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Contents

- 3** Constructing a Joint Product Portfolio to Support Commercial Cooperation
Erno Mustonen, Arto Tolonen, Janne Härkönen, and Harri Haapasalo
- 25** Using Grounded Theory: The Case of Political Marketing and Women Candidates in the 2014 Parliamentary Election in the Kingdom of Bahrain
Abdul Wahab Yusuf Al Jawder
- 43** Auditing Industrial Safety Management: A Case Study
Sondre L. Bjelle and Are K. Sydnes
- 61** Digital Literacy in the First Three Years of Primary School: Case Study in Slovenia
Ksenija Uršej
- 79** Impact of Working Conditions and Supervision on Academic Staff's Job Satisfaction at Dilla University
Getachew Alene Chekol
- 95** Capturing Knowledge Co-Creation with the Practice Ecosystem Framework in Business and Academia Collaboration
Maria Jakubik
- 115** Abstracts in Slovene

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Constructing a Joint Product Portfolio to Support Commercial Cooperation

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This study aimed to find a method to construct a customer-oriented joint commercial product portfolio for several independent companies to enable more effective market operations. The study also aimed to identify any related challenges. The findings indicate that a customer-oriented joint commercial product portfolio can be constructed through a five-step approach. The challenges of construction include those related to productisation, understanding the customer value of independent products, as well as understanding the necessary viewpoint. Earlier literature on product portfolio management has focused on independent product portfolios. This study is the first one to introduce a construction to productise a joint commercial product portfolio.

Keywords: productisation, product management, product portfolio management, business-to-business marketing, co-marketing

Introduction

Technological development and increasing customer requirements are challenging companies to develop their products and production processes to remain competitive. Especially in high technology industries, small and middle-sized companies (SMEs) have a particular role in bigger companies' technology acquisitions (Tavčar & Dermol, 2012; Rossi, Tarba, & Raviv, 2013), and cooperation in this early stage of the value chain is valuable (Park & Lee, 2018).

As big companies may not necessarily have enough resources, or competences, to develop all technologies internally and to undertake the related risks, the assistance of SMEs may be needed. However, due to their comparatively small base of resources and capabilities, smaller companies may have difficulties in standing out in the crowd of their larger competitors (Knight, 2001). Brand awareness and credibility, in turn, influence the com-

pany's financial performance (Anees-ur-Rehman, Wong, Sultan, & Merrilees, 2018).

To raise awareness of their products, independent SMEs could cooperate with each other by constructing a joint commercial product portfolio to be able to provide wider and more comprehensive solutions and products. Earlier research and current literature do not provide many insights into commercial cooperation of several companies through a joint commercial product portfolio. Some scholars have studied co-marketing alliances, a form of commercial cooperation in which two or more companies combine some of their marketing resources and activities. However, the emphasis of the research has been mainly on the managerial and organisational aspects (Bucklin & Sengupta, 1993; Robson & Dunk, 1999; Venkatesh, Mahajan, & Muller, 2000; Yi, Lee, & Dubinsky, 2010) or on the effects of such alliances (Rao & Ruekert, 1994; Das, Sen, & Sengupta, 2003; Ahn, Kim, & Forney, 2009; Gammoh, Voss, & Fang, 2010). In the product portfolio management (PPM) literature, the emphasis has been on the analysis, development, and management of independent companies' product portfolios (Cooper, Edgett, & Kleinschmidt, 1999; Cooper, 2008; Tolonen, 2016). The current literature does discuss some instances of customer-centric re-structuring of product portfolios by differentiating the products on the basis of product features due to merger situations (Rao, 2009). However, the aspect of constructing a joint commercial product portfolio by the means of productisation and product management in cooperation by a cluster of companies is still missing. Productisation deals with how products are defined (Danson, Helinska-Hughes, Hughes, & Whittam, 2005). Here, product structures and product types are considered to be an important part of that.

This study aims to find a method to construct a joint commercial product portfolio to allow smaller companies to operate more effectively on the market. This is realised by combining the viewpoints of productisation, product management (PM), product portfolio management (PPM), co-marketing, and customer value creation to approach commercial cooperation by several independent companies. The study investigates a cluster of seven geographically concentrated small companies that are delivering new solutions and products to big global companies in the steel industry.

The core research objective of this study can be summarized in two research questions:

- RQ1 *How to construct a customer-oriented joint commercial product portfolio?*
- RQ2 *What are the challenges of constructing the joint commercial product portfolio?*

The paper is structured as follows: The earlier research and literature

on relevant topics are presented first, after which the research process is described. Then, the construction of the joint commercial product portfolio and related challenges are described in the results section. In the end, the results, theoretical contribution, managerial implications, and limitations of the study are discussed and concluded. In addition, some ideas for future research are proposed.

Literature Review

Productisation and Product Portfolios

Products have a particular role in the company's success as a source of the company's sales. Poor products cannot keep the company alive for long but well-performing ones can. However, despite the importance of products that surely everyone is aware of, the definition of product and related terms still varies. Products are suitable combinations of elements that can be tangible or intangible (Harkonen, Haapasalo, & Hanninen, 2015). Tangible elements include physical goods, such as devices and machines, while intangible elements include software, services and other elements that cannot be touched. Saaksvuori and Immonen (2008) separate services from intangible products to form its own type. Instead of seeing products simply as physical goods, or outputs of service processes, outputs that are being just produced and sold, Vargo and Lusch (2008) suggest seeing them as co-creating processes to assist customers in their own value-creation processes. Harkonen, Tolonen, and Haapasalo (2017), however, distinguish between the product and the process that creates it.

When discussing a company's products as a whole, they can be referred to as the company's commercial product portfolio. The commercial product portfolio represents all the company's products that can be sold, delivered and invoiced (Tolonen, 2016; Harkonen et al., 2017). Overall, the company's product portfolio should reflect the company's business strategy (Cooper et al., 1999). However, the need to manage the product portfolio accordingly is not always understood, or followed through, in the companies (Tolonen, Shahmarichatghieh, Harkonen, & Haapasalo, 2015). In addition, technology generations, materials, product types (hardware, software, service, document) or product lifecycle status are among the examples of different viewpoints to the product portfolio (Kropsu-Vehkaperä & Haapasalo, 2011). According to Haines (2014), a product portfolio can be divided hierarchically into solutions, product lines, products, product elements and product platforms. Tolonen, Harkonen, and Haapasalo (2014) divide product portfolio into commercial product portfolio and technical product portfolio. They divide commercial product portfolio (product offering) further into solutions, product families, sub-product families, product configurations and individual hardware (HW), software (SW), service and a document type of sales items

6 Erno Mustonen, Arto Tolonen, Janne Härkönen, and Harri Haapasalo

that can be offered, ordered, delivered and invoiced. Sales items are on the lowest level in the commercial product portfolio creating the base for the whole commercial product offering. The sales items have unique characteristics, functionalities, and price. For the higher-level product offering, the product configurations consist of one or more sales items. The technical product portfolio is connected to the commercial product portfolio by the link of commercial sales item and its technical version item. The technical version items on the highest level of the technical product portfolio consist of main assemblies, sub-assemblies, and components for HW and SW products and service processes for service products (Tolonen, Harkonen, & Haapasalo, 2014). Despite many productisation and product portfolio concepts being available in the literature, they are not necessarily clearly defined and commonly agreed in companies (Kropsu-Vehkaperä, Haapasalo, Harkonen, & Silvola, 2009; Tolonen, Kropsu-Vehkaperä, & Haapasalo, 2014a).

Customer Value Creation

As Porter (1985) in his book *Competitive Advantage* states, a company can create customer value by providing products that bring benefits for the customer's primary (inbound logistics, operations, outbound logistics, marketing & sales, service) or supportive (firm infrastructure, human resource management, technology development, procurement) activities. Customer value and competitive advantage can be created through differentiation. Differentiation can be created through generic, expected, augmented and potential product levels, which are built upon the core benefit the product offers (Kotler & Keller, 2015). Core benefit is the solution to the customer's problem or need, and the fundamental reason for the purchase (e.g. mobility is the core benefit of a car). The core benefit is realised in the generic product (for example, the car itself). The expected product is formed by the functions and features the customer can usually expect to be included in the product (e.g. car radio, electric windows). If the product has only the expected elements, it competes on price (Narver, Slater, & MacLachlan, 2004). The augmented product includes features that respond to a latent need (Slater & Narver, 1999) or, in other words, exceeds the customer's expectations of the product (e.g. GPS navigation system, four-wheel drive). The potential product includes all the potential features that attract customers to stay with the product (e.g. a new version of the car). So the value perceived by the customer does not only depend on the price versus derived benefits of the product but on the whole customer-supplier relationship value including aspects of product quality, service support, delivery, supplier know-how, time-to-market, personal interaction, direct product costs and process costs (Ulaga, 2003).

Products are related to transactions between the buyer and the seller.

The seller gets financial value in return for customer value created for the buyer's own value-creation process (Vargo & Lusch, 2008). Customer value realises as the price paid by the customer (Porter, 1985). Since the perceived benefits vary between different customers, the same product may be more valuable to some than to others. The interaction between the buyer and the seller is not only present at the time of purchasing, but also, as Tolonen (2016) notes, at the time of developing, selling, delivering and caring of the product. In conclusion, the product can be seen as any interaction in which customer value and financial value are transferred between the buyer and the seller, and to which certain terms and conditions, agreed by the buyer and the seller, regarding this transfer, apply.

Co-Marketing

Multiple companies can utilise their resources for mutual benefit through strategic agreements. Such cooperative agreements may for instance be joint ventures, buyer-supplier partnerships, technological alliances or marketing alliances (Das et al., 2003). Common terms for commercial cooperation topics in the literature include brand-alliance (Rao & Ruekert, 1994; Gammoh et al., 2010; Thompson & Strutton, 2012; Fang, Gammoh, & Voss 2013; Mishra, Singh, Fang, & Yin, 2017) and co-marketing alliance (Bucklin & Sengupta, 1993; Robson & Dunk, 1999; Venkatesh et al., 2000; Ahn et al., 2009; Yi et al., 2010).

Bucklin and Sengupta (1993, p. 32) define co-marketing alliances as 'contractual relationships undertaken by firms whose respective products are complements in the marketplace. They are intended to amplify and/or build user awareness of benefits derived from these complementarities.' Other reasons for such alliances may involve trying to gain cost-reductions or an access to intellectual capital, new markets or technologies, or to enhance the company's image, or its products' image (Rao & Ruekert, 1994, Robson & Dunk, 1999, Das et al., 2003). Complementary products are such whose demands are positively correlated. The correlation may be unidirectional (B's demand is affected by A's demand but not the other way) or bidirectional (both products have an effect on the other's demand) (Dass & Kumar, 2014). Sengupta (1998) defines a complementary product as 'one that enhances the value of a primary product when the two are used together by end-users.' By primary product, he means a product which value is then added to complementary add-on products (e.g. a PC's value is added with a mouse). A company may use direct or indirect complementary product strategies to increase the number of complementary products (Nambisan 2002). In the direct complementary product strategy, the company tries to affect the development of complementary products so that they will be compatible with the primary product. In the indirect strategy, the company

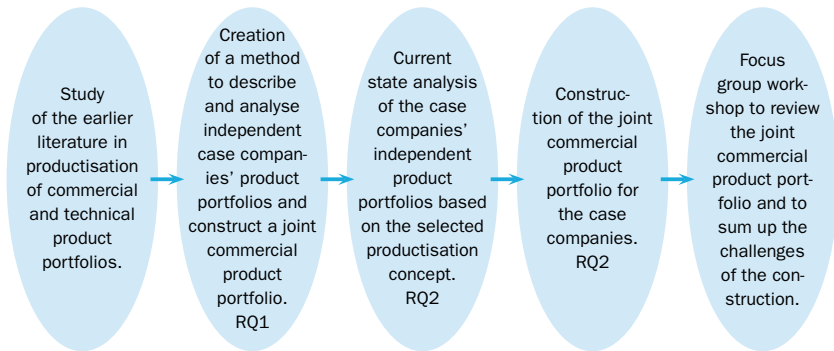


Figure 1 The Research Process

modifies its own product so that it will be compatible with complementary products available in the market.

Cooperation in marketing can occur vertically or horizontally, i.e. between the buyer and the supplier or between companies at the same level in the value chain (Felzensztein, Gimmon, & Aqueveque, 2012). Forms of marketing cooperation studied in earlier research include, for example, a jointly marketed product with a composite brand (Park, Jun, & Shocker, 1996; Teng & Das, 2008; Ahn et al., 2009), a new product with branded components (Venkatesh & Mahajan, 1997), or using multiple brands under the same product category (Robson & Dunk, 1999). Co-marketing in this study is considered as offering and selling the companies' current independent products jointly as a joint commercial product portfolio.

Research Process

An inductive and qualitative research method has been utilised in this research. The research process is shown in Figure 1.

At first, the earlier literature covering productisation and creating commercial product portfolios were studied. The related PPM literature was focused to find a uniform concept to describe the case companies' current independent commercial product portfolios. Literature related to customer value creation provided viewpoints for the construction of the joint commercial product portfolio. In addition, the literature on co-marketing alliances was studied to search for any earlier research on the topic and to gain insights over such cooperation. The method to describe and analyse independent case companies' product portfolios and to construct the joint commercial product portfolio was created based on the current literature.

Current commercial product portfolios of the case companies were described in advance in the way they were depicted on their public websites.

Table 1 Description of the Companies and the Workshops

(1)	(2)	(3)	(4)	(5)	(6)
A	10	Refractory materials for ladles and tundishes	1	2	CEO Sales director
B	6	Blast-cleaning robots	3	4	CEO Sales director R&D director New business development director
C	0.1	Measurement of real-time melting conditions inside an EAF	1	1	CEO
D	0.3	Waste stream reduction and recovery of valuable components	1	2	CEO R&D engineer
E	0.1	Steel quality and refractory wear monitoring	1	1	CEO
F	0.1	Industrial dryer	2	1	CEO
G	1	Steel strip surface quality measurement	2	2	CEO Product manager

Notes Column headings are as follows: (1) company, (2) turnover (million €), (3) general description of the portfolio for steel industry, (4) number of workshops, (5) number of informants, (6) roles of the informants.

Then, the descriptions were aligned according to a product portfolio modelling concept (Tolonen, Harkonen, & Haapasalo, 2014). This model was utilised because it includes the productisation possibility for different types of products: those consisting of HW, SW and/or services. The portfolio descriptions were corrected further by arranging workshops with the case companies and interviewing their representatives. The portfolio descriptions were distilled by recognising the commercial product portfolio structures from the highest solutions to individual sales items. Description of the companies and the workshops are presented in Table 1.

After the current independent commercial product portfolios of the case companies were described, each products’ value for the customer was discussed with the companies’ representatives. Finally, the researchers constructed the joint commercial product portfolio. The portfolio was constructed by taking product complementarities, generic product types and customer value creation into account. The first version of the joint commercial product portfolio was presented to the focus group consisting of representatives from the analysed companies. Based on the discussions within the focus group meeting, a second version of the joint commercial product portfolio was created and the challenges of the construction were summed up.

The study includes seven business-to-business SMEs in Finland. The companies’ products for steel industry are related to process development,

quality control, and environmental aspects. Earlier, the case companies have developed and delivered their individual solutions to the same customers independently.

Company A produces high-quality refractory materials and components that are needed in steel foundry processes characterised by molten metals. Company B produces advanced robotic blast-cleaning systems for casting products. Company C produces advanced control systems that allow real-time measurement directly from the high-temperature metallurgical process, which are also sold as services. Company D produces solutions for water and waste treatment. Company E produces solutions for process tracking and quality assessment in high-temperature processes. The products are also sold as a service. Company F produces solutions for drying of by-products. Despite offering similar solutions (sludge drying) to company D's product portfolio, they are not direct competitors since the latter focuses on wetter sludge. Company G produces solutions for improving steel on-line inspection and quality measurement.

Steelmaking processes vary depending on the company and steel types. The production process can be divided into four stages: melting and casting, hot rolling, cold rolling, and final processing. Recycled steel is melted in an electric arc furnace (EAF) after which its carbon content is reduced in a converter. Another option is to use iron ore as raw material and melt it in a blast furnace. After the melting process, the molten steel is poured into a ladle and transferred to a casting machine. The molten steel is tapped into a tundish and further into a mould after which it is cooled to achieve the desired shape. The glowing casting product can be hot-rolled, and further annealed and pickled to remove the mill scale. Hot-rolled steel is cold-rolled to modify its profile and flatness. Cold-rolled steel is again annealed and pickled to restore its material properties and to remove the mill scale. The steel can be temper rolled to improve its properties. In the final processing stage, steel is processed using one or more finishing processes, such as levelling, edge trimming, cutting, slitting or surface preparation.

Results

Constructing the Joint Commercial Product Portfolio

The customer-oriented joint commercial product portfolio can be constructed based on the independent company-specific product portfolios (Figure 2) through a five-step approach.

The five-step approach consists of the following phases:

1. Describing the case companies' independent current commercial product portfolios similarly according to the selected productisation concept.

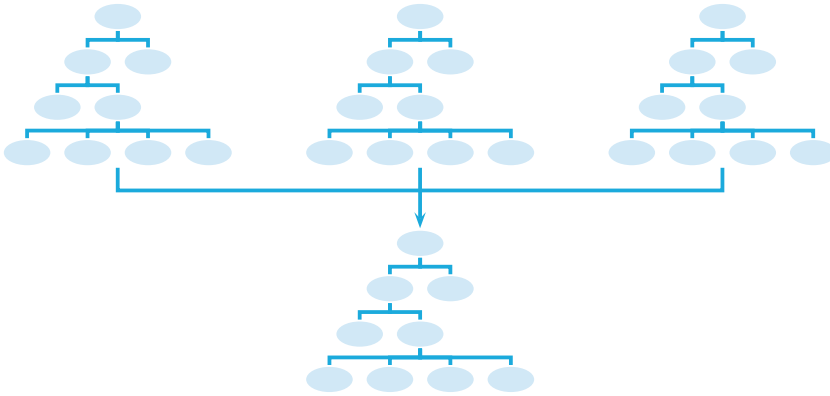


Figure 2 Constructing the Joint Commercial Product Portfolio

2. Identifying complementarities between the companies' independent product portfolios.
3. Identifying the generic solutions, product families and product types and related customer's core benefits.
4. Constructing the joint commercial product portfolio and sub-portfolios.
5. Validating the constructed product portfolio.

The Current Independent Commercial Product Portfolios of the Case Companies

The case companies' current independent commercial product portfolios by the number of items on different product portfolio levels are described in Table 2.

Company A's current commercial product portfolio for steel industry consists of one solution providing refractory materials and components. It includes all the materials and equipment needed to install and construct a tundish and to line and insulate steel and blast furnace ladles.

Company B's commercial product portfolio for steel industry is formed by one solution providing blast-cleaning robots. The robots can be used to make a high-quality surface for casting products before painting and coating processes.

Company C's commercial product portfolio is formed by one solution providing control systems for processes taking place at high temperatures. It includes EAF conditions and temperature measurement devices to measure real-time melting conditions and temperatures inside EAFs. The company offers also maintenance and research subcontracting.

Company D's commercial product portfolio for steel industry is formed by one solution providing services for water and waste treatment. The com-

Table 2 Items on the Case Companies' Commercial Product Portfolio Levels

Item	Company						
	A	B	C	D	E	F	G
Solutions	1	1	1	1	1	1	1
Product families	3	2	1	4	1	2	2
Sub-product families	8	–	–	6	3	–	7
2nd-level sub-product families	23	–	–	12	–	–	–
Configurable products	40	7	8	30	12	4	17
Sales items	56	37	19	48	11	42	119

pany's products for steel industry focus especially on treatment services of cutting liquids, EAF gas cleaning waters, EAF dust and cooling waters of the hot rolling, and also regeneration services of pickling acids.

Company E's commercial product portfolio has one solution providing monitoring and quality assessment devices. The tapping device monitors the flow of molten steel and slag bringing information to operators about the tapping process' quality. The casting device monitors the surface of casting and hot rolling products to reveal quality defects. The refractory wear device provides inner surface monitoring of ladles, converters, and furnaces to reveal the wear of refractory lining enabling their accurate and resource-saving renewal. Data produced by the devices are shown on a common cloud platform.

Company F's commercial product portfolio for steel industry consists of one solution providing an industrial dryer. For steel producers, the dryer enables efficient drying of raw materials, flue-gas scrubber sludge, and mill scale. A waste heat recovery concept in development enables exploitation of waste heat coming from slag and other hot materials to be used in the dryer.

Company G's commercial product portfolio for steel industry consists of one solution providing optical quality assurance devices. It is formed by pinhole and roll mark devices. The pinhole devices monitor surface imperfections by detecting pinholes, holes and edge cracks of the cold rolling strips, and measure the width of the strip. The roll mark devices detect roll marks caused by rolling mills.

The Complementarities of the Independent Product Portfolios Based on Their Customers' Steel Making Process Stages

Complementarities of the current products must be analysed to construct a joint product portfolio from which the customer can get more extensive value-creating solutions than by buying them separately. The division into groups in which the content complement each other is done by classifying

Table 3 The Case Companies' Current Commercial Product Portfolios

Company	Mining	Melting and casting	Hot rolling	Cold rolling	Final processing
A		Refractory materials and components			
B					Blast-cleaning robots
C		EAF conditions measurement device EAF temperature measurement device			
D		EAF dust treatment EAF gas cleaning water treatment	Rolling cooling water treatment Pickling acid re-generation	Pickling acid re-generation	Cutting liquid treatment
E		Tapping device Casting device Refractory wear device	Casting device		
F	Dryer	Flue gas scrubber sludge dryer	Mill scale dryer	Mill scale dryer	
G				Pinhole detection device Roll mark device	

the current products based on the steelmaking process stages they operate in. Table 3 illustrates the case companies' independent portfolios with their content and indicate how they are positioned in their customers' steelmaking process.

Generic Product Type and Customer's Core Benefit of Each Product

To be able to classify the current products further based on the customer's need underlying the buying decision, and to understand how the products create value, each product's generic product type and the core benefit they offer must be identified. The identification is based on the discussions with the companies' representatives. The results can be seen in Table 4.

