robust way that allowed the researchers to reach a result based on well-known methodologies. Design processes on software development projects were initially also reviewed but none was adopted since part 1 could not be identified in any software development projects. Design processes within this theme were more focused on the actual development of the software based on already provided specified requirements, which is not the central part for this study. Therefore, the design process for this study was based on a general model where the second step was conducted in two separate parts and formed a hybrid version of the general engineering design process.

The results of this study should be considered satisfying in the sense that all three research questions were answered and aligned with the original problem. The suggested designs still need further development and homogenization into the current version to enhance how the dashboard is perceived by operators. If the results can be successfully incorporated into the software the overall value of the software to its customers will increase which additionally will enhance the nightclub industry performance with regard to VIP-service.

Future development and research areas should be identified as how to further develop the dashboard to not only enhance monitoring- and communicative purposes but also consider and enhance consistency and planning. The planning purpose could for instance be further developed as a customer relation management tool and a customer sales management tool with a potential to assist operators in sales-related decisions. Additionally, a more extensive market analysis can be conducted in order to see if there are differences in demand between the nightclub industry in Sweden compared to other countries.

The results and suggested design should be evaluated to ensure that operators are not exposed to any moral hazard that could lead to higher levels of work-related stress in terms of being monitored or having a dashboard reducing the level of autonomous work. Further, it should also be highlighted that guests may be viewed based on new criterions that could endanger the total customer experience based on making the tables more objective than before. However, since the analysis throughout the study has been made with the intention to enhance decision making during service hours with the main focus on increasing customer experience through quality, the results can be seen as harmless to that perspective.

The sustainable perspective of this study has on the result level contributed to a more sustainable work environment by increasing transparency in the company. By this, the management of operators has left the "mushroom" management approach since the operators are no longer kept in the dark and the purpose of their operations are well aligned with the strategic goals.

The CEO of Ekberg Group, Johan Ekberg is one of the two researchers in this study and have been active in the company and simultaneously conducting this study. This has helped the study to deliver a result that is closely connected to the visions by Ekberg Group before the study began. The possibility to always have close communication with the company made it possible to be well aligned with the vision and Ekberg Group could continuously ensure that the study was in line with the pre-set objectives. One risk in this setup was the risk of bias from the company and not allowing the study to have its own course and this was handled by strictly

ensuring that decisions within the study were motivated by the interests of the researchers and not the interests of the company.

Conclusion

The results in this study states that the development of the six created measurements will help to enhance accuracy in decision making for operators in the nightclub industry by communicating relevant information that has been aligned with performance objectives set on owner and top-level management level. Additionally, the measurements can be used to monitor the VIP-area of VIP-tables that also enhance more accurate decisions during service hours. Moreover, the development of the operational objectives and by implementing them into the dashboard, it is shown that performance objectives set on owner and top-level management can become measurable with respect to quality, flexibility, dependability, speed and cost. By enabling this, nightclubs can evaluate its business based on data and use accumulated data for decision making on a tactical and strategic level in the future, if know how exists within the company and proper tools are available.

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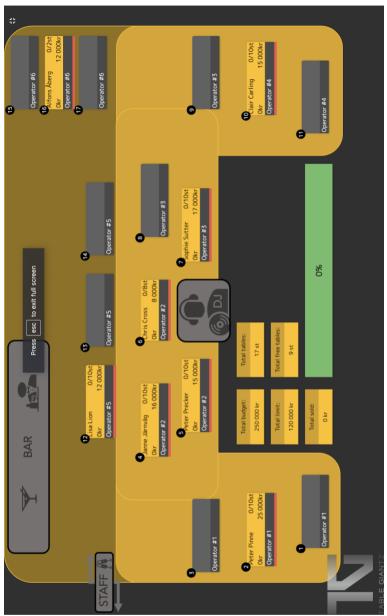
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Appendix 1 - Visual of software

Current version of the software.

Appendix 2 - Interview Guideline

1) To achieve long-term success, what performance objectives do you focus on?

    a) Performance objectives within areas of quality, speed, dependability, flexibility and cost (if possible, rate them).

2) Do you actively work with these performance objectives?

    a) How? *One or more examples.*

3) Do you communicate the performance objectives to operational staff?

    a) All of them or just some? *One or more examples.*

4) What do you consider as your strengths on the market?

    a) Do you measure this? *One or more examples.*

5) What do you consider to be your biggest threats?

    a) Incumbent actors, substitutes, new entrants, buyers, suppliers?

6) Except financial stability, are social- and environmental sustainability important to you?

    a) How? *One or more examples.*

Instruction to interviewer:
Follow up each answer to identify which performance objective(s) the interviewee aims to emphasize if it is not already mentioned by the interviewee.

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