Construction of the Joint Commercial Product Portfolio and Sub-Portfolios

As the products have now been categorised from the customer value aspect, they must be compared to each other to form the joint commercial

Table 4 Current Products' Core Benefits and Generic Product Types

(1) Product	Generic product type	Core benefit
A Refractory materials and components	Refractory materials and components	Energy efficiency
B Blast-cleaning robots	Surface treatment robots	High-quality steelmaking
C EAF conditions measurement device	Measurement and monitoring device	High-quality steelmaking
EAF temperature measurement device	Measurement and monitoring device	High-quality steelmaking
D Cutting liquid treatment	Waste and side stream treatment & recycling	Eco-efficiency
EAF gas cleaning water treatment	Waste and side stream treatment & recycling	Eco-efficiency
Rolling cooling water treatment	Waste and side stream treatment & recycling	Eco-efficiency
Pickling acid regeneration	Waste and side stream treatment & recycling	Eco-efficiency
EAF dust treatment	Waste and side stream treatment & recycling	Eco-efficiency
E Tapping device	Measurement and monitoring device	High-quality steelmaking
Casting device	Measurement and monitoring device	High-quality steelmaking
Refractory wear device	Measurement and monitoring device	Energy efficiency
F Waste heat recovery & dryer	Waste and side stream treatment & recycling	Eco-efficiency
G Pinhole detection device	Measurement and monitoring device	High-quality steelmaking
Roll mark device	Measurement and monitoring device	High-quality steelmaking

Notes (1) company.

product portfolio. The principle for classifying the current independent commercial product portfolios into new commercial product sub-portfolios involves considering how the products are complementary to each other. Those products that create the same kind of customer value should be included in the same sub-portfolios. Therefore, the solution level needs to be divided based on the core benefits the products offer. Each customer segment (following the steelmaking process stages) can be offered their respective part of the product portfolio. This division enables the customers to instantly find the right portfolio of products that meet their core needs. Thus, the constructed joint commercial product portfolio is as follows: The portfolio consists of four solution level sub-portfolios, namely *Refractory So-*

lutions, Steel Quality Control Solutions, Sustainable Value Recovery Solutions and Surface Treatment Solutions. The core benefits of the sub-portfolios are energy efficiency, high-quality steelmaking, eco-efficiency, and high-quality steelmaking, respectively. The sub-portfolios are illustrated in Table 5. The intention is to offer the companies' know-how through services to the possible extent. This enables the customer to focus on performing its core competence: steelmaking. Delivering the products as services reduces the customer's financial risk making the portfolio more attractive.

The Refractory Solutions portfolio offers smelters and foundries solutions for molten steel transfer and handling. Company A brings customer value through ladle and tundish lining maintenance and repair services. The additional value of the portfolio brings refractory wear monitoring service provided by company E, including rental and maintenance of the devices and maintenance of the cloud platform.

The Steel Quality Control Solutions portfolio offers steel quality and process monitoring and control for melting and casting as well as hot rolling and cold-rolling process stages. Products in the portfolio are carried out as services including rental and maintenance of the devices. The whole portfolio is established on company E's cloud platform. This direct complementary product strategy facilitates the addition of new technological devices in the portfolio, attracts other technology suppliers to join the cooperation, and makes the portfolio more attractive. The devices by company C are used to create two services: EAF process optimisation service to control the process automatically, and EAF process measuring service to measure and present relevant data to the operators. The tapping device by company E is used to create a molten steel tapping monitoring service. The casting device by company E creates two services: casting products' surface quality monitoring service and hot strip surface quality monitoring service. The pinhole and roll mark devices by company G form four services: cold strip pinhole, hole and edge crack detection service, cold strip roll mark detection service, and hot strip and cold strip width measurement services. Additional proposals are hot-rolled strip and cold-rolled strip thickness measuring services, which could be developed in cooperation between company E and company G.

The Sustainable Value Recovery Solutions portfolio offers the customers eco-efficient solutions for the treatment of waste and side streams, recovery of value components and their reuse. The waste heat recovery concept and industrial dryer by company F are used to create services to exploit the waste heat of slag and other hot materials and use it to dry raw materials, flue gas scrubber sludge and mill scale. Company D offers treatment services for EAF dust, flue gas scrubber waters, cooling waters, pickling acids, and cutting liquids. In cooperation, the companies could create a complete

Table 5 The Joint Commercial Product Portfolio

Sub-portfolio	Mining	Melting and casting	Hot rolling	Cold rolling	Final processing
Refractory Solutions		Blast furnace ladle lining maintenance and repair service Steel ladle lining maintenance and repair service Tundish lining maintenance and repair service Lining wear reveal service			
Steel Quality Control Solutions		EAF process optimisation service EAF process measurement service Molten steel tapping monitoring service Casting products' surface quality monitoring service	Hot strip surface quality monitoring service Hot strip width measurement service Hot strip thickness measurement service	Cold strip pinhole, hole, and edge crack detection service Cold strip roll mark detection service Cold strip width measurement service Cold strip thickness measurement service	
Sustainable Value Recovery Solutions	Raw material drying service	Scrubbing liquid treatment service Scrubbing sludge drying service EAF dust treatment service	Mill scale drying service Pickling acid regeneration & mill scale recovery service Rolling cooling water recirculation service	Mill scale drying service Pickling acid regeneration & mill scale recovery service	Cutting liquid recirculation service
Surface Treatment Solutions					Blast-cleaning service

service in which the pickling acids would be regenerated, as the mill scale would be recovered and dried for reuse. Another possibility is a complete flue gas scrubber liquid treatment service covering scrubbing water treatment and scrubbing sludge drying using waste heat of the flue gas.

The Surface Treatment Solutions portfolio offers surface treatment so-

lutions for final processing stage. Blast cleaning robots by company B are used to prepare casting products for painting and other surface treatment processes. Despite having the same core benefit as the products in the Steel Quality Control Solutions portfolio, the blast cleaning service forms its own portfolio since its generic product type differs so much.

The Challenges of Constructing the Joint Commercial Product Portfolio

Challenges of constructing the joint product portfolio include companies' individual product portfolios not necessarily being described in a uniform way. Different, ambiguous or absent productisation concepts such as product structures, understanding of the commercial and technical product portfolios and different product types can also form challenges. Different product structure concepts can make the description of independent product portfolios and their comparison difficult. Companies may not even have any defined product structure for their products, but are operating in a less structured manner. Companies may question the adaptability of the chosen product portfolio model and related product structure levels in case of describing of their product portfolios. A potential challenge in describing an independent company's product portfolio may occur if the company has not defined its products, or is hesitating about what products it actually is offering, and whether some products have been or should be terminated. Also, description is difficult if the company's website is not aligned with the actual product offering. Another productisation-related challenge includes different productisation terminology and product types. For example, companies' own productisation terminology, such as dividing the company's offering into products, devices, and services, can hinder describing and understanding its product portfolio. Companies may not necessarily understand that selling a device both as a hardware and as a service are two separate products. Also, the concept of configurable products and sales items may not be easily understood. Another challenge includes the lack of understanding the customer value of independent products to analyse, compare and categorise, and further to construct the joint product portfolio and related sub-portfolios. The consideration of how, and from which viewpoint the joint product portfolio should be constructed can also result in some challenges.

Conclusions

This study investigated a cluster of seven SMEs aiming to develop commercial cooperation by constructing a joint commercial product portfolio. The aim of the study was to find a method to construct a customer-oriented joint commercial product portfolio and to identify the related challenges. The study introduces a new construction based on a five-step approach to

productising a joint commercial product portfolio from a customer-centric viewpoint.

Theoretical Contribution

A five-step approach was constructed to productise a joint commercial product portfolio from a customer-centric viewpoint by: (1) describing the companies' independent current commercial product portfolios in accordance with a common product portfolio structure; (2) identifying complementarities between the independent product portfolios based on customers' process phases; (3) identifying the generic product types and related customer's core benefits; (4) constructing the joint commercial product portfolio taking the complementarities, generic product types and core benefits into account; and (5) validating the constructed portfolio. The current literature in product portfolio management and productisation have focused on analysis, development, and management of the independent product portfolios of the companies (Cooper et al., 1999; Cooper, 2008; Tolonen, 2016). To the authors' knowledge, Rao (2009) has been the closest to the subject. Hence, the current study provides a new contribution and extends the previous literature from the viewpoint of constructing a joint commercial product portfolio for independent companies that serve the same and much bigger customer. The customer value creation literature is contributed by applying the product level concept (Kotler & Keller, 2015) to product portfolio scope. The study also complements the previous co-marketing literature (Park et al., 1996; Venkatesh & Mahajan, 1997; Robson & Dunk, 1999; Teng & Das, 2008; Ahn et al., 2009) by providing a practical viewpoint of enhancing marketing by constructing a joint commercial product portfolio for several companies. The construct provides an interface to link product portfolio management with marketing literature.

This study also identifies challenges related to constructing a joint commercial product portfolio. Different, ambiguous or absent productisation concepts, lack of understanding over the value of independent products, and over the viewpoint from which to construct the joint portfolio can lead to challenges. The results related to productisation are in line with Kropsu-Vehkapera et al. (2009) and Tolonen, Kropsu-Vehkapera, and Haapasalo (2014), and indicate the lack of understanding over the significance of the topic. The study also complements previous studies on productisation (Harkonen et al., 2015, 2017) by providing practical evidence. If a company has not defined its products and product structures, it cannot completely describe its own product offering. And, if a company cannot describe its offering it cannot effectively market its products. On the other hand, if a company cannot describe its offering it cannot analyse its products. This may, in turn, lead to a situation in which the company cannot define or

is not sure what products to develop, sell and terminate. Difficulties and hesitation in defining the company's offering not only shows the lack of productisation and product structure concepts but also indicates the absence of strategic product portfolio management. Hence, this study supports the findings of Tolonen et al. (2015) by emphasising the importance of a defined product and product structure concept to enable decisions on what products to develop, sell, and terminate, as well as to maintain a strategic and profitable product portfolio. The viewpoint of the customer needs may seem to be the natural choice to productise a customer-centric joint product portfolio. However, the viewpoint may change depending on the case. In addition, the target of constructing the joint product portfolio may have some influence, as different viewpoints, such as customer, technology or market segments, can be used as the principle to construct the joint product portfolio and related sub-portfolios. This study hence supports previous studies emphasising the importance of addressing various viewpoints for different stakeholders, e.g. product development or manufacturing, when necessary (Kropsu-Vehkaperä & Haapasalo, 2011).

Managerial Implications

The managerial implications include the potential of the constructed method to be used as a guiding principle to merge two or more independent commercial product portfolios into one joint portfolio to enable offering wider and more competitive product portfolio. A joint portfolio can support cooperation by SME companies in serving much bigger customers. The joint commercial product portfolio may enable better credibility and negotiation power due to the synergies and higher value. The joint commercial product portfolios could be realised for example in case of company mergers and the establishment of a joint sales company. An independent company could use the created approach to restructure its commercial product portfolio. Joint portfolio also has the potential to be used to look for cooperation opportunities both in commercial and technical portfolios. The identified challenges can support company managers in assessing and developing the state of productisation, product management and product portfolio management in their companies.

Limitations

As all studies, also this one has its limitations. The study analysed only one business cluster operating in a certain business environment, in which members have the same customers. In addition, the study does not take into account how the cooperation is carried out after creating the joint portfolio (e.g. a new sales company, a strategic alliance, etc.). Different business environments and ways of implementation may set their boundaries

to the usability of the method. The products in this study did not really include explicit substitute products nor does this study provide any advice what should be done in case of substitute products. The depth of analysing the complementarities between the products has its limitations as it was based on associations. In addition, the identification of the core benefits of every product was based on the discussion between the authors and companies' representatives. Understanding the customer's core needs requires experience and knowledge of the industry and steel products.

Future Research

The future research topics could involve examining how the joint product portfolio affects the sales of individual companies' products included in the portfolio, and whether it also affects the sales of products excluded from the portfolio. The developed method of constructing a joint commercial product portfolio could be advanced further by including more insights from the marketing literature to analyse and productise the portfolios. During the study, a question was raised about how the joint commercial product portfolio should be managed. Hence, constructing a governance model and management process for the cooperation could provide a topic for research.

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Using Grounded Theory: The Case of Political Marketing and Women Candidates in the 2014 Parliamentary Election in the Kingdom of Bahrain

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This paper discusses the process of Grounded Theory (GT) to analyze the behaviors of female candidates in the 2014 Parliamentary Election in the Kingdom of Bahrain (KoB). Women candidates in the 2014 Parliamentary Election used political marketing strategies to win the election. This study uses Grounded Theory. Data were collected from two sources: in-depth semi-structured interviews and documentation. Twenty-two female candidates stood for the 2014 Parliamentary Election in the KoB. Ten out of 22 female candidates were selected as informants based on a purposive sampling method. The research findings show that the candidates' behavior was controlled and influenced by the Gulf Cooperation Council culture, notably: masculinity, tribalism, stereotype, and uncertainty avoidance. Findings also show that the candidates circumvent cultural factors by expanding their networks with stakeholders. Moreover, the findings show that female candidates can be described as relationship-oriented.

Keywords: grounded theory, political marketing, female candidates

Introduction

The aim of this paper is to discuss the processes involved in generating a substantive grounded theory by making explicit a seemingly chaotic process. This paper uses writings from Glaser and Strauss (1967, 2008; Glaser, 1998), Charmaz (2014), Corbin and Strauss (1990, 2015), and Birks and Mills (2015) to present the principles of how to conduct a GT study. This paper illustrates the data collection, data analysis, and development of a conceptual theory that is central to grounded theory research.

This study applies GT, which allows the construction of a theory from data. The GT strategy was appropriate for this study for several reasons. First, the parliamentary election is a very new practice in the Kingdom of Bahrain (KoB). Second, there is little, if any, research that investigates the phenomenon of political marketing in the KoB. Third, based on the latter, there were no hypotheses to be tested or assumptions to be confirmed

or refuted. Fourth, this study constructs a theory from data. Thus, GT is an appropriate strategy to build a theory on the behaviour of female candidates in elections in the KoB.

The Kingdom of Bahrain, Female Candidates, and Political Marketing

It is fruitful to briefly discuss the political and social environment in the KoB to understand the behaviour of female candidates in parliamentary elections in one of the Arab countries. The KoB is located in the middle of the Arabian Gulf surrounded by three regional powers – Saudi Arabia, Iran, and Iraq – all of which influence attitudes, thinking, and behaviour of KoB voters and candidates. The KoB is a member of the Gulf Cooperation Council (GCC), which consists of six countries: Saudi Arabia, KoB, Kuwait, UAE, Oman, and Qatar. The six countries share the same culture, which can be characterised as masculine, tribal, and collectivist. In a masculine culture, women have less opportunities to reach higher positions. Amidst tribalism, younger individuals and lower positions respect and follow the orders and commands of seniors in the tribe like a father, the Head of the tribe (*Shiekh Al Qabilah*). In a collectivist society such as the GCC, group ties in relationships of extended families link them to other groups in society (Hofstede, 1984, 1991).

The 2002 Constitution of the KoB guarantees political rights of voting and standing for elections for both males and females. Women stood for parliamentary elections in 2002, 2006, 2010, and 2014. In the first three elections, there was only one female candidate who could reach the legislative chamber.

In 2011 and a few months after the 2010 Parliamentary Elections, the Arab Spring (*Arrabea Al Arabi*) swept some Arab countries such as Tunisia, Egypt, Syria, and Yemen. People in these countries demanded political reform. Opposition political parties in the KoB installed *Arrabea Al Arabi* in an attempt to overthrow the regime. The political parties ordered its Parliamentary members of the 2010 Parliament to resign. This action left 18 seats in the parliament empty. Consequently and according to the Constitution of the KoB, a Supplementary Parliamentary Election was held, which was a good opportunity for three more female candidates to reach the legislative chamber.

In 2014, 22 female candidates stood for Parliamentary Elections. Three out of the 22 female candidates could reach Parliament in the second round. The female candidates used political marketing strategies and tactics to win elections.

Political marketing strategies are used by politicians, governments, political parties, and candidates to win elections. Shama (1976) defines political marketing as the process by which political candidates and their ideas are

directed at voters to satisfy their political needs and thus gain their support for the candidate and ideas in questions. Lees-Marshment (2001) argues that political marketing is about political organizations adapting techniques and concepts originally used in the business world to help them achieve their goals.

Tremendous studies investigated political parties' behaviour to identify the orientations of the political parties; for example, 4Ps framework (Niffenegger, 1989), a conceptual framework by Butler and Collins (1990) and Wring (1996), focuses on propaganda, media and political marketing, and the three approaches model (Lees-Marshment, 2001).

This study investigates the political marketing strategies used by female candidates in the KoB in 2014.

Questions of the Study

The questions of the study are:

1. What is the extent of the female candidates' awareness of political marketing in the KoB?
2. What were the political marketing techniques and strategies utilized by female candidates in 2014 Parliamentary Election in the KoB?
3. What political marketing orientations characterised the female candidates' in the KoB?

In this qualitative inductive study, the researcher considers that: (1) the Parliamentary Election is a new practice in the KoB; (2) this study is the first that investigates the phenomenon of political marketing in the KoB; (3) there is no hypothesis to be confirmed or refuted; (4) there is a huge amount of data collected from interviews and documentation; and (5) female candidates in the KoB stood for election in one of the countries that is influenced by Arab Muslim culture. Hence, the appropriate strategy to collect and analyze data is Grounded Theory.

Grounded Theory

Grounded Theory (GT) was introduced by Barney Glaser and Anselm Strauss (1967) and is widely used in qualitative research. Strauss and Corbin (1990, p. 24) define GT as 'a qualitative research method that uses [a] systemic set of procedures to develop an inductively derived theory about a phenomenon.' GT aims to generate a theory from data. The main objective of GT is to build a theory rather than to test concepts and ideas. Strauss and Corbin (1990, p. 23) argue that GT is 'one that is inductively derived from the phenomenon it represents. It is discovered, developed and provisionally verified through systemic data collection and analysis of data pertaining to that phenomenon. Therefore, data collection, analysis and

theory stand in reciprocal relationship to one another.’ Martin and Turner (1986, p.141) support the viewpoint of Strauss and Corbin to define GT as ‘an inductive, theory discovery methodology that allows the researcher to develop a theoretical account of the general features of a topic while simultaneously grounding the account in empirical observations or data.’ Charmaz (2014, p. 343) argues that GT is ‘a rigorous method of conducting research in which researchers construct conceptual frameworks or theories through building inductive theoretical analysis from data and subsequently checking their theoretical interpretations.’ GT, then, is an inductive, rigorous, and systemic method of collecting and analysing data. The GT method requires implementing steps including data collection, open coding, selective coding, and theoretical coding to construct a theory. In each of these steps, researcher experience is a cornerstone in developing theory. GT gives researchers wider margins of interpretation from rich data to construct a theory.

GT was introduced in the 1960s after Barney Glaser and Anselm Strauss’ sociological research in medical sociology. The approach of GT was published and introduced in 1967 in the book *The Discovery of Grounded Theory*. The strategy began from data, based on the research interaction among respondents and the environment. Neuman (2006, p. 157) argues that GT enables researchers to develop theory during the data collection process.

GT has two differentiating characteristics: constant comparative analysis and theoretical sampling (Glaser and Strauss, 1967). Constant comparison enables researchers to compare the codes and classify similarities and differences and thereby refine concepts (Bryant and Charmaz, 2013, p. 607). Comparisons can be used to establish facts and verify theories (Glaser and Strauss, 1967, 2008). Constant comparison aims to obtain truthfulness of evidence in the conceptual categories, and to generate theory subsumes this establishing of empirical generalizations (Glaser and Strauss, 2008, pp. 22–31). Gibson and Hartman (2014) noted that five principles differentiate GT: openness, explanatory power, generation and justification, theory structure, and the research process.

The process of GT includes data collection, data analysis, coding, writing memos, conducting constant comparison, and theoretical sampling all in one package. The steps of GT process are continuous, going forward and backward among the steps from data collection to theoretical sampling (Glaser, 1998, p. 12).

Triangulation Strategy

Triangulation is a strategy used in GT research to strengthen the design and increase the ability to interpret the findings (Campbell and Fiske, 1959; Denzin, 1970). According to Denzin (1970), triangulation is the combination

of two or more data sources, investigators, methodological approaches, theoretical perspectives, or analytical methods (Kimchi, Polivka, & Stevenson, 1991) in the same research. Data triangulation enables researchers to see the scenario from more than one angle, which increases the validity, reliability, and truthfulness of the study (Kimchi et al., 1991). Similarly, Jick (1979) notes that using triangulation increases confidence in research data, creating innovative ways of understanding a phenomenon, revealing unique findings, challenging or integrating theories, and providing a clearer understanding of the problem.

Process of Grounded Theory

The first step of the GT is identifying the population and the sample of the study. The second step is open coding and writing memos. In this step, the researcher looks for similarities and differences by using constant comparison. Similar ideas, concepts, themes, actions, and reactions emerge by classifying the similarities and giving a name for each category.

Data were collected from two sources: in-depth, semi-structured interviews and documentation. Ten in-depth, semi-structured interviews were conducted with the sample of the study. Purposive sampling technique was used to select the informants based on phases of the election; that is, female candidates who competed in the first and second rounds, female candidates who won their parliamentary seats, and informants' demography in terms of different governorates and constituencies.

Interviews

Researchers need to prepare themselves and consider ethical concerns as they design a study so that sound ethical practice is built into the study design (Neuman, 2006, p. 129). Relying on Kvale (1996), informed process consent, confidentiality, and emotional protection were the ethical issues considered in this study. Prior to the interview, the researcher informed the participants about the objectives and purpose of the interviews and study, as suggested in Bogdan and Biklen (2003; Kvale, 1996). Each of the informants was contacted by phone by the researcher to introduce himself and seek their involvement in the study. Also, letters contained an introduction to the study, its objectives, and the purpose of the interviews, and contact numbers of the researcher and his supervisor were sent to each informant by electronic mail.

According to Bogdan and Biklen (2003; Fraenkel, 1990), the confidentiality of informants should be protected. The informants were given codes (C1, C2, C3, . . . etc.) to hide their identities. This action protected the informants from any embarrassment or harm (Bogdan and Biklen, 2003).

Bogdan and Biklen (2003) argue that a researcher must be aware of

sensitive issues that should be avoided during an interview. The researcher avoided asking the informants questions related to their personal lives, income, or any other questions that might cause them any emotional distress.

Moreover, place, date, and time of the interviews were established based on the informants' preferences. The interviews were conducted between July 15, 2015 and March 4, 2016. Interviews were held with the informants in Arabic to ensure that the concepts, ideas, and themes were understood. The interviews in Arabic were translated into English by the researcher and verified by an expert who is proficient in both languages.

Neuman (2006, p. 306) suggests that 'interviews proceed through three stages: introduction, asking questions, and exit.' The interviews for this study proceed through the same stages. The first stage was introduction. This included making the interviewer seem friendly, using a conversational form rather than questioning. It is favourable in Arab countries to start with asking about the families of the informants. The introduction also included providing informants with information about why they were selected for the study.

The second stage is entering the interviews. In this stage, questions were asked and the informants were given the freedom and time to answer and elaborate their points. Interaction between the interviewer and the interviewee is the main approach through which the informants will become agreeable to give more details. The last stage is exit. In this stage, the interviewer asked the informants to add any comments that would be useful for the study on topics such as women in politics, elections, and development of female performance. The interviews ended with thanks and appreciation for the informants' willingness to participate in the study.

Each interview was digitally recorded and transcribed immediately afterwards. According to Charmaz (2014, p. 68), 'using a recorder allows you to give full attention to your research participant, with steady eye contact, and to obtain detailed data.' Transcribing was word-by-word and was checked to ensure that no word was omitted. During and after each interview, the researcher took notes, including on the body language and reactions of the informants. The notes were summarised and converted into memos.

According to Glaser (1998, p. 122), 'the first step in grounded theory is to enter the substantive field for research without knowing the problem. This requires suspending your knowledge especially of the literature and your experience. The researcher must take a "no preconceived interest" approach and not ask questions that might be in his mind.' Entering interviews with a blank mind is a problem for researchers. The best tactic in such a case is to ask general questions in the field without directing the informants and allowing them to explain freely. The role of the researcher is to ask for elaboration of ideas if they are not clear.

Documentation

Documentation can be videos, drawings, diaries, group meetings, memories, newspapers, historical documents, and biographies (Corbin and Strauss, 2015, p. 37). People create documentation for specific purposes and they do so within social, economic, historical, cultural, and situational contexts (Charmaz, 2014, p. 46). This documentation plays a big role in clarifying scenarios. Documentation supports other data (data of interviews, for example) as they are often used in combination with other qualitative research methods as a means of triangulation (Denzin, 1970, p. 291). Corbin and Strauss (2015, p. 36) note that 'it is important for a researcher to initiate a research journal or diary in which he or she keeps a record of all the activities present and future that transpire during the research process.' The informants' documentation comes from two sources: newspapers and social media. Documentation on the main topics was presented by the female candidates in two forms. These were collected and read carefully. The data for the study were collected from two sources; newspapers and social media (Facebook, Instagram, and Twitter). Data from documentation were collected mainly from two local newspapers, *Akhbar Al Khaleej* and *Al Ayam*, collected between 1st September and 31st December 2014.

Pre-Analysis Process

Before conducting coding for all the informants, coding was conducted with two informants. The two informants represent two cases: the first case was with an informant who stood for election but could not stand for the second round and left the competition after the first round. The second case was an informant who stood for election, went through the second round, and won the election. Interviews of the two informants were coded and analysed.

Analysis in research on Grounded Theory starts as soon as the first bit of data is collected (Corbin and Strauss, 1990). Data from substantive areas can be numbers, photographs, images, and/or slogans. Dey (1999) mentions that the researcher usually starts with a general subject or problem conceived only in terms of a general disciplinary perspective.

Analysing data from the two informants followed the GT procedure. Data was first subjected to open coding. Similarities and differences emerged from ideas from the informants during open coding. Then the codes were classified, and each group was assigned a name. Constant comparison was conducted to identify the similarities and differences. The comparison was held to identify the similarities and differences in strategies and actions of the two informants.

Some categories emerged while analysing the two cases from the interviews with informants. The two informants' concerns were 'appearance of the informants in media and public,' 'culture,' 'tribalism,' and 'relation net-

works.’ It is clear from these two informants that there are two groups of factors: internal and external influences on their campaigns. For example, the appearance of a candidate is the most important stage of introducing the candidate to voters. Informant C2 could deal with her appearance by using a strategy that allowed her to flood the market with her images, news, and announcements. She used all available media to introduce herself to the electorate. Also, she used three of the most popular newspapers to extend her political product. Meanwhile, Informant C1 underestimated the importance of social media. She did not use all available social media to expand her political product. She was satisfied with using Instagram, where she made a few posts.

Birks and Mills (2015) argue that theoretical sampling should be employed from the first interview or data collection event, as concepts will begin to take shape even from these earliest stages of analysis. Researchers should not rush into deciding the final theoretical pattern. Researcher may seek broader and more diverse sources and types of data, or alternatively attempt to tease out specific issues (Birks and Mills, 2015, p. 69). The two cases that the researcher used to conduct pre-analysis first confirmed the validity of the tools used for this study. Second, the two cases provided more insight into the categories that may emerge in the main study. However, emerging categories such as ‘appearance,’ ‘culture,’ ‘tribalism,’ and ‘relation networks’ needed more investigation. The researcher needed to identify more categories and themes during subsequent interviews.

Analysing Data of the Main Study

Data analysis in Grounded Theory refers to searching out concepts, themes, and terms behind the incidents, categorising them, and then linking the categories to construct a theory. Coding is ‘the process of breaking down, conceptualising, and reassembling data (Corbin and Strauss 1990).’ Grounded Theory data analysis contains three cumulative rounds of coding: *open coding* for concepts, ideas, terms, and categories; *axial coding* to put categories back together in new ways after open coding; and *selective coding* to form theory. These operations require constant comparison. Microsoft Excel was used in the coding process. However, while using Microsoft Excel is exhausting and time-consuming, it also has its advantages. First, it enables the researcher to reflect on informants’ statements. Reading and re-reading the transcriptions on spreadsheets gave more insights into understanding each sentence of the transcription. Secondly, it enables the researcher to see the concepts and ideas behind the codes. Finally and most importantly, it allows the generation of codes for GT based on data. Thus, in the Microsoft Excel spreadsheet, the data led the researcher to come up with categories. In the application, the researcher is led by data,

which is the main purpose of GT. In the mechanisms in other applications, the researcher leads the data, and this biases the data and increases subjectivity.

Open Coding

The first step in the coding process is when open coding takes place. This step involves breaking down data into distinct units of meaning (Goulding, 1999). According to Glaser (1978), coding is 'running the data open.' Birks and Mills (2015, p. 10) state that open coding is 'the first step of data analysis. It is a way of identifying important words, or groups of words, in the data and then labelling them accordingly.'

Strauss and Corbin (1990, p. 6, 1998, p. 102) characterise open coding as the process when 'the data are broken down into discrete parts, closely examined, compared for similarities and differences, and questions are asked about the phenomenon reflected in the data.' Segmenting the statements aims to provide more understanding and insight into each of the ideas and concepts that signal an evolving theory. Also, segmenting statements enables researchers to focus on codes that emerge. If the researcher has trouble finding indicators that lead them to codes, they are advised to read the statement backward. Such a tactic allows the researcher to read the transcript word-by-word.

The researcher in this step broke the transcription of the interviews into separate lines. The lines of each transcription were assigned serial numbers to facilitate tracing statements of informants. Each line contained ideas, terms, themes, concepts, and events by analysing the text line-by-line, which means naming each line of written data (Glaser, 1978). Some statements were given more than one title based on the purpose of the ideas or concepts. The transcription of each informant was subjected to open coding separately to enable the coding to lead to the emergence of new ideas in the next transcription. Each line of the transcription was labelled with its respective abstract representation, which can be conceptual.

The next step was putting all transcriptions onto one sheet to sort them in the aggregate. After the open coding process, the codes were sorted in alphabetical order. Sorting codes reassemble codes in similar categories that held the same concept. Each one of these codes represented similar conceptual items. The total number of generated codes after open-coding was 819 codes, no matter how many times they appeared in each transcription. The list of codes presented the code numbers and names.

Constant Comparison

The emergent codes from the open-coding process present different ideas, concepts, and actions in different directions of the informants' political mar-

keting strategies. To identify similarities and differences in the strategies of the informants, the researcher conducted constant comparison. Corbin and Strauss (2015, p. 85) define constant comparison as ‘the analytical process of comparing different pieces of data against each other for similarities.’

After the process of open coding, the comparison was conducted to identify similarities and differences in initial data. To do so, similar concepts, terms, and ideas were classified and assigned a name. The location of each idea and concept was also identified, regardless of the number of times they appeared in each transcription. Also, naming the codes and their locations facilitated subsequent categorisation of coding.

Documentation analysis revealed that there were 1,190 items related to the Parliamentary Election in *Akhabr Al Khaleej* and *Al Ayam*. Items that related to the election include caricatures (cartoon drawings presenting viewpoints of the caricaturists about parliamentary candidates), news (all items related to the news published by candidates about their social and election campaign activities), columns (all columns written by candidates), posters (all advertisements, images, and slogans of candidates related to the parliamentary elections), announcements (all messages and announcements sent by candidates to voters), and media coverage (all items that are related to the coverage conducted by the newspaper about the candidates).

The study deals with rich data. Some of the data were obtained from interviews while other came from images, slogans, and banners, and gathered from female candidates’ accounts on social media and in magazines, newspapers, and other written sources. Interviews and documentation were subjected to analysis.

The process of open coding identifies similarity and differences in the actions and strategies of informants during their election campaigns. Constant comparison aroused many questions. Some of the questions are presented in the following:

1. Why do the informants believe that political marketing is about ‘sales skills’?
2. If the informants did not represent ideology as a political product, what then did they use as political products in their campaigns?
3. Which constituencies were dominated by tribalism and masculinity?
4. What was the role of the supporters in the informants’ campaigns?
5. In which constituencies did cultural dimensions in terms of masculinity, tribalism, and collectivism appear?
6. Why are all the informants using their relationships to conduct their election campaigns?

To answer these questions, the researcher reviewed the transcriptions to find some hints to uncover the means behind the informants' beliefs, actions, and strategies. The researcher found that the election process provided more explanations on the informants' strategies because some strategies were used before, and some were used during; others were used in the second round of elections and some were controlled by Arab culture. Analysing documentation enables the researcher to cover the scenario from different angles. Hence, newspapers, social media, and posters were analysed to observe how the informants appeared to voters. Slogans, advertisements, and images were coded, categorised, and given names.

Memo Writing

Glaser (1978, p. 83) warned researchers, 'if the analyst skips the stage of memo writing by going directly from coding to sorting or writing he is not doing grounded theory.' This stage is as important as is the theoretical write-up of ideas, separate from the data that focuses on relationships between codes and their properties as they became evident to the analyst. Glaser (1978, p. 83) states that 'memo writing captures the frontier of the analyst's thinking.' Memo writing is a fundamental analytical process in grounded theory research that involves the recording of processes, thoughts, feelings, analytical insights, decisions, and ideas in relation to a research project (Birks and Mills, 2015, p. 179). Memos are a roadmap for researchers to show the development of the theoretical sampling based on cumulative data. Researchers need to log all of the information (date, time, etc.) related to the memos. This allows the researcher to trace the development of theory. In memo writing, the researcher has to ask the five questions *what*, *why*, *when*, *where*, and *how* concepts, ideas, themes, actions, reactions, and strategies emerge. To answer these questions, the researcher needs to dig into the data to find explanations from data.

Corbin and Strauss (2015, p. 189) argue that one of the reasons some researchers have difficulty formulating theory is that they fail to write long, thoughtful memos throughout the research process. Although interviews provide data covering all of the aspects of the phenomenon under investigation, writing and organising memos enables researchers to develop theory.

Categorising and Axial Coding

Researchers need to go forward and backward through the data from the memos and transcription to codes that were generated (Charmaz, 2014). According to Charmaz (2015), axial coding, which is related to categories and subcategories, specifies the properties and dimensions of each, and reassembles the data that was fractured during the initial coding to give coherence to the emerging analysis. De Vos, Strydom, Fouche, and Delport

(2005, p. 348) argue that axial coding is 'a set of procedures whereby data are put back together in new way after open coding, by making connections between categories.' Glaser and Strauss (1967, p. 36) define a property as a 'conceptual aspect or element of a category. Property is related to the main ideas, themes, or concern that can be conceptualised.' Strauss (1987, p. 21) notes that property is 'the most concrete feature of something (idea, event, activity, relation) that can be conceptualised.'

Deciding on the name for a category requires some imagination and sensitivity to the process or phenomenon being categorised. Most important, the chosen name must be something memorable, something that promotes thoughtful analysis, and something from which the researcher may draw theoretical inspiration (Strauss and Corbin, 1990). The researcher's own knowledge and experience are very important to finding the categories that fit reality and give logical explanations of the relationships between categories.

To do this task, the researcher first laid out the dimensions of each category. Open coding revealed the various dimensions of the categories. These include: *action*, *strategies*, *behaviours*, and *reactions*. Political marketing is a social interaction between the informants and their stakeholders.

Categories and sub-categories were identified. The categories represent three timeframes in female candidates' campaigns: *before*, *during* and *after* the election. The period 'before election' shows the informants' process of preparation for election. The period 'during election' involves two stages of strategies in the election: during the first and second rounds of the elections. 'After the election' refers to the informants' behaviour after the polls.

Digging data from interviews, documentation, and memos showed the various strategies used by the female candidates in their election campaigns. The strategies were deployed before, during, and after elections. A total of 819 codes were categorised into 96 titles and sub-titles in three time-periods (pre, during, and post election) of the informants' campaigns were identified. The following are some of the categories and sub-categories that were generated:

- 1 What is Political Marketing?
- 2 Informants before Election
 - 2.1 Empowering Programme
 - 2.2 Political Environment
 - 2.2.1 Boycott of the Political Societies
 - 2.2.2 Boycott of the Voters
 - 2.2.3 Cancelation of Wusta Governorate
 - 2.2.4 Al Wafaq Domination
 - 2.3 Cultural Factors

- 2.3.1 Masculinity
- 2.3.2 Tribalism
- 2.3.3 Uncertainty Avoidance
- 2.3.4 Collectivism
- 2.3.5 Welayat Al Maraa' (the Rule of Women)
- 2.3.6 Bahraini Culture
- 2.4 Designing Political Products
 - 2.4.1 Electoral Programme
 - 2.4.2 Slogans
 - 2.4.3 Advertisements, Posters, Banners, and Brochures
 - 2.4.4 Appearance of the Informants

Theoretical Saturation

Saturation is 'when no new categories or relevant themes are emerging (Corbin and Strauss 2015, p. 139).' After identifying the categories and sub-categories, the researcher found no new emerging ideas, concepts, terms, or themes. Moreover, the researcher investigated the themes in depth to ensure that there were explanations for each of the emerged categories. The researcher used the *repetition* of ideas, concepts, and themes as an indicator of saturation stage. The researcher followed the emergence of new ideas, concepts, and themes, once the ideas, concepts, and themes were repeated; thereafter, no new ideas emerged. At this stage, the researcher ceased collecting data.

Theoretical Coding and Story Line

At first glance, a number of patterns of informants' behavior in the election emerged. The researcher did not rush into deciding which one of these patterns explains the behaviors of the informants in the election, but it is important to confirm the most relevant logical pattern that reflects reality. Strauss (1987, p. 36) states that categories must be sufficiently abstract so they can be used as the overarching explanatory concept tied to the other categories in the aggregate. It also must appear frequently in the data. The category must be logical and consistent with the data. It should grow in depth and explanatory power as each of the other categories is related to it. Theoretical sampling may expose more than one pattern of behaviour. The core variable reoccurs frequently in the data and comes to be seen as a stable pattern that is increasingly related to other variables. It relates meaningfully and easily with other categories and has a 'carry through' within the emerging theory by virtue of its relevance and explanatory power (Bryant and Charmaz, 2013, p. 280). Having enough time to consider each pattern provides more insight and understanding of the scenario.

It was clear that two factors played a role in the informants' election campaigns. External factors, such as cultural elements (masculinity, tribalism, stereotypes of women, and women in management) played a role in the informants' election campaigns, as did internal factors such as late decisions to stand for election, lack of planning, lack of financing, and little experience in election practices. In such a culture, the informants circumvented the cultural factors by creating, maintaining, and activating their relationship networks to help them conduct their election campaigns. The informants relied on their stakeholders and built good relationships with each of these stakeholder groups in their campaigns.

In sum, female candidates in the KoB can be characterised as relationship-oriented candidates. The informants who run for the second round of elections increased their alliance with other candidates who could not reach the second round. They used their relationship networks to win the second round. Unfortunately, the informants who could not pass the first round stopped appearing in the media and in public. Meanwhile, the informants who won and reached parliament increased their participation in social and political activities.

Limitations

The data were collected from two main sources: in-depth, semi-structured interviews and documentation. The sources provided rich data that served the study. However, the researcher should collect data from observation, which would enrich the data and cover the full scenario of the behaviour of the female candidates in elections.

Theory Construction

Birks and Mills (2015, p. 108) define theory as 'an explanatory scheme comprising a set of concepts related to each other through logical patterns of connectivity.' Similarly, Charmaz (2014) notes theory is the 'explanatory of relationships between concepts.' In this research project, the culture was in the focus of the female candidates.

Using GT in data collection and analysis in this research revealed that the female candidates were controlled by Arab and Muslim culture. The female candidates encountered two groups of factors before, during and after election. Internal factors include: (1) late decision to stand for election, (2) lack of appearance in media and in public, (3) lack of planning for election. There are also external factors influencing the female candidates election campaigns, which include: (1) stereotypes threat, (2) cultural factors in terms of masculinity, tribalism, stereotype of women and uncertainty avoidance.

To circumvent cultural factors, the female candidates increased their relation networks with stakeholders. The female candidates relied on their relation networks in all stages of their election campaigns. The female candidates can be characterized as relationship-oriented candidates.

Reflections on Using Grounded Theory

Selecting an appropriate methodology in a major project such as a doctoral study is a difficult task encountered by doctoral researchers. The Methodology should enable the researcher to answer the questions of the study and achieve its objectives.

Starting the process of GT with a blank mind is one of the difficulties facing researchers. Morse (1994) states that no one would claim to enter the field completely free from the influence of past experience and reading. Even if this were possible, ignorance is not synonymous with generating insider understandings. Glaser (1978) argues that prior understandings should be based on the general problem area and reading very widely to alert or sensitise oneself to a wide range of possibilities. Learning not to know is crucial to maintaining sensitivity to data. Strauss (1987) notes that the use of self-education and literature are early influences and, while they diffuse understanding and provide greater sensitivity, both specific understandings from past experience and literature may be used to stimulate theoretical sensitivity and generate hypotheses.

Before the researchers start their GT, they should understand the GT process. Then, once the researchers start doing the GT following its procedure, the data will lead them to where the theory emerges. All that the researchers need to do is surrender themselves to the data and coding process. Researchers should accept the findings whether they agree or disagree with it. Glaser (1998) suggests that researchers should stop talking about GT and just start doing it. GT is all about data and nothing but data. Theory in GT will emerge from the data without forcing it.

Memos are more than a store of ideas and thoughts. Corbin and Strauss (2015, p. 118) state that students complain that writing memos and doing diagrams is time consuming. As a matter of fact, memos provide insights and deep thinking about the theory rather than just store ideas and thoughts. Writing memos helps researchers conceptualise the ideas, concepts, and themes and find the interactions between them to construct a theory.

Documentation (newspapers, social media, posters, slogans) supports the data of interviews. For example, 'appearance' is one of the categories that emerged in the coding process. Undoubtedly, the appearance of a candidate represents the main stage of the Product Life Cycle (PLC) introduction. Also, voters need to experience the candidate as a political product.

They seek to know about the candidate that they would select. In her interview, an informant states that, 'I started late. This of course minimised the chance to introduce myself to voters.' Similarly another informant said, 'We were advised to be appeared [sic] in media. We lacked to appear in media and in public. Trainers in the workshops kept telling us to appear in public. It would allow people to know about you.' By digging into newspaper data, researchers found that, out of the 1,190 items published in newspapers that related to the election activities (announcements, advertisements and images), only 14.71 percent of the items were published by female candidates. Documentation analysis confirmed the category of 'appearance' that emerged from open coding, where the informants did not give enough attention to appear in media and public.

The coding process may reveal a number of patterns. The most important goal is to select the pattern that reflects the reality of the scenario. Selecting the pattern has a number of criteria:

1. The scenario must reflect the reality of the scenario in terms that illustrates 'what is going on.' This can be achieved by using a strategy to ensure that data is collected from different angles, such as triangulating data.
2. Based on Number 1, the pattern must be logical. Experience, knowledge, and imagination of the researcher are required in grounded theory. A logical pattern must derive from a position of trust and truth.
3. The pattern should holistically cover the scenario, which requires the needed skills, experience, and knowledge of the researcher.
4. Patterns should explain the relationships between the variables and categories.
5. The pattern answers the research questions and achieves its objectives.

Conclusion

This study implements GT to construct theory from data. The findings emerged from a systemic process (open coding, selective coding, and theoretical coding) of GT. This enables the researcher to deal with a huge amount of data. It also permitted the researcher to collect and analyse data throughout the coding steps to develop a theory. The area of the GC including the KoB is new in using political marketing in elections. The study employs inductive reasoning. It did not use hypotheses to be proved and refuted, but rather provided a wide margin of imagination to interpret the behaviour of the study sample. Reviewing the political marketing theories provided insights for the researcher to discuss the process of political marketing in the KoB using his personal experience to interpret the behaviour of the in-

formants. Using Grounded Theory in collecting and analysing data was an appropriate strategy to develop a data-driven theoretical explanation for the process of political marketing in Bahrain. *w_aljowder@hotmail.com*

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Auditing Industrial Safety Management: A Case Study

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As industries are becoming increasingly self-regulatory, external auditing has become increasingly important to ensure that industrial practices are in line with regulations and the public good. This study asks if there is a fit between the industrial practices of safety management and external auditing. It concludes that while companies largely manage safety through operational-level experience and with a low level of formalisation, the audits have a primary focus on formal documentation and gathering audit evidence at the strategic and tactical levels in the organizations. This limits the effectiveness of auditing as a tool both for learning and regulating safety management.

Keywords: industrial safety, safety management, auditing

Introduction

As long as industrial operations have taken place, people have tried to handle the increased risks they entail (Grote, 2012). All Norwegian companies within a broad range of industrial sectors, with 40 employees or more, are required to establish an emergency response capacity as part of their industrial safety system. The industry and government have in partnership established the Norwegian Industrial Safety Organisation (NSO) to facilitate the development of industrial safety and to audit its implementation.

Following the rise of 'new public management,' industries have become increasingly self-regulatory, while the State (as regulator) establishes requirements (laws and regulations) and seeks to control (audit) that these are met (Power, 2003). How they are met is largely left to the industries themselves. However, in ensuring the public good, such enforced self-regulation is dependent on both that industries establish appropriate safety management systems and that state agencies (or their representatives) through audits are capable of controlling that they meet the established requirements (Gilad, 2010).

This brings us to the main issue of this paper: is there a 'fit' between how industrial safety management (emergency response in particular) is conducted by industrial enterprises and how NSO audits are conducted? Previous research has been critical of whether existing auditing practices within

different sectors manage to find evidence of actual safety practices (Tackett, Wolf, & Claypool, 2004; Blewett & O'Keefe, 2011; Hohnen & Hasle, 2011; Batalden & Sydnes, 2015). Are NSO audits capable of gathering relevant and necessary evidence on whether industrial enterprises uphold safety standards established by laws and regulations? Notably, the focus here is not on levels of compliance with public regulations. Rather, we address how industrial safety management is established and acted upon, and how audits are conducted in practice. Firstly, we ask how companies establish an emergency response as part of their industrial safety systems. Are they based on bottom-up or top-down processes, formal or informal procedures, process or action rules? Secondly, we address how NSO conduct audits of the industrial safety, with a focus on emergency response. In particular, we distinguish whether NSO audits are based on documentation (structural audits), or also include auditing safety practices (operational audits). These issues are critical from a government perspective in terms of their ability to manage, regulate and control, as well as from a business/organizational perspective in terms of learning and developing safe practices.

Regulations, Safety and Audits

In recent decades the regulation of safety has shifted from detailed prescriptive public laws and regulations towards more functionally defined requirements and self-regulation (Power, 2000). It is then largely left to the enterprises to design, establish and maintain systems that ensure that they comply with the publicly required levels of safety (Reason, 1997; Gilad, 2010). As a consequence, the State's role as a regulator has been reduced, while the enterprises' role in serving the public good (safety) has increased in importance. It is common that State agencies or other mandated actors conduct systematic checks, referred to as audits, to whether the enterprises activities and arrangements comply with the required standards (Blewett & O'Keefe, 2011). This kind of arrangement between regulator and industry is commonly known as enforced self-regulation and are widespread *inter alia* within the production, transport and provision of public services (Gilad, 2010). To function as intended it relies heavily on the ability to audit, defined as 'the systematic, independent and documented process of obtaining audit evidence, and evaluating it objectively to determine the extent to which the audit criteria are fulfilled' (International Standard Organization, 2011).

There are many issues that have been raised regarding the role of auditors, audit criteria, audit overloads and so forth (see for example Blewett & O'Keefe, 2011; Batalden & Sydnes, 2015). In this paper we focus on the relation between how industrial safety management systems are established and how audits of these systems are conducted.

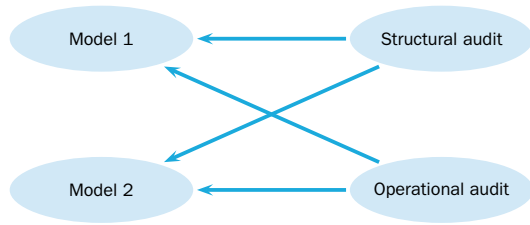
Safety management includes all systematic measures taken to establish and maintain levels of safety that conform to policies, goals and other requirements (Abrahamsen, Aven, Vinnem, & Wiencke, 2004). It commonly includes the elements of policies, goals and objectives, operating standards and norms, monitoring and feedback. Safety management should be a continuous process (Stolzer, Halford, & Goglia, 2008) and an integral part of an organizations activities (McDonald, Corrigan, Daly, & Cromie, 2000).

In defining organizational roles in the handling of unwanted incidents, it is common to distinguish between strategic, tactical and operative levels of organization (Canton, 2006; Hovden, 2012). Actors at these levels have important roles and functions in safety management. The operative level is the 'sharp end' of the safety system that directly responds to unwanted incidents. The tactical level leads the response through coordinating activities. The strategic level is responsible for long-term and over-arching processes that guide the operative response (Canton, 2006).

There are two main analytical approaches to study safety management (Hale & Borys, 2013). These can be labelled as Model 1 and model 2 (Dekker, 2005). Model 1 is commonly referred to as a rationalistic, top-down approach. It has a focus on hierarchy, formal rules and routines, the standardization of safety procedures, and a top-down approach to establish safety regulations (Hale & Borys, 2013). The central decision-makers are to be found at the strategic and tactical levels that seek to provide detailed directions to the operators in the sharp end. It is assumed that activities are documented well and that audits can rely on this as a source of data.

Model 2 is a bottom-up approach, where the operators at the sharp end are assumed to have the central role (Hale & Borys, 2013). Rules and routines are dynamic and are not prescriptive; rather they function as guidelines (Hale & Borys, 2013). The operators are constantly evaluating the safety situation during operations based on their knowledge and experience. A high degree of flexibility is considered essential to be able to handle operative uncertainties that arise (Grote, 2012). Consequently, the levels of documentation and formalization are low. This makes the gathering of audit evidence more challenging (Hale & Borys, 2013).

Audits can be conducted in a variety of ways and by various actors. Audits can be internal or external (International Standard Organization, 2011; Kjellen & Albrechtsen, 2017). Internal audits check if the safety performance is according to its own organizational criteria. External audits can be conducted by a public authority (or mandated agent), or be market-based. In these cases, the enterprise or organization is audited according to criteria set externally by public laws and regulations, industrial standards or market-based criteria (Baldwin, Cave, & Lodge, 2010). One can also distinguish audits according to what data and information is gathered as audit evidence

**Figure 1**

Models of Safety
Management and Auditing

in the process. Structural (also known as document or desk-top) audits are based on available documentation and a consideration whether these documented activities meet the established criteria (Blewett & O’Keefe, 2011; Kongsvik, 2013). Operational audits also include interviews and observations to verify whether safety rules and routines are implemented in practice (Costella, Saurin, & Guimarães, 2009; Kongsvik, 2013).

There has been much debate regarding audit practices; for example, the use of the establishment of criteria, audits reflection of safety practices, the competence of auditors, their use as a basis for organizational learning, and so forth (Power, 2000; Hohnen & Hasle, 2011, Blewett & O’Keefe, 2011; Batalden & Sydnes, 2015). In this study, we will elaborate on the relation between the industrial safety system (model 1 and model 2) and the auditing approach (structural and operational audits). We, firstly, ask how rules for industrial safety are established within the organizations. Secondly, we ask how external NSO audits of industrial safety are conducted. Finally, we discuss the relative ‘fit’ between the approaches to safety management and audits in providing a basis for valid and effective safety.

The underlying assumption is that structural audits based on documentation is only suited to conduct audits of organizations with a high degree of formalization, prescriptive standards, rules and procedures, structure and documentation procedures and, in general, to a top-down approach to management – referred to as Model 1 in safety management (Dekker, 2005; Hale & Borys, 2013). Structural audits are not well suited to gather audit evidence from organizations with a low degree of formalization, a bottom-up approach to safety management, and a high degree of flexibility in decision-making – referred to as Model 2 in safety management (Dekker, 2005; Hale & Borys, 2013). Auditing Model 2 organizations are claimed to require a more thorough gathering of audit evidence, including operational audits whereby one can observe the SMS in action. Operational audits could naturally also be a benefit to Model 1 organizations, but not as necessary to gather relevant audit evidence. These questions are of importance as they determine whether audits actually gather relevant evidence and ensure that enterprises whose operations may pose a risk to society uphold the required safety standards.

Table 1 List of Respondents

Respondent	A1	A2	A3	A4	B1	B2	B3	C1	C2	C3	T1	T2	T3
Business enterprise	A	A	A	A	B	B	B	C	C	C			
Title in industrial safety	ERP	ERP	ISM		OSC	ISM		OSC	ISM		A	A	A
Level in industrial safety	O	O	T	S	O	T	S	O	T	S			

Notes ISM – industrial safety manager, OSC – on scene commander, ERP – emergency response personnel, A – auditor, S – strategic level, T – tactical level, O – operative level.

Methods and Data

This is a qualitative case-study (Yin, 2003) of industrial safety audits in Norway. It is based on a series of semi-structured interviews, document analysis and observations of industrial safety audits. We have chosen to triangulate the sources of data to strengthen the empirical findings of the study (Bryman, 2008).

The business enterprises (A–C) in the study are all located in Norway. They all have >50 employees and are obliged by the industrial safety regulation (Naringslivets sikkerhetsorganisasjon [Norwegian Industrial Safety Organisation], 2015) to establish an industrial safety system.

All interviews were conducted in the period January–February 2016 by the first author. Employees of the business enterprises (A1–C3) were selected based on their position in the industrial safety system, according to formal title and level in management. The auditors interviewed (T1–T3) are all employees of the Norwegian Industrial Safety Organisation. All interviews were recorded and transcribed with the consent of the informant. Eleven interviews were conducted face-to-face on the site of audits, while one was conducted by telephone and another on Skype.

The first author participated as a non-participating observer during the audits of the three enterprises in the study. The audits observed were all conducted by the same auditor (T1). This gave access to observe the safety context of the enterprises and the audits taking place.

A document study was conducted of relevant public laws and regulations on industrial safety, evaluations and guidelines by the Norwegian industrial safety organization, and internal documentation from the business enterprises in the study. Unfortunately, the business enterprises had limited documentation available, e.g. only enterprise A had developed a contingency plan for industrial safety. The document study was used both as a basis for gathering interview- and observational data, and as a supplement to strengthen empirical findings.

Industrial Safety in Norway

'Industrial safety' is the enterprises own preparedness to handle unwanted incidents in the time-period until public emergency responders arrive on scene and further provide support to the latter (Naringslivets sikkerhetsorganisasjon, 2017). The kind of incidents vary but typically include fire, personnel injuries, and leakages of toxic substances. Enterprises with 40 employees or more, within certain industries, have a duty to establish an appropriate level of industrial safety (Justis- og beredskapsdepartementet, 2015).

In 2015 there were 1066 enterprises that had industrial safety systems, with a total of 15206 emergency response personnel (Naringslivets sikkerhetsorganisasjon, 2015). Among these enterprises, 269 of them activated the systems in 848 actual incidents. In 565 of these cases, it was reported that the industrial safety systems had contributed to mitigate the consequences of the incidents. In short, industrial safety is important both for the individual enterprises and the public in general.

NSO was established in 1938 by the Confederation of Norwegian Enterprise (NHO) (Naringslivets sikkerhetsorganisasjon, 2012). From an initial focus on war-related safety and preparedness, industrial safety has focused on handling accidents and unwanted incidents as part of the enterprises overall work on HSE (Naringslivets sikkerhetsorganisasjon, 2012). NSO is a supervision authority with the main task to supervise and audit enterprises with a duty to establish industrial safety systems. NSO is mandated by the Ministry of Justice and Public Security based on the Civil Protection Act (Justis- og beredskapsdepartementet, 2010, §23) and the Industrial Safety Regulation (Justis- og beredskapsdepartementet, 2015). Its task is to provide an overview of enterprises with industrial safety systems, gather annual reports from the enterprises, provide training and coordinate with other HSE authorities. However, the main task is to conduct industrial safety audits of the enterprises.

Organizationally, NSO falls both under the NHO and the Ministry of Justice and Public Security. The latter follows up on the activities of the NSO through setting the frames and conditions for its activities through the Norwegian Directorate for Civil Protection (<http://nso.no/om-nso>). However, the NSO is run as an independent organization financed through an annual industrial safety fee established by NHO and paid by the relevant member enterprises.

NSO has two categories of audits: the so-called inspections and the audits related to large-scale accidents (Naringslivets sikkerhetsorganisasjon, 2015). The vast majority of audits (262 of 293 in 2015) are inspections (Naringslivets sikkerhetsorganisasjon, 2015). An inspection is an audit that

is planned ahead and systematically covers selected issues related to the enterprise, to control that the latter complies with established laws and regulations. After audits, a report is written by the auditor on the findings, including both formal non-conformities and comments on less serious issues (Naringslivets sikkerhetsorganisasjon, 2015). In 2015, approximately half of the 262 audits resulted in 291 formal non-conformities with established laws and regulations (Naringslivets sikkerhetsorganisasjon, 2015). Among these, there were non-conformities related to exercises (29%), risk assessments (15%), contingency plans (15%), and qualifications (10%).

Industrial Safety and Emergency Response

Here we present our findings from the three industrial companies in the study. We focus on four factors that are important in distinguishing between a Model 1 or Model 2 approach to safety management. These are: how internal safety procedures are established by the enterprises (participation), whether safety management is a continuous process, the level of flexibility in rules and procedures, and whether decision-making in emergency situations is centralised or de-centralised.

As noted above, it is common to distinguish between three organizational levels: strategic, tactical and operative (Canton, 2006; Engen, Kruke, Lindøe, Olsen, & Pettersen, 2016). While the strategic and tactical levels are central decision-makers in model 1, the operative level has a central role in model 2 (Hale & Borys, 2013). A prominent view among informants from all three companies was that managers on the tactical level are vital in working out written rules (A1, A2, A3, A4, B1, B2, B3, C1, C2, C3). To what extent strategic and operational levels are central in making written rules was somewhat uncertain. One informant put it as follows: 'the industrial safety manager and HSE-manager have worked on the written rules. The operative have not participated much, really. It has been done that way, as the industrial safety manager and HSE-manager have a good overview of the enterprise and know a lot about what is required' (B2). Some informants added that workers at the operational level also were welcome to share their points of view (A1, A2, B3, C1, C2). Although some informants said that strategic level was crucial in making written rules (A1, A2, A3, B1), others mentioned that strategic level generally did not contribute (A4, B2, B3, C1, C2, C3). Informant B3 noted that the strategic level was mainly included during complicated decisions. This does sound likely, in particular when decisions have wider implications (economic or organizational) for the enterprise.

According to the auditors, the ideal is that all three levels cooperate in preparing written rules (T1, T2, T3). The plans should be rooted in the top-level management as there should be a broad agreement in the enterprise

on what the emergency response should be for. The tactical level in the enterprise should participate to be able to delegate responsibility further on, and they often have important knowledge that is crucial for the practical conduct of emergency response (T3). T2 adds that 'those that are to follow the rules should also be central in their making, that is, the operative [level].'

Safety management should be a continuous process (Stolzer et al., 2008). Plans, documents and procedures should be updated regularly through established procedures. In our cases, we find that one informant stated that safety management is a circular activity in their company (A4), while others disagreed (B1, B2, B3, C1, C2). One informant explained: 'We are usually so busy that assessments and changes are not done until we have to. Often in relation to near-accidents, accidents or audits' (B3). Three informants, all from company A, claimed that their company carried out the safety management according to the established requirements (A1, A2, A3). 'The list of unwanted incidents should be reviewed a minimum once per year and be updated in the case of changes that affect the organization and dimensioning' (Justis- og beredskapsdepartementet, 2015, §5).

Audit results found that all three companies had non-conformities related to their documentation, both in terms of their content and in keeping documents up to date. While company A struggled to prove they had updated their contingency plan within a year, the 'industrial safety' in the two enterprises B and C had no relevant contingency plan.

One respondent on the operative level argued that assessments and corrections may have been done, even if it is not visible in the contingency plan. He explained that assessments and corrections in certain situations are made orally. He also stated: 'It is seldom that we make changes to the written material, that is, contingency plans and risk assessments. Probably far too seldom. It happens that we (the operative-level) make oral assessments and changes of the industrial safety system before we start on new projects that require changes' (C2). This may be interpreted as an indication of documents not being vital for operational feasibility.

Another indication of documents being less important for the operational level is related to how apprentices are being taught. The informants appear to know the documents are located at the manager's office (A1, A2, A3, B1, B2, B3, C1, C2, C3), but documents turn out to be an insignificant source of learning among apprentices. Learning from experienced crew appears to be more common. One informant put it like this: 'Some of what is important to know about our industrial safety system is not to be found in any document. Who is good at what and how an individual performs his/her work, for example. We are supposed to operate as a team and are dependent on good cooperation' (A2).

Safety rules can be divided into categories based on their degree of flexibility, performance rules, process rules and goal rules (Grote, Weichbrodt, Zala-Mezö, & Künzle, 2011). In general, all informants expressed that the procedures are most formalized in the early phase after the emergency alarm has been activated (A1, A2, A3, A4, B1, B2, B3, C1, C2, C3). One informant explained that 'when the alarm sounds everyone part of the industrial safety meet at the designated site, and all the remaining employees at their designated site' (A2). The degree of flexibility increases as soon as the staff is gathered at the destined meeting-place following evacuation. 'It is not possible to plan ahead for an accident, that is why the rules and procedures have a fair amount of flexibility' (C3). From the auditors point of view, both standardization and flexibility are necessary to handle emergency situations (T1, T2, T3).

The Industrial Safety regulation of 2015 established that an on-scene-commander is to be appointed with responsibility for all emergency response personnel during incidents. All companies have assigned on-scene commanders. The informants from the companies also confirm that the on-scene commander is in charge during incidents. However, it is clear that he/she frequently delegates tasks to the operative emergency response personnel (A1, A2, A3, A4, B1, B2, B3, C1, C2). Moreover, as one informant notes, 'the operative emergency response personnel may of course make suggestions and often has to make its own assessments during an emergency' (A3). As such, there is a high degree of decentralization of decisions during incidents. The auditors agree with the informants from the companies in that decentralized control is necessary to make fast decisions (T1, T2, T3).

Structural and Operational Audits

This section examines the approach to audits that is prevailing among auditors from NSO. We will be distinguishing between the two main approaches to auditing, structural and operational audits.

All informants, both from the enterprises and the auditors, stated that NSO has a focus on various evidence during their audits. The three most important sources of audit evidence are document control, interviews with employees and managers, and inspections of the site (A3, A4, B1, B2, B3, C1, C2, C3). We also observed that the audits included all these three methods of evidence gathering, but that the time spent on each differed.

According to NSO's recommended guidelines, representatives from strategic, tactical and operational levels should all be interviewed by the auditor (Naringslivets sikkerhetsorganisasjon, n.d.). However, observations from the audits demonstrated that most of the time was spent on interviewing the strategic and tactical levels, while less time was spent on interviews

with representatives from the operational level. This observation contradicts what the auditors claimed during the interview conducted as part of the study: 'The on-scene commander together with the industrial safety manager provide a good overview of the enterprise' (T1). Another auditor adds that: 'The most important thing for me is that the enterprise actually has a sufficient capacity to ensure the emergency response personnel's [safety]. The emergency response personnel should have sufficient training and courses, good enough protective gear, enough time for exercises and so forth. When I am sure this is in place, then I can move upwards in the system and look at the more over-arching issues. My experience is that when things are in order at the operative level, they usually are in order at the tactical and strategic levels, as well' (T3). As such, there is a degree of variation in the focus the individual auditors have during audits: the operative, tactical or strategic levels of the organizations.

According to Blewett & O'Keeffe (2011), too much focus on document control might exclude important information. It was commonly held among informants from the companies that it is generally too much focused on documents during NSO-audits (A3, B1, B2, B3, C1, C2, C3). One informant explains that: 'My impression is that the auditors generally are too preoccupied with the documentation. I agree that the documents are important to establish the foundation for good industrial safety, but it is not the papers that are to save us in an emergency situation. It is after all a bit too easy to get away with presenting fancy documents that do not show actual operative capacities' (C3). B3 agrees and adds: 'I willingly admit that we previously have presented false documentation. The most important for me is the operative capacity, not fancy documents.' An example of such incorrect documentation that had been presented during audits was contingency plans (B3, C3).

The auditor gave, to some extent, contradicting answers about whether the audits are focusing too much on documents or not. One auditor says he understands those who think the audits emphasize documents too much. 'Already before the audit has started, we ask the enterprises to send documentation' (T3). The same auditor notes that such document control is demanded by the regulations (Justis- og beredskapsdepartementet, 2015). Meanwhile, he notes that there are several positive aspects of document control. 'I would say that the documentation provides us with a cue of how things are done in the enterprise. A sort of map that shows us where the challenges are to be found' (T3). On the other hand, the other two auditors do not find NSO audits being too much about document control (T1, T2).

A key issue of audits is, of course, how non-conformities are followed up upon by the auditees (Batalden & Sydnes, 2015). A common opinion among the company informants is that non-conformities may be positive, as they

may assist the company to reveal weaknesses and improve their safety management (A3, A4, B1, B2, B3, C1, C2, C3). A crucial prerequisite is that the auditor is capable to identify non-conformities that are affecting the actual emergency preparedness capabilities (B2, B3, C1, C2, C3). 'My experience is that the NSO are quite reasonable in their considerations. But I have previously experienced getting non-conformities for minor details' (C3). Another informant disagrees with the auditors' conclusion and claimed that: 'I think non-conformities can be positive. But it was clear that the auditor during this audit was aiming to make money when he was trying hard to sell NSO courses as a consequence of the audit results' (A4).

NSO presented their annual evaluation of non-conformities statistics in the Conference on Industrial Safety 2016. Of 209 audits conducted from 1/1/2016 to 20/11/2016, 47 (22.5%) did not result in non-conformities. Informants from NSO explained that the number was relatively low, and even lower than earlier years. 'It is positive that we do not find non-conformities. I would not say that it is a sign that we are incapable of detecting non-conformities. There are certainly enterprises that do not get non-conformities that have everything in order. However, zero non-conformities does not imply that one can relax. We have seen enterprises that have gone from good results to bad results in a short period of time' (T1).

The auditors (T1–T3) expressed that NSO has substantial procedures for following up non-conformities. One auditor tells that: 'We follow up on non-conformities by giving the companies a deadline to submit documentation on suggested corrective actions to resolve the problem. Thereafter, we consider if the solution is good enough. In serious cases, we return for a follow-up audit within one year' (T1). Several informants from all three companies expressed that non-conformities are prioritized in their company, and that they are willing to use resources to make improvements (A4, B1, B2, B3, C3). One informant stated that: 'For us it is important to close non-conformities in a good way. We will work systematically to find appropriate solutions to the non-conformities we got today. We choose to believe that NSO point at non-conformities that are of importance to our safety, and therefore we will do a good job' (A4). However, some informants noted that non-conformities remained unresolved between audits (three years ago), and therefore disagreed in that non-conformities were being prioritized in their company (C1, C2).

Discussion

Safety Management

The first issue to be addressed in this study was how industrial safety rules were established by the enterprises. In particular, at what level, differentiating between strategic, tactical and operational levels. In all cases, it was

clear that the tactical level was central in this process through the industrial safety manager who was responsible for formalizing rules and contingency plans (company A). This is natural as they commonly are tasks assigned to such positions. The question is to what extent the strategic and operational levels in the organizations also contribute in the making of safety rules. It was clear that workers at the operational level provided inputs to the industrial safety manager in the making of safety rules. There were more diverging practices regarding the role of the strategic levels in the organizations in this regard. It was noted that the strategic level (boards and directors) mainly participated in decisions with a certain degree of complexity (B3). Previous studies have also noted the limited role of strategic levels in safety management (Batalden & Sydnes, 2015). Safety management is too often the domain of safety managers with low involvement from the strategic level. This is serious as leadership involvement is a key factor in effective safety management (Kim & Gausdal, 2017). Also, according to Model 1 it is critical that safety management is established and rooted in the higher levels of the organization.

In terms of industrial safety being a continuous process, it is worth noting that enterprises B and C did not have a contingency plan for industrial safety. Enterprise A had a contingency plan that was not updated yearly, as required, and lacked in detail. In general, informants were clear that safety documentation was not a continuous process. Though the strategic level at enterprise A (A4) claimed that they worked continuously on safety documentation, it was registered as a non-conformity during the observed audit.

Though formal safety management is not a continuous process in a formal sense, it is clear that safety work is ongoing in the enterprises. At the operational level, workers are assessing work-situations and changing procedures informally (A1, A2, C1). However, this is not always formalized and documented in the safety management system, but remains as informal practices at the operational level. This is also evident in the training of new employees, which is done by the experienced crew-members, rather than by established procedures based on written documentation and such. The standardized procedures for industrial safety in the companies covered evacuation and establishing meeting points. Beyond this initial phase, emergency response is based on a high degree of flexibility. Roles, responsibilities and equipment were not defined by procedures according to the Industrial Safety Regulation (Justis- og beredskapsdepartementet, 2015, §7). According to auditors, there used to be a higher degree of formalized procedures, but this turned out not to function in practice (T1, T2, T3). The reasoning was that it is impossible to plan for the eventualities of a crisis and that a high degree of flexibility thereby is preferable (T3). This

is clearly in line with a Model 2 approach, arguing that prescriptive rules alone do not ensure higher levels of safety (Hale & Borys, 2013). This is further emphasized by the fact that, though the on-scene-commanders are in charge during incidents, they commonly delegate responsibility to the operational emergency response personnel. As such, it reflects a pattern of de-centralized decision-making in the industrial safety. In finding the appropriate balance between standardization and flexibility (Grote et al., 2009), the companies studied here generally land on the side of flexibility.

This leads to a situation where the informants claim that they feel 'prepared,' though there is no contingency plan (Companies B and C), or it is not updated (Company A). As demonstrated above, knowledge and experience located at operational level is valued higher than formal contingency plans, rules and documentation (the domain of tactical and strategic level) as a basis for industrial safety. This is clearly in line with a Model 2 to safety management (Hale & Borys, 2013). As such, the formal documentation and contingency plans do not provide an adequate representation of industrial safety practices at the company level. This is problematic in many ways and is a continuous debate in the safety literature (Hale & Borys, 2013; Blewett & O'Keeffe, 2011; Batalden & Sydes, 2015). However, as regards this study, it provides specific challenges in terms of auditing the performance of industrial safety.

Auditing

This brings us to the second main topic of this study: how audits of industrial safety are conducted. We have initially distinguished between structural and operational audits (Costella et al., 2009). The first focus on whether the documentation of the emergency response and related activities meet with the criteria established by the Industrial Safety Act. The second also includes interviews and observations with a main focus on whether safety rules and routines are implemented in practice. It is evident that the NSO audits of industrial safety are based on multiple sources of audit evidence: documentation, interviews and inspections. Live exercises are, on the other hand, not conducted during audits. It is clear that the NSO audits have characteristics of both structural and operational audits.

The relative significance given to different sources of evidence and how they are gathered are of specific interest to this study. The basis for all audits were the documents submitted by the companies to NSO during the preparation phase. This is the common approach in all auditing and provides the starting point prior to the actual audits (Kjellen & Albrechtsen, 2017).

During the audit interviews that were observed with the companies in this study, the main focus was on the representatives of the strategic and tac-

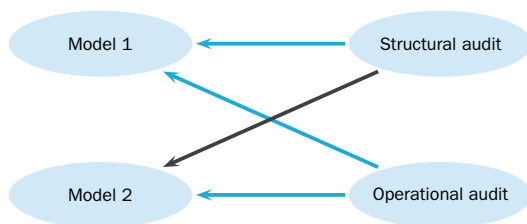


Figure 2

The Practice of Auditing
Safety Management

tical levels of the companies. The representatives at the operational level were less active and involved during the interviews. Moreover, the main focus during the interviews was on the formal documentation rather than on operative safety practices. As such, discussions centered on the documentation and formal system, rather than on its implementation and effectiveness in practice. This focus on formal rather than operational aspects of safety echoes the findings of previous studies of auditing in a variety of sectors (Hohnen & Hasle, 2011; Blewett & O’Keeffe, 2011; Batalden & Sydnes, 2015).

However, the auditors in this study (T1–T3) presented different approaches to gathering data and involving the operative, tactical and strategic levels of organizations. This in itself is a discussion within auditing, where issues related to the clarity of audit criteria versus the individual discretion and competencies of auditors is central (Tacket et al., 2004; Karapetrovic & Willborn, 2000; Beckmerhagen, Berg, Karapetrovic, & Willborn, 2004; Blewett & O’Keeffe, 2011; Batalden & Sydnes, 2015).

When it comes to how companies handle non-conformities, there are several contradictions. On the one hand, non-conformities seem generally to be considered seriously and followed up on by the companies, though there are some exceptions. On the other hand, it is clear that two of the companies have provided auditors with false documentation to avoid non-conformities during audits (B3, C3). This is not surprising in that it has been demonstrated that organizations apply a variety of strategies to both avoid and close non-conformities found in audits (Blewett & O’Keeffe, 2011; Batalden & Sydnes, 2015).

In this study, we have found that the companies analyzed largely abide by a Model 2 approach to safety management. Knowledge and experience at the operational level is considered more important than formalizing safety management through contingency plans and regulations. With the exception of the evacuation phase, the degree of formalization during emergency response is very low. In practice, safety management relies on decisions and adaptations made at the operational level, both when planning new projects or during exercises/emergencies.

The NSO audits of industrial safety are based on a variety of audit evi-

dence. However, they predominantly are structural audits, based on formal documentation and procedures.

It has been acknowledged that auditing model 2 organizations is complex (Hale & Borys, 2013). This is, of course, made worse when the audits focus on gathering evidence based on formal documentation and top-down procedures (Model 1) and when the companies largely rely on operational experience and knowledge following a bottom-up Model approach.

The findings from this study feed directly into the ongoing debates on both safety management and auditing. It addresses the overall 'fit' between the auditees' safety management systems and the auditors' approaches to provide efficient control of their operations. In a time where public regulation largely is based on self-regulatory-, meta- or smart- approaches, rather than command and control, these issues are crucial in ensuring the public good. From the company perspective, the findings imply that there is limited learning to be done on the basis of the NSO audits, as the audits to a limited degree focus on where the companies important safety work takes place – at the operative level. This may over time influence safety performance.

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Digital Literacy in the First Three Years of Primary School: Case Study in Slovenia

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The article deals with the importance of digital literacy, as well as with the role of school and teachers in developing digital literacy among primary school children. The theory of digital literacy is entering school curriculum in many different forms, be it as an independent or a cross-curriculum subject. While the differences in student knowledge of this field are very big, there are also discrepancies between teachers' qualifications and motivation. The study focuses on digital literacy with the example of Slovenian primary schools (first three years, children age 6 to 9). Digital literacy is a part of didactic recommendations for mandatory subject curriculum. Computer use in classes depends on individual teacher's resourcefulness and his or her ability to use computers or the Internet, which in turn has an important influence on students' digital skill development. Qualitative study methods were used in the survey to ensure that the participants understood the meaning of digital literacy integration in classes. Three primary schools were invited to participate in the survey and three interviews were conducted at each of the three (teachers, parents and students were interviewed). A conclusion was made that teachers and students associate differences in digital literacy with students' knowledge, learning skills and use of information and communication technology (ICT). Parents associate the differences with the use of ICT that is connected to the socio-economic background of individual families. Teaching with the use of ICT plays an important role in boosting digital literacy in primary schools, although this depends largely on teachers' motivation and further education. The conclusions of this study show that education policy-makers will have to consider giving a different role to digital literacy within school curriculum.

Keywords: computer skills, digital literacy, primary school, teaching ICT, curriculum, Slovenia

Introduction

Apart from literacy skills of reading, writing, listening and speaking, there has been an increase in the establishment of digital literacy, which includes knowledge and skills in the field of information and communication technology (ICT) (Lim & Oakley, 2013, p. 4). Different authors define digital literacy in different terms such as computer, Internet, digital, media and information

literacy. Literacy as a term (Stordy, 2015, p. 472) depends on the intended use of technology and on the understanding of literacy. Literacy in digital technology is the ability of an individual or a group of people to use technology as a tool of work or study. Fraillon, Schulz, and Ainley (2013, p. 17) describe computer and information literacy as the ability of an individual to use computers for researching, creating and communicating with the aim to become more effective at home, in school, at work and everyday life.

Improving digital literacy is included in the 'European 2020 Strategy' (Eurostat, 2015, p. 192). Because all Internet users are exposed to risks, the European Union started the 'European Strategy for a Better Internet for Children' in 2012. The strategy focuses on protection from and education of children about dangerous internet materials (p. 197). In 2007 the Government of the Republic of Slovenia adopted the 'Development Strategy for the Information Society until 2017' (Brečko & Vehovar, 2008, p. 15–16), in which it included plans for increasing ICT integration into school curricula. This, in turn, raises the level of ICT skills and knowledge by individual users. In Slovenia's development strategy 2014–2020, digital literacy is 'of primary importance' (Ministrstvo za gospodarski razvoj in tehnologijo, 2013, p. 12), as 'only digitally literate individuals will easily and equally integrate into the information society' (Ministrstvo za gospodarski razvoj in tehnologijo, 2013, p. 13).

Digital Literacy of Children and the Role of Schools

Children start using ICT in preschool age (Eurostat, 2015, p. 192) and to properly develop their brains, children have to start learning early. This includes developing computer skills starting from kindergarten to the third year of primary school (Saçkes, Cabe Trundle, & Bell, 2011, p. 1698). Škrabar and Sulčič (2009, p371) also emphasize that developing ICT skills and knowledge with children in primary education is important for lifelong learning. Developing ICT skills is connected with the use of ICT in classes, so ICT has to be included in the school curriculum (Kilfoyle Remis, 2015, p. 53), although the inclusion of ICT by itself is not enough. An important role is played by teachers that encourage and teach students (Krapež, 2013, p. 18–20), enabling them to use the computer as a tool for acquiring knowledge. Teachers require knowledge (Gill, Dalgarno & Carlson, 2015, p. 36) to effectively integrate ICT into curriculum in a way that will develop digital literacy of students.

ICT in Classes: The International Dimension

The Computer Science Teachers Association (CSTA) is an association that promotes teaching computer science and encourages schools to show how their curricula ensure coordination with CSTA K-12 (see <http://csta.acm.org>)

/Curriculum/sub/K12Standards.html) Computer Science Standards (Kilfoyle Remis, 2015, p. 53). CSTA K-12 Computer Science Standards are used as a curriculum model in primary and high schools around the world. Another standard that represents the basis of teaching essential computer knowledge and skills is NETS-S (see <http://www.iste.org/standards/ISTE-standards/standards-for-students>), defined in the document 'National Educational Technology Standards for Students' (Williamson, 2011, p. 4).

Ways of integrating ICT into teaching are related to individual subject goals (Bhaumik, 2012, p. 250). ICT can be used to teach traditional subjects because it makes learning more attractive to students (p. 251). In the first three years of primary schools teachers and students use computers as a didactic tool for effective learning and teaching (Vanderlinde & Braak, 2011, p. 124). In classes, ICT can be used for electronic presentations, visiting websites and accessing other resources available on the Internet. It can also be used for communication purposes between different users. The use of ICT in teaching is closely connected with the teachers' skill to give classes (Bhaumik, 2012, p. 247)

Hesterman (2011, p. 353) concludes that students with at least three computers in the classroom have more opportunities to use one. Allowing laptop computers (Cardellino & Leiringer, 2014, p. 851) in classes is very favourable to new ways of teaching and cooperation between students and teachers.

Modern technology enables teachers to find new ways of teaching. ICT has an important role in education because it acts as a tool for learning and teaching (Voogt, Knezek, Cox, Knezek, & Brummelhuis, 2011; Bhaumik, 2012; Kivunja, 2014). New ways and methods of teaching are very important for an innovative ICT use in classes and for developing students' digital literacy (Kivunja, 2014, p. 81). However, Cardellino and Leiringer (2014, p. 849) conclude that there will always be differences in use of ICT in classes due to the fact that some teachers will follow the development of technology and adapt their teaching methods, while others will not.

The use of ICT provides many opportunities for self-learning that enable students to acquire knowledge about the safe Internet use (Selwyn, Potter, & Cranmer, 2009, p. 929). Parker and Lazaros (2014, p. 25) identify typing skills as a very appropriate way of acquiring the most basic computer knowledge and skills. According to Toki and Pange (2014, p. 190), including digital storytelling in classes is a creative and simple way of motivating the youngest students to participate.

ICT in Classes: Slovenian Primary Schools

In Slovenia, primary schools last 9 years and is divided into 3 three-year cycles (Krek & Metljak, 2011, p. 112). In Slovenian schools, adopting and

learning about ICT is an important factor in ensuring equal opportunities for all students (Krek & Metljak, 2011, p. 19). In Slovenian primary schools, ICT is integrated in the curriculum through didactic recommendations for ICT integration into compulsory subjects that do not include basic knowledge of computer sciences in their knowledge standards (Novak, Velikanje, & Krajnc, 2013, p. 150). Therefore, the implementation of ICT in classes depends on individual teacher's resourcefulness and their abilities to use computers and the Internet. This determines the development of digital skills for students of the first three years of primary school.

ICT has also entered Slovenian primary schools through the curriculum of a non-compulsory optional subjects on computer sciences for students of the second three-year period (Ministrstvo za izobraževanje, znanost in šport, 2013) and through the compulsory subject of computer sciences (Ministrstvo za izobraževanje, znanost in šport, 2002) for students of the third three-year period.

In Slovenian primary schools a computer is a compulsory equipment in every classroom during the first three years. How much and in what way the digital material is used in teaching depends on each teacher (Brečko & Vehovar, 2008, p. 48). The curriculum for individual subjects include recommendations for ICT use in classes (p. 22). In the first three years of primary school, students and teachers use the computer as a didactic tool that helps students learn and teachers teach more effectively (Škrabar, 2010, p. 796). Provided that a teacher organizes lessons correctly, the didactic computer programs can help with presenting new teaching content (Mori & Kovše, 2007, pp. 6–8). In the first three years of primary school, teachers most frequently use didactic computer programs in mathematics, natural science studies and Slovenian (Škrabar & Sulčič, 2009, p. 385). Free computer programs are available for teachers on the Internet (p. 377). There is a lot of e-content that can supplement teaching materials if used in accordance with the curriculum. By adding a computer into the classroom, a teacher can motivate and teach students so they will be able to use computers as tools of acquiring knowledge (Krapež, 2013, pp. 18–20). The use of e-content is very popular among teachers (Čampelj & Čač, 2011, p. 8) as there are many classroom activities (Pesek & Mustar, 2011, p. 21) connected with e-content that encourage teachers to use them.

Methodological Approach and Methods Used

The object of this study is the in-depth understanding of digital literacy inclusion into the first three years of primary school. The empirical part was planned with a qualitative study method. The study (Easterby-Smith, Thorpe & Lowe, 2007, p. 49) was conducted through a paradigm of social constructionism. With this approach, we gained a deeper insight into the thinking,

wishes and expectations of the students (as well as their teachers and parents) of the first three years concerning digital literacy inclusion in classes. Another aim was to further understand the differences in digital literacy of the students of the first three years. The study about digital literacy in the first three years of primary school was also conducted because the author of the paper, a first-cycle teacher, notices that bringing computers into the classrooms is left upon individual teacher's resourcefulness and ability to use computers and the Internet. This study attempts to thoroughly define the role of teachers in including digital literacy in classes with consideration to didactic recommendations in mandatory subject curriculum.

The subject of the study were three different primary schools. The sample was subjective because the schools were chosen by the researcher. The credibility of the study was enhanced by triangulating sample groups (teachers, parents and students). The following questions were asked prior to the study:

- What are the views of different groups (teachers, parents and students) participating in the first three years of primary school on digital literacy of students of the first three years?
- How do different participants of the first three-year period understand and interpret the use of ICT in classes?
- What is the attitude of teachers in the first three-year period towards didactic recommendations in curriculum?
- How important is the role of the teacher in promoting digital literacy among students in the eyes of the first three-year period participants?

The study has certain limitations because it focuses on digital literacy in the first three years of three primary schools. It also has methodological limitations because it was carried out on a small sample, which means that the results cannot be extrapolated to all Slovenian primary schools. Generalization was not the aim, neither an immanent characteristic of the qualitative study. Another limitation of the study that cannot be entirely avoided is the researcher's bias as a teacher in the first three-year cycle at one of the primary schools.

The data was acquired by interviewing the three groups of the first three-year cycle participants on each of the schools. Interviews were conducted with six first-cycle teachers of the first three-year cycles at each of the primary schools, six parents of the first three-year cycle students who are interested in digital literacy inclusion in classes and four students of the first three-year cycle at each school whom teachers identified as having good speaking skills.

To ensure anonymity, the participating schools were referred to in capital

letters A, B and N. Each interview was immediately followed by a transcription. In the interview transcriptions, the interviewed teachers were given female names beginning with corresponding school letters. In the transcription, the interviewed parents were made anonymous by assigning them male names beginning with corresponding school letters. Furthermore, the interviewed students were assigned diminutive names beginning with corresponding school letters.

Three semi-structured interviews were conducted at each school (with a group of teachers, a group of parents and a group of students). Group interview (Easterby-Smith et al., 2007, p. 111) is one of the approaches to using a qualitative method of an in-depth interview. For the purpose of the study, a semi-structured group interview (p. 114) was conducted with a number of prepared questions that served to form the structure. Questions for each of the three groups of the first three-year cycle participants contained similar subject matters that were adapted to the participant characteristics. The interviews (pp. 120–121) were directed by starting with additional questions, summarizing and making sure the answers were improved without digressing. In the group interview with students (Đurić, Popović Ćitić, & Meško, 2010, p. 37), a method of guided group interview for children was used, taking into account their age, group size, time and place of the interview and the way it was conducted.

The analysis of primary verbal information acquired through the semi-structured group interview was carried out at the end of data collection. The information gathered from the interview transcription was encoded, categorized, analyzed and interpreted based on the combination of content analysis method and assertion analysis. The information gathered from the audio transcription of the semi-structured interviews was encoded. While encoding, the text was written in different colors. In the encryption process, key concepts (patterns) were identified and assigned accordingly to different groups in a theme. The data obtained was arranged and compared in the table consistent with the participants of the study (teachers, parents and students). The patterns repeating within individual themes were arranged with respect to the aim of the study and the data was encoded once again. The key patterns acquired in the process of re-encoding were thus arranged into new themes that were assigned to new categories. Once the data was arranged accordingly, it was analyzed and interpreted so the study questions could be answered. The findings of the study are presented below.

Findings and Interpretation

According to the purpose of the study we tried to answer the study questions asked. The answers were encoded into four categories that will later be presented in detail:

- Digital literacy of students
- ICT in curriculum
- Digital literacy of students
- Role of the teacher

Digital Literacy of Students

The aim of the study was to explore the views of various first three-year cycle participant groups (teachers, parents and students) on differences in digital literacy of the first three-year cycle students. The purpose and aim of the study was to answer the study question: 'What are the views of various first three-year cycle participant groups (teachers, parents and students) on differences in digital literacy of the first three-year cycle students?' The participants attribute the differences in students' digital literacy to the knowledge and skills of students, as well as to their use of ICT.

Knowledge and Skills

It was discovered that students at each of the three schools under study use computers for playing games, watching video materials or photographs and also for studying by acquiring and refreshing knowledge. Children start using ICT at a young age (Eurostat, 2015, p. 192). The study showed that teachers at schools A and B notice that students spend a lot of time on computers and that there are differences in knowledge of ICT use among students. In the primary school system (p. 192), knowledge and skills in the field of ICT are also important.

Use of ICT

The study showed that the teachers at schools A and N attribute the differences in digital literacy among students of the first three-year cycle to the use of personal computers, laptop computers, tablets and smartphones that are mostly used for playing games. A study in England (Barker, Franklin, & Meadows, 2000, p. 21) showed that the use of laptop, handheld and personal computers increases possibilities for improvement in digital literacy for the youngest. It also showed that the teachers at school B attribute differences in digital literacy among students of the first three-year cycle to modern education equipment. This fact is also stressed by Hesterman (2011, p. 357).

Parents' opinions at all three schools show that students use modern technology very differently. Parents at school N say that differences in digital literacy among students are obvious because some of them do not have access to laptop computers, tablets or smartphones at home. Children with access to computers in the early age of their development (Saçkes et al.,

2011, p. 1698) considerably minimizes lack of basic computer knowledge due to socio-economic family status or limited use of computers.

ICT in Curriculum

One of the aims of the study was to examine the teachers' view of didactic recommendations in curriculum. The purpose and aim of the study was to answer the study question: 'What is the teachers' view of didactic recommendations in curriculum?' Teachers associate these with knowledge and skills of students, with didactic recommendations in curriculum and with curriculum in general. The study showed that teachers at all three schools agree that incorporation of digital literacy into curriculum is ambiguous. They find most recommendations in the mathematics curriculum (Ministrstvo za izobraževanje, znanost in šport, 2011)

Knowledge and Skills

Teachers at school B observe that acquiring basic knowledge and skills in computer science can be incorporated into the existing curriculum. Recommendations for cross-curricular integration in annual classes reports are only written in the Mathematics Annual Report (Ministrstvo za izobraževanje, znanost in šport, 2011, p. 29). Teachers at school B believe that the number of classes for systematic digital literacy development can be increased by reducing the number of hours in other subjects, because the approach to incorporate ICT (Bhaumik, 2012, p. 250) into teaching is connected with the goals of individual subjects.

Didactic Recommendations

Teachers believe that didactic recommendations in existing curriculum are too poor and too general for teachers to incorporate digital literacy into classes. Kellner (2007, p. 15) adds that recommendations for digital literacy do not include common approaches to teaching, studying and grading of digital literacy. Therefore, incorporating ICT into curriculum (Elston, 2007, p. 1) requires teachers to consider the difference between teaching ICT skills and using ICT. Teachers at school N put particular stress on project-based educational planning in cross-curricular integration. Project-based educational planning (García-Valcárcel, Basilotta & López, 2014, p. 67) is one of the ways for students to acquire and expand their knowledge in cross-curricular integration.

Curriculum

Teachers propose a systematic incorporation of computer science into obligatory subject curriculum. Kilfoyle Remis (2015, p. 53) adds that teaching computer science has to begin in preschool education. Because of that,

computer science (Giavrimis, Giossi, & Papastamatis, 2011, p. 288) needs to be defined in curriculum and ICT has to be included in classes preparation. Teachers at schools B and N suggest vertical planning of digital literacy development until an appropriately and systematically remodeled curriculum becomes available. The study showed that school N already has a plan to put in place digital literacy development for the first three-year cycle students. Understanding and pursuance of targets in ICT (Vanderlinde & Braak, 2011, p. 132) is very demanding, that is why teachers have to be included in the planning of ICT incorporation into the curriculum. At the same time, teachers have to be included in the planning of ICT incorporation at school level.

Digital Literacy of Students

An aim of the study was to explore the attitude of different first three-year cycle participant groups (teachers, parents and students) towards ICT use in classes in the first three years of primary school. The purpose and aim of the study was to answer the study question: 'How do different first three-year cycle participants understand and interpret the use of ICT in classes?' The participants associate their observations with knowledge and skills that students acquire through the use of ICT, e-content and with safe Internet use.

Knowledge and Skills The study showed that teachers at schools A, B and N use desktop computers and interactive whiteboards in classes. Parents at school A believe that the use of ICT in classes is appropriate because students of the first three-year cycle acquire enough knowledge of ICT in classes. Parents at school B associate the use of ICT in classes with the use of interactive whiteboards, desktop computers and tablets. Apart from interactive whiteboards and desktop computers, teachers at school B also use laptop computers and tablets. During classes, a teacher can use ICT (Bhaumik, 2012, p. 247) for different purposes such as electronic presentations or accessing websites and other resources available on the Internet. It was discovered that teachers at schools B and N use computer classrooms to refresh teaching materials. Cardellino and Leiringer (2014, p. 850) warn that some teachers will follow the development of technology and adapt their teaching methods, while others will not.

The study showed that parents at school B consider computers as a teaching accessory, while parents at school N see computers as teaching accessories for students with learning difficulties. Parents at school N also identify computers as teaching accessories for study papers or projects. Writing these helps students learn about and understand computers mostly as means of acquiring knowledge and skills connected with computers, as

well as the Internet. Teachers and students of the first three-year cycle (Vanderlinde & Braak, 2011; Škrabar, 2010; Bhaumik, 2012; Voogt et al., 2011) use computers as didactic tools. Parents at schools A and B do not consider daily use of computers reasonable because students first have to acquire writing and reading skills, even though use of ICT (Barker et al., 2000, p. 20) plays an important role in developing these skills.

Students at schools included in the study use interactive whiteboards in classes. E-content for use with interactive whiteboards (Sambolić Beganović, 2011, p. 15) is very helpful for teachers to conduct classes. Students of all schools included in the study want to learn to type. Parker and Lazaros (2014, p. 25) add that typing is a very appropriate way to acquire the most basic computer knowledge and skills.

Safe Internet Use

The study showed that teachers at schools A, B and N incorporate safe Internet use in classes with the help of the Safe.si website. Parents at all schools included in the study warn that students need to be acquainted with safe Internet use and be protected from harmful content. The computer and the Internet are parts of a child's life (Elston, 2007), that is why it is very important to teach them about safe Internet use. Students at schools included in the study are aware of the dangers of the Internet. In planning the activities for the use of ICT (Selwyn et al. 2009, p. 930), a school can learn from children's experiences and needs to ensure students a safe and appropriate use of Internet content.

E-Content

The study showed that teachers at school A use the 'Lilibi' web portal, the 'Moja matematika' online workbook, 'Vedež' e-content for environment education, the Modrijan publishing house's interactive overlays, the safe.si, učiteljska.net and www.brezknjige.com websites in classes. Teachers at school B use e-content that enables a study approach to studying in classes. Teachers at school N still use old didactic computer programs (e.g. 'Polžkovi koraki,' 'Igrive številke,' 'Spoznavanje okolja'). For an innovative use of ICT in classes (Kivunja, 2014, p. 81) and for developing digital literacy of students, new forms and methods of teaching are important. Teachers have to be aware (Hicks & Turner, 2013, p. 59) that the use of ICT alone is not digital literacy and that is why they need to make changes in their teaching methods. Teachers at school A believe that old didactic computer programs that were incorporated into classes in the previous years have to be remodeled. Because computers in the computer classroom are not appropriate for the first three-year cycle, hardware also needs to be renewed. Cardellino and Leiringer (2014, p. 851) observe that working conditions for integration of ICT into classes vary greatly from school to school.

Teachers at school N think that at least four to five computers are necessary for refreshing teaching material in a classroom. Teachers can include ICT in classes (Hesterman, 2011, p. 357) if there is enough appropriate ICT available.

Parents at school N associate the use of computers in classes with e-content available on the 'Lilibi' web portal and the 'Moja matematika' online workbook. Students at schools A and N learn to use the interactive whiteboard with the help of learning accessories and the 'Lilibi' web portal. In this way, teachers use appropriate teaching strategies and didactic tools in teaching (Kivunja, 2014, p. 81).

Students at school B use computers and other e-content for doing interactive exercises on Lilibi web portal (<https://www.lilibi.si>), Wikipedia (<https://www.wikipedia.org>) and in the Dictionary of Standard Slovenian Language (*Slovar slovenskega knjižnega jezika*, 2015). Students at school A acquire computer and internet skills by doing exercises in the 'Moja matematika' online workbook. Students at school B learn how to turn on computers and how to use didactic programs, e-content and the Internet. Students (Hesterman, 2011, p. 350) can explore how computers work and use software appropriate for their stage of development. The study showed that students at school A want to learn with the help of desktop and laptop computers. Students at school N want to learn more didactic games in classes.

Role of the Teacher

An aim of the study was to identify the role of the teacher in integrating digital literacy into first three-year cycle classes. The purpose and aim of the study was to answer the study question: 'How much importance do the participants of the first three-year cycle attribute to the role of the teacher in digital literacy of students?' The study showed that the role of the teacher was interpreted differently by each study participant. Teachers associate their role in integrating digital literacy into classes with motivation, knowledge and skills of teachers, teacher education, colleague support and teaching ICT.

Teachers

Teachers' motivation (Vanderlinde & Braak, 2011, p. 125) for incorporating ICT into classes is one of the key components in developing digital literacy of students. Teachers at schools A, B and N require courses to acquire practical experience because they are aware of the constant changes in technology. Teachers require knowledge (Gill et al., 2015, p. 36) that will help them develop students' digital literacy. Teachers at school A warn that students do not have equal opportunities for integrating ICT into classes. Teachers at schools A and B stress that they need additional computer knowledge to successfully integrate ICT into classes. Teachers teaching first three-year

cycle students about digital literacy at schools B and N see themselves as guides to a safe and beneficial use of ICT. Teachers have to prepare themselves (Voogt et al., 2011, p. 3) for student-centered education.

Teachers at school B emphasize that they get support from teachers with knowledge and skills in digital literacy. Despite the support, teachers at schools B and N depend on their interest and resourcefulness in integrating ICT into classes. Because of that they require additional courses and computer teacher support. Computer teachers (Hesterman, 2011, p. 353) have a role in teaching ICT in classes, as well as in helping other teachers with the use of ICT in classes. The study showed that teachers at schools A, B and N believe their role in teaching ICT is very important. Teachers have to be aware (Hicks & Turner, 2013, p. 59) that the use of ICT alone is not digital literacy and that is why they need to make changes in their teaching methods.

Parents

The role of the teacher in developing digital literacy of students is also interpreted differently by parents. They associate it with a teacher's knowledge and skills, teaching ICT, cooperation, education and lifelong learning. Parents at schools A and B see the role of the teacher as very important in teaching the use of ICT and developing digital literacy of the first three-year cycle students. With their competency (UNESCO, 2016, p. 26), teachers can contribute to the improvement of curriculum and classes. Parents at school B believe teachers have to develop digital literacy of students in an appropriate way and educate themselves at the same time. Parents at schools A and B warn that digital literacy in modern society is connected with lifelong learning. Teachers need to think (Hicks & Turner, 2013, p. 59) about integrating students into digital literacy development that will help them in lifelong learning.

Students

Students associate the role of the teacher with lifelong learning. Students at schools A, B and N see the role of the teacher in developing digital literacy as very important. Students believe the way a teacher teaches is very important because they teach them about life. The use of ICT in classes (Brečko & Vehovar, 2008, p. 20) helps students develop skills needed for living.

Conclusion

The study provides an in-depth understanding of incorporating digital literacy into primary school education for the first three-year cycle participants (teachers, parents and students). The study was based on a sample of

three primary schools, therefore the results can neither be generalized to all Slovenian primary schools, nor was this the intention. Study findings provide an insight into the field of digital literacy from three different points of view (teacher's, parent's and student's) and are also interesting to other primary schools, particularly as a consideration of the teaching methods.

The study showed that students of the first three-year cycle have different experiences in using computers. Teachers attribute the differences in digital literacy of the first three-year cycle students to the use of ICT, as well as to the students' knowledge and skills for ICT use. Parents warn about the differences in digital literacy of students in the first three-year cycle. They attribute this to the varying use of ICT due to unequal opportunities to use modern technology at home. The students included in the study use computers for playing games, watching video content or photographs and also for learning. Students want to learn typing skills. The participants included in the study (teachers, parents and students) see the use of ICT in the first three-year cycle classes as a means of acquiring computer and Internet knowledge and skills. This is made possible by the use of various ICT, safe Internet and e-content. All three schools integrate safe Internet use into classes. Parents also stress that teachers need to give a lot of attention to safe Internet use when using ICT, while students are aware of the dangers of the Internet.

In obligatory subjects' curriculum, ICT is included as a didactic recommendation in the first three-year cycle of the Slovenian primary schools. Didactic recommendations in existing curriculum are too poor and too general for first-cycle teachers to integrate digital literacy into classes. Teachers propose that schools create a vertical plan of digital literacy development, while considering differences in the use of ICT and learning ICT skills. All teachers strive for a systematic curricular reform of obligatory subjects, which would have to thoroughly define the field of computer science. The role of the teacher in the integration of ICT in teaching is one of the key factors in the revised curriculum of the Slovenian primary schools, where the integration of ICT is very vaguely defined. The participants included in the study attach great importance to the role of the teacher in developing digital literacy of students. They associate the role of the teacher with a teacher's motivation, knowledge and skills, teacher education, teaching ICT, colleague support and lifelong learning. Teachers at all schools included in the study are aware that they need motivation, as well as computer knowledge and skills to successfully integrate ICT into classes. Teachers warn about the lack of courses for acquiring knowledge and skills needed to develop students' digital literacy. Students associate the role of the teacher in developing digital literacy with lifelong learning, that is why the system of

education and schooling needs to be reformed and oriented towards lifelong learning.

Our contribution to the theory and practice in the field of ICT use in education (which belongs to the field of business data processing) include recommendations for a different role of ICT in curriculum. The study findings suggest that digital literacy should be defined by target and content with the guidelines for digital literacy activities and standards for the first three-year students within the existing curriculum. In this way, teachers could more easily plan and incorporate digital literacy development of students in classes. The study findings present a strong message for policy makers. We suggest that policy makers plan additional resources needed to equip classrooms with ICT to enable teachers to include digital literacy in classes. We also believe that principals should be made aware of the importance of digital literacy vertical planning in schools. At the same time, principals need to provide teachers with additional resources, practical courses and computer teacher support in order to enable ICT integration into classes.

The lives of all today's students are strongly influenced by computers. Many of these students will work in areas related to computing. Many jobs that today's students will have are not yet accurately defined, which means that computer knowledge will become increasingly important in every profession of a modern society (Computer Science Teachers Association, 2011, pp. 2–3). An essential skill for acquiring occupations in the 21st century is the ability to critically reflect and solve problems using modern technology (Kivunja, 2014, p. 81). If schools want to take advantage of ICT in the best way (Voogt et al., 2011, p. 3), they need to make good preparations for changes. Teachers need to prepare for student-centered teaching. The skills of the 21st century (Williamson, 2011, p. 3) needed for a life in a digital society are written in the 'enGauge' document. Literacy in the digital age requires individuals to be familiar with the operation of computers, to create and use video content, and to critically analyze information from various media to use it effectively. The K-12 Computer Science Framework (Computer Science Teachers Association, 2011, p. 2) includes an in-depth understanding of computing and meets the requirements for the ever-increasing need for jobs where computer skills are expected. Basic understanding of computer science enables students to become educated and creative designers of technology, which will ensure quality of life in a digital society.

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Impact of Working Conditions and Supervision on Academic Staff's Job Satisfaction at Dilla University

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Organizations in the 21st century are faced with more challenges than ever before. Job satisfaction is assumed as a one of the main factors amongst academic staff and placed as a basic inner feeling for them. The researcher was inspired to carry out this research because different stakeholders often question why job satisfaction at Dilla University is low. The purpose of this study was to investigate the impact of working conditions and supervision on academic staff's job satisfaction at Dilla University. This study tries to identify the relationship between working conditions, supervision, and job satisfaction. A descriptive correlational research design was adopted for the study. Both questionnaires and interviews were used to collect the data. Stratified sampling techniques were used. Both quantitative and qualitative approaches were employed. The study found that there is a positive significant relationship between working conditions, supervision and job satisfaction. The study also revealed that the lack of equipment and tools for academic staff to carry out their tasks was one of the major challenges that academics experienced. The study recommends that top management should improve working conditions within the organization. The working conditions should be conducive to the academic staff's health and safety at the University. The decision makers at Dilla University need to pay more attention to the physical aspects of the working environment, such as buildings, equipment, furniture, lighting and air-conditioning.

Keywords: working conditions, supervision, job satisfaction, academic staff

Background of the Study

Organizations in the 21st century are faced with more challenges than ever before. Job satisfaction is one of the main factors contributing to the improvement of university outcomes. For decades, many researchers have examined the topic related to job satisfaction and investigated the determinants of job satisfaction. It has been reported that satisfaction and dissatisfaction significantly influence an employee's morale, organization productivity, commitment to job, absenteeism, as well as turnover rates. It has been an interesting and continuing topic that has been studied by many researchers in about 5000 reports, articles and publication related to topic of job satisfaction (Cranny, Smith, & Stone, 1992). Most researchers make

an effort to investigate the concept and theories related to job satisfaction used in any industrial organization, in the banking sector, as well as in institutions of higher education. Therefore, it is important for researchers to focus on, and not to overlook, the topic of job satisfaction among academic institutions of higher education.

Job satisfaction should be considered as a vital factor in each organization. In other words, the existence of a positive organizational feeling is very different among academic staff, but it provides an accurate way for improving and monitoring it as one of the main organizational policies to be protected by a university (Dawal & Taha, 2006). Indeed, job satisfaction is assumed as one of the major organizational factors having an effective role on academic staff's attitudes and feelings. Likewise, this factor conducts staff's behaviors and reactions at the university (Strydom, 2011). Meanwhile, the objective of a university is to provide quality and comprehensive knowledge, educate students, seek academic development and coordinate national development demands (Hassan & Romle, 2015).

Academic staff who were planning to leave the profession reported less satisfaction and a more negative attitude towards teaching as a career (Smith, 2007). Muindi (2011) found that academic staff's job satisfaction has a significant relationship with their job performance and the academic performance of their students. Attitudes of academic staff are affected, in part, by workplace conditions such as a positive and safe environment, a supportive administration, career progression, adequate salary, supportive work team, and the appeal of the job itself. This study aims to investigate the impact of working conditions and supervision on academic staff's job satisfaction at Dilla University.

Statement of the Problem

Understanding whether academics are satisfied or dissatisfied with their work may also lead to improvements and innovations in their teaching. Furthermore, the understanding about job satisfaction can also help the university to retain potential academics, as well as to decrease absenteeism and turnover rate, or to attract new competent staff. To achieve quality education and job satisfaction among academics, various dimensions should be studied, as job satisfaction increases productivity and performance of individuals.

The current level of academic staff's job satisfaction at Dilla University is quite low. Their performance is still less satisfactory than the expected standards and thus consequences could follow due to rising concerns over poor coverage of term projects and course content, delayed examination results and missing marks, poor assessment of examinations, poor lecturer-student interaction, deteriorating academic performance and reduced levels

of research and publications. As a result, academic standards and performance among students have been adversely affected and are still a daily complaint at the University. With these problems, the University is losing credibility, as students are no longer applying to study there, while a good number of them are resorting to other universities and colleges. This unsatisfactory performance of academic staff members has, in turn, posed a threat on the quality of education offered by the institution and service delivery.

The main problem the academic staff at Dilla university is facing today seems to be a lack of job satisfaction and motivation. It is widely believed that academic staff who is well motivated and satisfied with his or her job is likely to perform his or her duties very efficiently. The duties of academic staff are enormous. The attitude of any academic staff is affected by work-force conditions, such as a positive and safe work environment, and supervision. In addition, when university authorities make decisions and behave as if academic staff's opinions are not needed, the academic staff would feel slighted and demoralized. This is an indication of the presence of job dissatisfaction. It may lead to negative consequences such as low productivity, intentional absenteeism, brain drain, and low job performance. It is sad to note that, because they lack job satisfaction, academic staff leave universities for the industrial sector of the economy. For these reasons, academic staff should be made to experience high levels of job satisfaction and motivation. As per the researcher's one year observations made before conducting this study at Dilla University, there is a high academic staff turnover at the University, which indicates the existence of a job satisfaction problem where the level of job satisfaction is unclear.

A very challenging issue at Dilla University is the decline of academic staff and a rising turnover. The University has failed to attract and retain highly qualified professional staff. The present study investigates the impact of working conditions and supervision on the academic staff's job satisfaction at Dilla University.

Basic Research Questions

This study seeks to answer the following basic research questions:

1. What significant relationship exists between working conditions and job satisfaction?
2. What is the relationship between supervision and job satisfaction?

Objectives of the Study

The objectives of the study are divided into two main areas: the general objective and the specific objectives.

General Objective

The general objective of the study is to investigate the impact of working conditions and supervision on the academic staff's job satisfaction at Dilla University.

Specific Objectives

The study aims to achieve the following specific objectives in line with the basic research questions:

- To explore the relationship between working conditions and job satisfaction.
- To assess the relationship between supervision and job satisfaction.

Research Hypotheses

To provide answers to the research questions, the following hypotheses have been formulated:

- H1 *There is a positive significant relationship between working conditions and job satisfaction.*
- H2 *There is a positive significant relationship between supervision and job satisfaction.*

Significance of the Study

The study results will provide evidence to the management of the Dilla University on how they conform to the academic staff's satisfaction. The study will be significant to policy makers and other players in the education sector in Ethiopia, as they will undertake policy reforms in the higher education sector in order to deal with emerging issues in these areas. The study will provide background information to research organizations and scholars who will want to carry out further research in this area. From the academic point of view, this research will encourage other researchers or academicians to carry out more extensive studies in this area and to explore overlooked factors associated with job satisfaction of academic staff. The study will serve as a reference material for further studies in this area. The study is expected to contribute to expanding literature on issues related to job satisfaction of academic staff.

Scope of the Study

Conducting a research at a university is not an easy task: it requires much money, time and effort. Considering these factors, the geographical coverage of this study was Dilla University in South Nation, Nationalities and Peoples, Ethiopia. Methodologically, the study was delimited to a descriptive

correlational research design. For the purpose of this study, working conditions and supervision variables were examined. This study was conducted between January and August 2017.

Limitations of the Study

Unwillingness of the respondents during filling questionnaires. This study focused only on job satisfaction of academic staff. Therefore, the results of this study might not be applicable to job satisfaction of non-academic staff (administrative) at the university. The study considered factors of job satisfaction working conditions and supervision. However, there may be other factors that may affect job satisfaction that the study does not incorporate or explore. The study was limited to Dilla University, implying that the results obtained should not be generalized to other universities that were not included in this study.

Operational Definition of Key Terms

For the purpose of this study, the following operational definition of key terms was applied:

- *Job satisfaction* refers to the feeling of content an individual has with his or her job (Scott, Kirk, & Taylor, 2004).
- *Academic staff* staff are defined as professionals who are responsible for planning, directing and undertaking academic teaching and research within academic institutions.

Review of Related Literature

Theoretical Review

Working conditions

Working conditions are relevant to the environment impact, such as the space for operating and resting, the criticality of the job, the degree of required technology and skill, the equipment situation and so on. Working conditions are hygiene factors to prevent dissatisfaction (Grigaliunas & Herzberg, 1971). Locke (1976) finds that working conditions, which are compatible with the individual's physical needs and work goals, are positively associated with job satisfaction. Employees are highly motivated with good working conditions, as they provide a feeling of safety, comfort and motivation. On the contrary, poor working conditions bring out a fear of bad health in employees. The more comfortable the working environment is the more productive the employees will be. The following points come under this category:

- Feeling safe and comfort in a working environment.

- Tools and equipment.
- Working methods
- Security guards and parking facility.
- Well ventilated, with good light fans and air-conditioning.
- Neat and clean office place, rest area and washrooms.

Supervision

Factors such as supervisory style and influence, human relations and administrative skills are analyzed in this dimension (Locke, 1976).

Supervision is the affiliation between leaders and subordinates. A synergistic supervision is an appropriate instrument to enhance job satisfaction. It will establish open communication, trust relationships, supervisory feedback and evaluation. Supervisors should apply the appropriate strategies with their employee's status and act accordingly (Grigaliunas & Herzberg, 1971; Hackman & Oldham, 1975).

According to Baron and Greenberg (2003, p. 158), if workers view their superiors as fair, competent, and sincere, the level of job satisfaction will be high. Furthermore, those workers that perceive their employers as unfair, incompetent and selfish will therefore experience a lower level of job satisfaction. There has been a huge outcry from educators regarding the poor supervision in the education sector. Many staff has complained that their seniors lack human relations and supervisory skills. They have also mentioned the tremendous amount of favoritism and inequities that exist at the management level.

Job Satisfaction

Even though job satisfaction is defined in various ways, Cranny et al. (1992) suggest that there is consensus on the definition of job satisfaction as an emotional reaction. They define job satisfaction as one's affective or emotional reaction to a job that is the result of one's comparison of actual outcomes with expected or deserved outcomes. From the definitions above, job satisfaction can be defined as the attitude or feeling that one has about one's job, which is either positive or negative. Hence, someone who has a high level of job satisfaction will have a positive feeling about his/her job, while someone who is dissatisfied will have negative feelings.

Empirical Review

Several studies have been done on job satisfaction, its determinants and consequences during the past several decades. However, little progress has been made in integrating those research results. Some of the important studies conducted on job satisfaction are reviewed here.

Egbule (2003) conducted a study on factors related to job satisfaction of academic staff in Nigerian universities. The results show that lecturers in federal universities have a higher mean job satisfaction score than those in state and private universities.

Mukyanuzi and Benell (2005) assessed the nature and causes of job satisfaction. The study revealed that, compared to what is paid to similar professionals with the same or at times less academic qualifications and experiences in the non-academic private sector and in politics, academics in the majority of Tanzania's public higher education institutions receive meager pay despite their stressful job, which is often characterized by long working hours. All these challenges can be major causes of job dissatisfaction, which results into internal brain drain of the academics in Tanzania's public universities.

A research conducted by Naeem, Hadi, & Shish (2011) found a positive relationship between job satisfaction and supervision. However, Nezaam (2005) found a weak relationship between job satisfaction and supervision.

Mkude (2011) conducted a study on challenges and opportunities facing academic staff in Tanzania. The findings revealed that public universities experienced many problems associated with staff job dissatisfaction. Although the problem of turnover was reported to be low compared with private universities, it affected the university to some extent.

For example, Mkude (2011) pointed out that the Faculty of Education was being threatened by an economic crisis and reduced resource flow. Newly trained staff in which the faculty and donors had invested heavily became frustrated and left for green pastures because of job dissatisfaction. The reason behind was inadequate remuneration, which forced academic staff to seek other employment or engage in personal economic activities.

Chimanikire, Mutandwa, Gadzirayi, Muzondo, & Mutandwa (2007) determine factors affecting job satisfaction among academic professionals in tertiary institutions of Zimbabwe against the backdrop of a high brain drain in the sector. The results of the study showed that a greater proportion of the academic staff was not satisfied with their jobs. Reasons for dissatisfaction included a high volume of work, inadequate salaries, allowances and so on.

Conceptual Framework of the Study

A conceptual framework gives a familiar and easily understood relationship of the variables under the study. Based on the above literature, the following conceptual framework was developed: the independent variables represent the factors (working conditions, supervision), while the dependent variable represents job satisfaction.

Figure 1

Conceptual Framework
Developed by the Researcher



Research Methodology

Research Design

For the purpose of this study, a descriptive correlational research design was employed to describe the relationship between the dependent and the independent variables and to establish any association between these variables. Using this design, the researcher focused on examining the relationship between working conditions, supervision, and job satisfaction. The goal of a descriptive correlational design is to determine the relationship between one thing (the independent variable) and another thing (the dependent or outcome variable) within a population. It allows the researcher to measure variables and then analyze them to see whether the variables are related and to what extent.

Research Approach

Taking into consideration the significance of applying mixed methods in modern research, the researcher adopted a mixed method, which combines quantitative and qualitative techniques for the reasons of achieving credibility of results, for a better interpretation of results, to offset the weaknesses associated with using one method and to achieve corroboration between the two methods. When using a mixed approach, the researcher mixes different data collection methods, which enable the researcher to see the same phenomenon from different perspectives in order to understand the problem more completely (Creswell, 2007).

Total and Target Population

In this study, the population is comprised of academic staff at Dilla University, as being the target respondents. The target population of this study was all academic staff of Dilla University. The total number of academic staff at Dilla University is 1,610.

Sampling Frame

To achieve the objectives of the study, the sampling frame was drawn from the lists of all academic staff at Dilla University, which is 1,610.

Sampling Technique and Sample Size

For the purpose of this study, a stratified random sampling technique, which is based on their faculty/colleges, was employed to get information from Dilla University academic staff. This technique is preferred because it is

Table 1 Scale Reliability Analysis of Each Variable

Variables	Cronbach alpha	No of Items
Working conditions	0.815	7
Supervision	0.943	8
Job satisfaction	0.884	7

used to assist in minimizing bias when dealing with the population and when the population is heterogeneous. Regarding sample size determination, among different methods, the one developed by Joseph Carvalho (1984) was used. The population size of the study is 1,610, which ranges between 1,201 and 3,200 according to Carvalho sample size determination. Therefore, the sample size selected for the study under consideration was 125.

Method of Data Collection

Both primary and secondary sources of data were employed in this study.

Research Variables

In this study, job satisfaction is identified as the dependent variable. Independent variables used in the study are working conditions and supervision.

Data Analysis and Presentation

The descriptive statistics for working condition variables are shown in Table 2. The mean score of the respondents' answers to the item 'Dilla University has strong values that support academic excellence' is 2.85 on a 5-point scale, while the standard deviation is 1.120. This means that, at Dilla University, the respondents disagree on the University's strong values that support academic excellence. Respondents are of the opinion that working conditions in their department allow them to perform at a high standard, with a mean value of 2.67 and a standard deviation of 1.221, and the physical set up (furniture, lighting, air-conditioning, etc.) at work allows them to do their best, with a mean of 2.19 and a standard deviation of 1.238. Respondents disagree on statements that Dilla University supports the use of different types of technology to improve teaching, learning and research, with a mean value of 2.64 and a standard deviation of 1.226. The mean score of the respondent's answers to 'The University provides the equipment and resources necessary' for them to execute their responsibilities is 2.53 on a 5-point scale, while the standard deviation is 1.296.

This means respondents at the University disagree on the fact that the University does not provide the equipment and resources to execute their responsibilities. In other words, the respondents agree that working conditions for academics support their advancement, with a mean value of 2.15 and a standard deviation of 1.243. They also supported the fact that

Table 2 Descriptive Statistics for Working Condition Variables

Item	(1)	(2)	(3)
Dilla University has strong values that support academic excellence	113	2.85	1.120
Working conditions in my department allow me to perform at a high standard	113	2.67	1.221
The physical set up (furniture, lighting, air-conditioning, etc.) at work allows me to do my best	113	2.19	1.238
Dilla University supports the use of different types of technology to improve teaching, learning and research	113	2.64	1.226
The University provides the equipment and resources necessary for me to execute my responsibilities	113	2.53	1.296
Working conditions for academics support their advancement	113	2.15	1.243
Academic staff are encouraged to undertake research	113	2.81	1.094
Overall mean score	113	2.548	1.205

Notes Column headings are as follows: (1) number, (2) mean, (3) standard deviation.

academic staff is encouraged to undertake research, with a mean score of 2.81 and a standard deviation of 1.094. A critical review of the mean column in Table 2 shows that the majority of variables has a mean score of less than 3.00 on a 5-point scale. This indicates that respondents disagree or strongly disagree with all the variables regarding working conditions. The overall mean score of the working conditions variable is 2.5485 with a standard deviation of 1.205. According to the criterion set in Table 2, the mean value falls to a 'disagree level' of the respondents. This means that the majority of the respondents disagree on the working conditions variables. This shows that the University should work more to improve its working conditions.

The response from Table 3 show that the respondents are not satisfied with the totality of their supervisor except the sixth row or construct, i.e., 'It is easy for me to talk with my supervisor.' For this statement, they agree at a mean value of 3.13 and a standard deviation of 1.046. They disagree that their supervisor takes prompt and fair corrective action on staff who fail to perform their work satisfactorily, at a mean value of 2.13, which is below the average on a 5-point scale. The mean value for their responses on the construct that their supervisor is quite competent in doing his/her job is very low, as it tends towards the value of the average of a 5-point scale, that is, 2.53, just a little above the average. They disagree with the construct that their supervisor gives them the opportunity to participate in important decision making, at a mean value of 2.23.

The respondents disagree that their supervisor shows consideration for subordinates' feelings, at a mean value of 2.72 and a standard deviation

Table 3 Descriptive Statistics for Supervision Variables

Item	(1)	(2)	(3)
My supervisor takes prompt and fair corrective action on staff who fail to perform their work satisfactorily	113	2.13	1.235
My supervisor is quite competent in doing his/her job	113	2.53	1.272
My supervisor gives me the opportunity to participate in important decision making	113	2.23	1.193
My supervisor shows consideration for subordinates' feelings	113	2.72	1.110
My supervisor often takes time to listen to staff feelings and opinions	113	2.54	1.120
It is easy for me to talk with my supervisor	113	3.13	1.046
My supervisor is fair in recognizing individual & team accomplishments	113	2.42	1.113
My supervisor is always available and willing to give me advice whenever I need it	113	2.28	1.295
Overall mean score	113	2.50	1.173

Notes Column headings are as follows: (1) number, (2) mean, (3) standard deviation.

Table 4 Descriptive Statistics for Job Satisfaction Variables

Item	(1)	(2)	(3)
I feel satisfied with my chances for salary increases	113	2.75	1.181
I am satisfied with my chances for promotion	113	2.67	1.175
I am generally satisfied with the kind of work I do on this job	113	2.56	1.235
I am satisfied with the physical working conditions in the University	113	2.31	1.386
I feel positive about my future in the organization	113	2.46	1.307
The University retains its best employees and really cares for its employees	113	2.32	1.322
I feel comfortable within the University and because of that I am able to work to well	113	2.48	1.325
Overall mean score	113	2.51	1.275

Notes Column headings are as follows: (1) number, (2) mean, (3) standard deviation.

of 1.110. The construct on their supervisor often taking time to listen to staff feelings and opinions is at a mean value of 2.54, while the one that their supervisor is fair in recognizing individual & team accomplishments is at a mean value of 2.86 and a standard deviation of 1.139. The construct on their supervisor being always available and willing to give them advice whenever they need it shows a mean score and a standard deviation of 2.68 and 1.295, respectively. The overall mean score for the supervision variable is 2.497 and a standard deviation of 1.173. This value falls under the response of 'disagrees.' This implies that, in the study, the job satisfaction of academic staff was affected by the supervision variables.

Table 5 Model Summary

Model	<i>R</i>	<i>R</i> ²	Adjusted <i>R</i> ²
1	0.752	0.566	0.541

Notes Predictors: (constant), supervision, working conditions. Dependent variable: job satisfaction.

Responses in the table show that respondents feel satisfied with their chances for salary increases at a mean value of 2.75 and a standard deviation of 1.181. They are also satisfied with their chances for promotion and they are generally satisfied with the kind of work they do on this job, at a mean score of 2.67 and 2.56, respectively. However, the mean value of the respondent's answers to the physical working conditions at the University is 2.31, which is below average, that is, 2.5 on a 5-point scale. They disagree that they feel positive about their future in the organization, at a mean score of 2.46. The respondents disagree on the statements 'The University retains its best employees and really cares for its employees' and 'I feel comfortable within the University and because of that I am able to work to well,' at a mean value of 2.32 and 2.48, respectively. The majority of the respondents are not satisfied with the physical working conditions and they do not feel comfortable within the Dilla University. So the University management should be improving this by giving more attention to academic staff. According to the criterion set in Table 4, the overall mean value (2.5071) falls to a 'disagree level' of the respondents.

Adjusted R-Square or coefficient of determination of the model is 0.541 or 54.1%. So, Table 5 with Adjusted R-Square = 0.541 means that the total variation in the dependent variable (job satisfaction) is explained by 54.1% by all independent variables (working conditions, supervision). In other words, the remaining 45.9% can be explained by other variables or factors. As a result, there must be other factors that are not incorporated in this study to explain job satisfaction of academic staff. This means there are other additional variables that are important in explaining job satisfaction that have not been considered in this study.

Multiple Linear Regression Analysis Method

Multiple regressions are used to express the effect of independent variables and the dependent variable. The formula of linear regression (multiple linear regressions) in general is as follows:

$$y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \varepsilon \quad y = f(x_1, x_2), \quad (1)$$

where y is job satisfaction (dependent variable), β_0 is constant, β_1 and β_2 are regression coefficients of each variable, x_1 is working conditions, and x_2 is supervision.

Table 6 Pearson Correlation Coefficient

Variable	Working conditions	Supervision	Job satisfaction
Working conditions	1	0.559**	0.634**
Supervision	0.559**	1	0.633**
Job satisfaction	0.634**	0.633**	1

Notes ** Correlation is significant at the 0.01 level (2-tailed).

Table 7 Rule of Thumb on Pearson Correlation Coefficient

Correlation Range	Classification
0.0–0.2	Very low correlation
0.2–0.4	Low correlation
0.4–0.6	Reasonable or moderate correlation
0.6–0.8	High correlation
0.8–1.0	Very high correlation

Notes Adapted from Harris, Taylor, & Taylor (2005, p. 158).

Testing Hypotheses

This study has two hypotheses formulated in a previous page of the research hypotheses part. In order to determine the relationships between independent and dependent variables, further statistical analysis was calculated. As it is clearly indicated in Table 7, a strong positive relationship was found between working conditions and job satisfaction because of the positive value for correlation coefficient. The working conditions variable has a 0.634 correlation with the job satisfaction variable. The value of this correlation coefficient 0.634 falls under a coefficient range from ± 0.6 to ± 0.8 . Thus, the relationship between working conditions and job satisfaction is high and significant. This is so because the p -value 0.000 is less than alpha value 0.01. In conclusion, it rejects the null hypothesis and accepts alternative hypothesis.

Based on Table 7, there is a positive relationship between supervision and job satisfaction because of the positive value for correlation coefficient. The supervision variable has a 0.633 correlation with the job satisfaction variable. The value of this correlation coefficient 0.633 falls under the coefficient range from ± 0.6 to ± 0.8 . Thus, the relationship between supervision and job satisfaction is high and significant. It is because the p -value 0.000 is less than alpha value 0.01. In conclusion, it rejects the null hypothesis and accepts alternative hypothesis.

Conclusion

From the study, the researcher found that working conditions and supervision are the factors that determine the job satisfaction of academic staff. The study found that there is a positive significant relationship between

working conditions, supervision and job satisfaction. The findings of this study show that employee's job satisfaction with their working conditions is low. The study also revealed that the lack of equipment and of tools for academic staff to carry out their tasks was one of the major challenges that academics experienced.

Recommendations

Top management should improve working conditions within Dilla University. The working conditions should be conducive to academic staff's health and safety at the University. The University should use technology to improve teaching, learning and research, which are fundamental aspects for the success of higher education institutions. Therefore, this study recommends that the use of technology as an additional support to teaching and learning, as well as the improvement of research at the University, needs the implementation of technology by staff members, as this will ensure they remain motivated with their job. It is suggested that proper facilities must be provided at the University, including by building infrastructure, introducing the latest technology for teaching and other resources, so that teaching can be easier and more effective, while academic staff would feel motivated in delivering quality education. The decision makers at the University need to pay more attention to the physical aspects of the working environment, such as buildings, equipment, furniture, lighting and air-conditioning.

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Capturing Knowledge Co-Creation with the Practice Ecosystem Framework in Business and Academia Collaboration

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This paper demonstrates how the evolutionary knowledge co-creation processes captured with the practice ecosystem framework in business and academia collaboration. Data are collected from 91 organizations in Finland during the period of 2007–2016. The scope of this research is limited to the educational field and to one Applied University of Sciences (UAS) master's degree programme in Finland. The implications are mainly empirical but they contribute also to the knowledge co-creation theory by demonstrating the value and usability of the theoretical framework. The novelty of the research paper lies in the application for the first time of this theoretical framework in an authentic ecosystem.

Keywords: knowledge management, knowledge co-creation, practice ecosystem framework, business and academia collaboration

Introduction and Main Concepts

In the knowledge and creative economy, understanding and enabling the knowledge co-creation processes as human activities is pivotal. However, these processes and practices are very complex and in a constant flux. Evolutionary human practices occur in physical, virtual, cognitive, and emotional places and spaces. In addition, the goals, objectives, rules, policies, and actors of the knowledge creation processes are evolving in time. Regardless of this high complexity, understanding the knowledge co-creation practices is important for advancing current existing knowledge. The theoretical practice ecosystem framework of knowledge co-creation (Jakubik, 2018) could provide help in capturing these practices.

The paper focuses on the business and academia collaboration ecosystem as a context where master's thesis projects are conducted. In this ecosystem, during the thesis project practices, students capture organizations' knowledge and, simultaneously, students' knowledge is captured by organizations. Figure 1 presents the focus of the paper. This figure utilizes the Johari window model (Suderman and Foster, 2015, 23) that helps to understand relationships between a person (i.e., students) and others

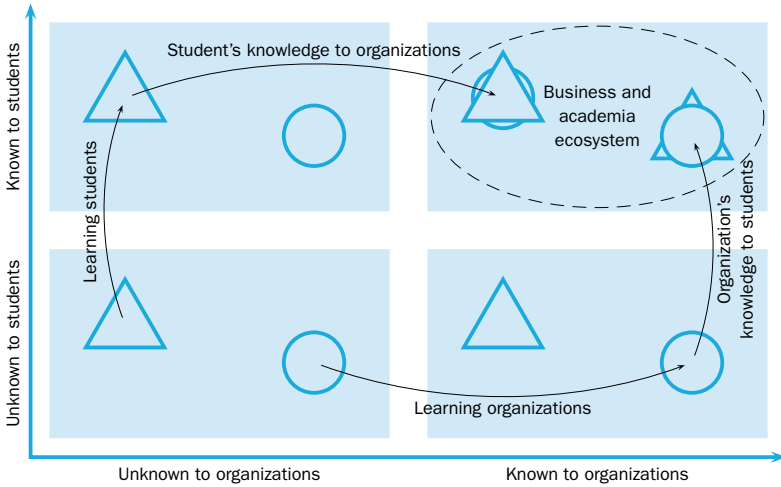


Figure 1 Focus of the Paper (triangles – students, circles – organizations)

(i.e., organizations). Psychologists Joseph Luft and Harrington Ingman created this model in 1955. It represents four areas as unknown unknowns, known unknowns, unknown knowns, and known knowns. In the business and academia ecosystem (i.e., known knows) during the thesis project as a work development project, the knowledge acquired by students in universities is transferred to organizations while, on the other hand, knowledge gained by organizations in business is transferred to students. The aim of this paper is to capture these knowledge co-creation processes in this specific context.

This paper builds on two earlier journal papers (Jakubik, 2017, 2018), as well as on an additional empirical research of the author. Data used in this paper are related to the master’s thesis process and to the students’ professional growth during the thesis project. Feedback were collected from 91 organizations in Finland during the period of 2007–2016. These secondary data will be used to demonstrate how the theoretical practice ecosystem of knowledge co-creation framework helps to capture and analyze knowledge dynamics in a business and academia ecosystem.

Next, in order to clarify some relevant concepts, the following questions will be briefly addressed: What is knowledge? What does ‘capturing knowledge’ mean? Why to capture knowledge? What knowledge can be captured? How could the knowledge co-creation processes be captured? How to capture something that is in a constant change?

What is Knowledge?

The question ‘What is knowledge?’ is an eternal question for humans. The purpose here is not to provide a historical, philosophical journey of how peo-

ple defined and what they thought about knowledge. Rather the aim is to focus on knowledge from the business and academia perspectives. In business, knowledge is primarily considered as an important asset, as an intangible resource that could be utilized to create value from it. In academia, the focus is on knowledge development of students, on knowledge sharing and co-creation processes. This might be a simplification but one could say that while in academia the focus is exploration, in business the focus is on exploitation of knowledge.

Taking the critical and postmodern perspectives to knowledge management, Styhre (2003a) writes that 'defining knowledge is the most difficult task' (p. 57) and the concept of knowledge is 'deeply imbued with ontological and epistemological qualities' (p. 50). Concurring with Styhre, the author of this paper thinks that 'knowledge *per se* is never an issue or source of interest, it is the *knowing* in terms of competitive advantage that makes the difference' and that 'knowledge can never be fully captured by checklists and normative models' (p. 64). Therefore, in this paper the focus is not on capturing the content but the process, i.e., actions of knowledge involvement. The main objective is to demonstrate how knowing evolves in a specific context of a business and academia ecosystem.

Instead of trying to define knowledge, it is better to focus on its characteristics. McDermott (1999) argues that knowledge is different from information in six ways: (1) knowledge is a human act, (2) knowledge is a residue of thinking, (3) knowledge is created in the present moment, (4) knowledge belongs to communities, (5) knowledge circulates through communities in many ways, and (6) new knowledge is created at the boundaries of old knowledge (p. 105). Seeing the characteristics of knowledge and knowing this way shows the unity of the content, process and the context of knowledge co-creation.

What Does 'Capturing Knowledge' Mean?

The word capturing in social context means understanding, sense making, storing, recording, documenting, archiving, generalizing, combining, categorizing, analyzing, sharing, diffusing, making explicit the tacit knowledge, and embodying the knowledge. Briefly, capturing is related to activities and human practices connected to knowledge creation.

Why to Capture Knowledge?

Knowing what we know and not re-inventing the wheel could make our practices more efficient. Building on existing knowledge, combining existing knowledge might lead to new perspectives and innovation. Capturing knowledge, depending on the purpose, could be a positive or a negative process. It could be done with the objective to gain knowledge and to use it for achieving good or bad purposes. Knowledge could be captured by force

or willingly. In this paper, the purpose of capturing knowledge co-creation actions is to demonstrate its evolutionary character.

What Knowledge Can Be Captured?

Von Krogh, Ichijo, and Nonaka (2000, 261) present a model that emphasizes capturing and locating knowledge as an activity that focuses on existing knowledge and on the content instead of the process. Concurring with them, the author of this paper believes that only existing knowledge can be captured. However, it is equally important to capture or to understand the context and the process of knowledge co-creation. Enabling the process, understanding how knowledge and knowing evolve in a specific social context, such as business and academia collaboration, or in a physical, virtual, or in a mental space is the key for creativity and innovation. The content, context (time, place, space) and the process are inseparable from each other.

How Could the Knowledge Co-Creation Processes Be Captured?

Styhre (2003b, p. 32) argues that 'knowledge is always indeterminate and fluid' and 'this processual and fluid view of knowledge represents an epistemological break with reductionist views of knowledge.' Knowledge has an emergent character, 'knowledge is neither solely a practice, nor concepts, but what emerges in-between the seeing and the saying, the operation and its conceptual framework' (p. 33). Not surprisingly, Nonaka, Toyama, and Hirata (2008) titled their book *Managing Flow: A Process Theory of the Knowledge-Based Firm*. This shows that they started to move away from the functionalist view of knowledge towards a more subjective, process-relational, aesthetic, and a practice-based view of knowledge (pp. 6-17). Indeed, this shift in paradigm is inevitable. Jakubik (2011, p. 391) emphasizes the processual and practice-based view of knowledge in her 'becoming to know' model, which could be called as 'becoming epistemology.' This model is built on three concepts: learning, knowing and becoming, and it 'highlights the social, human, interactive, evolutionary, and dynamic nature of knowledge creation' (p. 393).

The author of this paper assumes that knowledge (or rather knowing) is similar to a river: it is emergent and fluid. Knowing is evolving through the whole life of human beings.

How to Capture Something That Is in a Constant Change?

In the knowledge management literature, authors talk about knowledge management episodes (i.e., KMEs). Holsapple and Joshi (2004, pp. 89–124) argue that 'examples of KMEs include making a decision, solving a problem, conducting an experiment, designing a product or process, brainstorming, evaluating a proposal, performing a scenario analysis, collaborat-

ing on a project, engaging in a workflow' and so on (p. 91). From this, it could be concluded that KMEs are practices.

Similarly, others (e.g., Heisig, 2009; Dalkir, 2011) tried to identify the activities in the process of knowledge creation. Heisig (2009) compared 160 KM frameworks around the world to discover their similarities and differences. The findings of Heisig related to KM practices in 117 out of 160 frameworks (pp. 22–26) are relevant to this paper. Heisig (2009, pp. 13–14) concludes that 'the result of the analysis shows that there are five most frequently mentioned broad categories of KM activities: share, create, apply, store and identify knowledge ... KM practitioners, "apply knowledge" was related as "essential" and "very important" by a total of 96 per cent respondents. "Distribute knowledge" received 91 per cent, in third place "create knowledge" with 84 per cent, followed by "store knowledge" with 78 per cent and "identify knowledge" with 65 per cent.' It was surprising that 'capturing knowledge' was mentioned only in nine frameworks out of 117.

When Dalkir (2011, pp. 31–58) discusses the topic of KM cycle (p. 53, Table 2.1), he compares five KM cycle approaches from Meyer and Zack (1996), Bukowitz and Williams (2000), Rollet (2003) McElroy (2003), and Wiig (1993). After a detailed presentation of these different approaches, Dalkir concludes that 'an integrated KM cycle can be distilled ... The integrated cycle subsumes most of the steps involved in the KM cycles' (Dalkir, 2011, p. 53). In the integrated KM cycle, Dalkir proposes three major steps, as follows: (1) Knowledge capture and/or creation, (2) Knowledge sharing and dissemination, and (3) Knowledge acquisition and application (p. 53). This conclusion is relevant to this paper because it considers capturing as the first and most important practice in knowledge co-creation.

This paper is organized in six main sections excluding appendix and references. The introduction highlighted the need for this research and briefly discussed the main concepts. In the next sections, the business and academia ecosystem, the data collection, and the theoretical framework are presented. Finally, the framework is applied in an authentic context, followed by the discussion of the findings and their implications.

Business and Academia Ecosystem

This paper focuses on business and academia collaboration during the master's thesis project. In this ecosystem (Figure 1), there are three main participants and other stakeholders. The main participants are (1) the students of the Master's Degree Programme in International Business Management, (2) the business managers of the organizations where the thesis project takes place and (3) the thesis advisors from the Applied University of Sciences (UAS). Other stakeholders include local or international customers, consumers, communities, and partners of the business organizations.

According to the Students' Guide (<http://www.haaga-helia.fi/en/opinto-opas/opintojaksokuvaukset/mgt7lg502?userLang=en>), the goal of the master's thesis is to develop and demonstrate the ability to apply the selected research strategies and methods in the identification and solution of an authentic, work related, international business management problem. Furthermore, the objectives of the thesis are to develop international business management skills, competences, and qualities of students that would make them competitive in the global job market. The Master's Thesis is directly linked to one large or many small, interrelated, international business or product development project/s.

The master's thesis is a work development project. Its process has four phases such as planning, implementing, assessing, and developing (Jakubik, 2017). From this paper's point of view, it is important to explain the practices in each phase because the theoretical framework applied in this paper will capture practices:

1. In the *planning* phase, the students discuss the development needs of their organization with a manager; they present their thesis idea in a workshop; and they write and submit their R&D plan for approval by the head of the master programme. After approval of the plan, the thesis advisor from the UAS is assigned.
2. In the *implementation* phase the students, managers, thesis advisors work together, they meet several times, give and receive feedback. The students do their research, search and study the relevant theories, read books and articles. They design and conduct interviews, surveys, analyze the collected quantitative and qualitative data, write the thesis report, present their work development recommendations at the organization and at the university, they implement their suggestions, collect feedback, make improvements, and submit the final version of their thesis for plagiarism check, and for assessment.
3. When the plagiarism check shows no copy-pasting results, the *assessment* phase starts. The participants in this phase include the UAS thesis advisor, an outside educator from the university, and the manager from the organization. They together assess the thesis on a scale of 1 to 5 based on the following criteria: topic and objectives, conceptual framework based on the literature review, research method, outcomes, reporting, and management of the thesis project. Managers assess the student's learning and professional growth during the thesis project. They also indicate how the organization has benefitted from the thesis, what was developed, what was implemented in practice, and what the immediate and long-term impacts and value are for the organization.

4. The last phase in the thesis process is the *development* phase, when the thesis process itself and any businesses involved are developed by implementing and utilizing the suggested business problem solutions.

In brief, this section presented the business and academia ecosystem (cf. Figure 1) participants, objectives of the work development project, the thesis process four phases and the participants' practices in each phase. Next, the data collection, feedback from managers will be described.

Data Collection

This paper uses secondary data collected from 91 managers as feedback on the students' professional growth, development of students' skills, knowledge, and competences during the master thesis project in the business and academia ecosystem. The managers provided 251 different feedback. Feedback were collected during the period of 2007–2016 and they were considered in the assessment phase.

The managers' occupations were for example CEO, CFO, Director of Learning & Development, Global HR Line Manager, Head of Product Development, Information Manager, Managing Director, Process Development Leader, Program Manager, Sales and Customer Service Manager, Sales Manager Finland, Senior Account Manager, Senior Executive, Senior Manager People Advisory Services, Technical Director. Among others, the following organizations provided feedback. Accenture, Basware Oyj, Danone Finland Oy, Danske Bank Oyj, Ericsson Finland, Ernst & Young Oy, Fazer Food Services, Hartwall, Hewlet-Packard Oy, InterCall Sweden Ab, KONE Corporation, Nokia Oyj, Reaktor, Trawise Oy, and so on.

It is important to note that the data are secondary data, as they were not collected with the purpose of this paper. However, they are valuable when capturing the knowledge co-creation practices. These data will be handled with confidentiality, none of the managers, organizations, or students could be identified from this paper. Next, the theoretical model and its components will be presented.

The Theoretical Framework

As mentioned earlier, the knowledge co-creation practices are very complex and constantly evolving processes. The theoretical framework, i.e., the practice ecosystem of knowledge co-creation (Jakubik, 2018), could be applied in emerging forms (e.g., lean, agile, virtual, and networked) of organizations (Chia, 2003; Faraj, von Krogh, Monteiro, & Lakhani, 2016; Handy, 2007; Heckscher & Adler, 2006; Senge, 1990; Senge, Scharmer, Jaworski, & Flowers, 2005; Wenger, 2005, 2000; Wenger & Snyder, 2000; West &

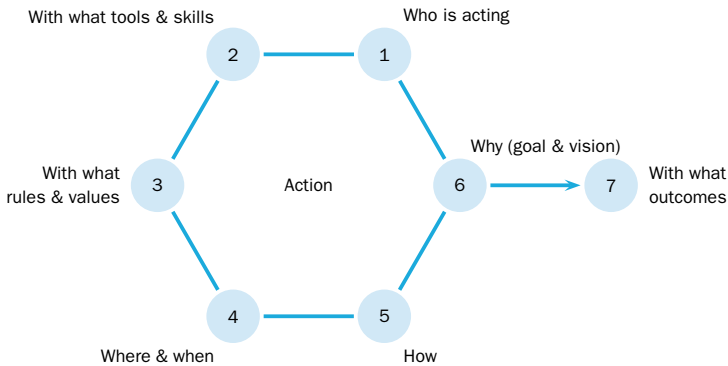


Figure 2 Basic Building Block of the Practice Ecosystem of Knowledge Co-Creation Framework

Wood, 2013). With the help of this framework, knowledge co-creation could be captured in flux environments such as business and academia collaboration ecosystem (Figure 1).

The practice ecosystem of knowledge co-creation framework is based on four theories: (1) the human activity theory (Engeström, 2005, 1994, 1990), (2) the theory of practice (Korkman, 2006; Tsoukas, 2003), (3) the organizational knowledge creation theory, including the process model of the knowledge-based firm (Nonaka, Toyama, & Hirata, 2008), and (4) the ecosystem theory (Tukiainen, Lindell, & Burström, 2014).

Figure 2 presents the basic building block of the framework with its seven components. Similar to a complex tissue that is a composition of cells, this framework is a composition of these basic building blocks. Another example of this framework could be building a complex statue from standard LEGO blocks. The evolutionary character of the framework comes from the repetitions of this basic building block in place, space and time. The author of this paper argues that complex phenomena, like evolutionary human processes of knowledge co-creation, could be captured and better understood by systematically applying the building block of this framework. Next, it will be demonstrated how knowledge co-creation captured with this framework in business and academia collaboration during the thesis writing process.

Application of the Framework and Management Feedback

In this paper, the aim is to demonstrate how co-creation of knowledge in a business and academia ecosystem (Figure 1) is captured with the theoretical framework (Figure 2) presented in the previous section. Capturing knowledge co-creation practices has the following steps:

1. Selecting and presenting the context (business and academia ecosys-

- tem as collaboration of business organizations in Finland and one master's degree programme of one UAS in Finland).
2. Selecting and describing the process (master's thesis writing as a work development project).
 3. Identifying phases (planning, implementing, assessing, and developing) in the process and naming the knowledge co-creation practices in each phase.
 4. Deciding on the time (period of 2007–2016) of the data collection.
 5. Selecting and introducing the participants (master students, UAS thesis advisors, managers, ecosystem stakeholders).
 6. Getting familiar with the theoretical framework.
 7. Applying the framework to a selected phase and practices to demonstrate its viability as a tool for capturing complex and evolutionary practices.

The first six steps were presented in previous sections of this paper. The aim here is not to apply the framework for the whole process and for all the practices but rather to demonstrate how it can be applied in practice. The implementation and assessment phases of the R&D project where businesses and students capture each other's knowledge are important too. However, these phases are the most complex to show when applying the framework.

For the purpose of the paper, the author of this paper believes that it is adequate to show how the framework can be applied in the planning phase of the thesis process. Therefore, the framework will be applied only to the planning phase of the thesis writing process that has several practices/actions such as:

1. Exploring the development needs of the organization
2. Presenting the thesis idea
3. Writing the R&D plan
4. Submitting the plan
5. Approving the plan
6. Assigning the thesis tutor
7. Presenting the plan

By applying the basic building block of the framework (Figure 2) and its seven components, it is demonstrated in Table 1 how the knowledge co-creation actions are captured with the framework. It is important to note that the outcomes of one action lead to the next action. It means that the process of knowledge co-creation is evolving in time, places and spaces.

Next, examples from the managers' feedback will show the knowledge co-creation in business and academia collaboration (Figure 1). In addition, there will be few illustrations of the managers' feedback on the thesis process.

There were 251 different feedback collected from 91 managers through the period of 2007–2016. Managers were asked to answer several questions when the thesis project was accomplished. Feedback related to the knowledge co-creation during the project are relevant to this paper. They were qualitatively analysed. First, four answers were ignored as they were irrelevant. For example when the manager wrote that he/she is not able to evaluate and give feedback. Then, the relevant feedback was read, keywords were identified, and grouped according to the four phases of the thesis project. Next, a brief summary was provided of such feedback according to planning, implementing, assessing, and developing phases of the thesis process, as it proved how knowledge was co-created in the business and academia ecosystem (Figure 1).

Planning Phase

Below are few managerial comments about exploring the development needs of the organization, learning about the company, proposing ideas for development, learning how to scope the project, how to collect and make sense of information.

The student understood the situation fast. She understands our business. He was able to understand the whole picture about the development needs of the organization. She has learned quickly about our company and its business environment. He has gained deeper understanding of our company and its people. He learned to understand very quickly the structure of the organization and its challenges with communication. The field of communication was new for the student. The student understood fast the business processes and the strategy. She gathered a lot of information about the company.

She has been open to new ideas. She has come up with new ideas. The student proposed a topic. He presented new ideas for business development. She was able to develop new ideas. She has gained new insights. She was able to find a new angle to our problem. He understands the root causes of why the process has not been successful. She knows our current processes and she is able to provide suggestions on how to improve them. She has developed new ideas.

She finds lots of new information. She has gathered lots of information about the company. She has learned to prioritize. She was able

Table 1 Capturing Knowledge Co-Creation Actions in the Planning Phase

Actions	Steps (see Figure 2 for explanation)
1 Exploring the development needs of the organization	1 The student
	2 Experiencing, observing, communicating
	3 Following the organization’s rules and values
	4 In the organization, when the thesis process starts
	5 Organizing a meeting, asking managers
	6 Finding a topic for the thesis
	7 Having the thesis topic as work development project
2 Presenting the thesis idea	1 The student, teacher, peers
	2 Writing and presenting
	3 Following the university rules, guidelines, and values
	4 In the thesis workshop when master studies starts
	5 Preparing slides, sharing them in the virtual learning platform, and presenting the idea to others
	6 Receiving feedback from teachers and peers
	7 Clarified thesis idea
3 Writing the R&D plan	1 The student
	2 Writing, thinking, computer skills
	3 Following the thesis guidelines and ethical values of the university
	4 During the Applied Research and Development course of the university, in the beginning of the studies (first semester)
	5 Logically, editing the text
	6 To have a good, feasible R&D plan
	7 Plan is ready for submission
4 Submitting the plan	1 The student
	2 Computer,virtual platform
	3 Following the submission instructions and criteria
	4 Applied Res. and Development course, following the required due day
	5 Using the university’s virtual learning platform
	6 To pass the Applied R&D course and to have a plan for the thesis
	7 Plan is sent for approval

Continued on the next page

to limit the scope of the project. She was able to make the necessary adaptations in order to adjust the work development project into our specific case. The student was able to focus and scope the wide knowledge area. He had a clear focus. She did her work with good planning and background research. He was able to identify the research framework.

She has shared the plan in several internal meetings. The work helped the student to get inside company’s way of working.

Table 1 *Continued from the previous page*

Actions	Steps (see Figure 2 for explanation)
5 Approving the plan	1 Teacher
	2 Computer,virtual platform, experience
	3 Based on R&D plan assessment criteria, being objective and constructive
	4 By the end of the Applied Research and Development course
	5 By providing written, constructive feedback to students
	6 When the plan is approved thesis tutor can be assigned
	7 Approved R&D plan
6 Assigning the thesis tutor	1 Head of the master's programme, thesis tutors
	2 E-mail, communication
	3 Considering the competencies, willingness, and passion of the tutor
	4 In the master's degree programme of the university
	5 Informing the tutors about thesis tutoring opportunities and the topics of the approved thesis/R&D plans
	6 Getting a tutor who is competence in tutoring master students
	7 Having tutors assigned to the students working on their thesis
7 Presenting the plan	1 Student, thesis tutor, manager
	2 Oral presentation, communication skills
	3 Limited duration of the presentation (20 min), discussion, questions, clarifications, openness
	4 In the kick-off meeting at the organization
	5 Oral F2F presentation or Skype presentation
	6 Getting the manager committed and supportive to the project of the student, clarifying the university requirements of the master's thesis
	7 A manager who is aware about the requirements of the thesis, who is committed to the student's project, and who supports the student

Implementing Phase

Most of the managerial feedback was related to this phase. This is understandable because it is the longest phase where students and managers capture each other's knowledge, where they collaborate the most. Below are few comments related to research knowledge, literature review, applying theory in practice, the student's attitude to the project, managing the project, receiving and utilizing feedback, and about learning during the development project.

She learned about conducting research during the project. She learned a lot about the investigation process. She developed competence in research methods. She organized and conducted a research and interviews. He developed the questionnaire based on feedback. She was able to conduct a survey, gather results and analyze them. She

was able to identify, analyze and structure information. He learned to handle statistical materials, draw conclusions, and compare them with earlier results. She has learned to analyze and understand the findings. She became familiar with the research material. She was able to identify the research framework. She has learned how to execute a customer survey and how to analyze the results. He learned about survey and data analysis.

The master student has been reviewing the literature and gained excellent new perspective. He learned a lot from the literature review. He independently studied the literature. He learned from books and articles. He learned to find the relevant literature. She is mastering the theoretical background. She read the literature about job satisfaction and change management. She used business literature and put them into practice in an excellent way.

The student applied theories and facts from the respondents. His determination came from mixing theory and practice. He has put a lot of effort to understand the business. She was able to use theory in the interview questions. He developed a concept. She studied the new concept and applied it. She has suggested development ideas for improving critical issues in our strategy. She has managed to comprehend both the technical and business sides. He developed the theoretical and practical ground for the community. She has been able to connect theory and practice well.

She had strong self-motivation during the project. She has been very motivated and enthusiastic about the project. She has shown a great interest in the project. She has been active, motivated and managed the challenges. She has shown commitment to the company. She has been passionate and motivated about the topic. She has been truly interested and engaged with the topic. She had strong commitment to the project. I am impressed with her tenacity, dedication and openness. She has been motivated, pro-active, and worked hard. She had a very mature approach, she has been a well-focused, reliable and committed person. He was the main driver and motivating factor of the community.

She had a natural capability to engage with people in all levels of the organization. He has developed presentations about critical development areas related to the strategy. She kept us updated on the process and the findings. He was able to present the project in a clear and an understandable way. She gave a professional presentation of the findings. She is able to convince business decision makers. The

student has taken a great ownership to drive the completion of this project. She has presented her findings in our management meeting. She had the ability to think the big picture, apply available theory and information and provide suitable, practical change management solutions for project management.

The student asks questions and takes feedback. She listened to the feedback. She has been willing to consider different point of views. She learned how to take criticism in a constructive way. He was attentive to feedback and suggestions. She was ready to adapt to changes. She has been persistent regardless of the numerous feedback. She accepted feedback.

The whole process was a valuable learning for both for her and the organization. Through her, I also learned theoretical background of the topic. The student learned about the topics from different perspectives. He learned about complexity of our business model, sales channels and distribution. He developed a holistic view of the market. She has been able to widen her knowledge about strategy, leadership competencies and people strategy.

She gained deeper understanding of the internal processes and the customers' needs. He learned about low budget marketing strategies and channels. She has increased her knowledge about customer experience. She learned about the pay-for-performance system. She has learned valuable knowledge about foreign investments. She learned about financial matters and that will support her career. She gained lots of new knowledge on knowledge management, operations and challenges of a globally operating enterprise. He developed his knowledge for developing job satisfaction. She deepened her knowledge about project and change management. The project enabled the student to have more in-depth discussions with our clients. She has learnt how to listen, how to make onboarding work in an international, multicultural company with virtual teams and local presence. The development project has been useful for his learning process.

Assessing Phase

Here are few comments about the students' professional development, working moral and practice, and about their skills and business knowledge enhancement during the thesis project.

She has become expert in the topic. She moved from a learner's level to level that is far more expert. She gained skills in evaluating the current process, investigating optional working methods, proving sug-

gestions. His way of working is very professional, which shows in the results of his research. He has become more determined and consistent with his decisions. She strengthened her performance as a consulting practitioner. The student showed the capability to move from IT-focused specialist towards the total requirement-understanding manager. She showed good growth and maturity. She has grown in knowledge and confidence. Her learning has contributed to her professional growth. His development and learning has been remarkable during the whole process. She became self-confident in protecting her views.

She has achieved to plan, evaluate and implement her insights. She wrote a professional research paper. I am impressed with her extensive research. He was able to draw conclusions based on his research. The student provided a good quality work. She worked independently. She worked hard. She does a good quality work. It was easy to work with her. She has been proactive and worked independently. She handled the project very well. In the final presentation, she was very familiar with the work, concepts, and findings.

She developed her writing and communication skills, conducting a survey, technical skills, using Webropol. She has learned a lot from these MBA studies. She was constantly learning. He has increased his knowledge in business. She seemed to be very experienced in digital marketing. She has developed deeper understanding of the factors influencing a positive and motivating working environment. She has gained new ideas, new theoretical knowledge in marketing communication work. His theoretical understanding of the topic increased along the project.

Developing Phase

The feedbacks below from managers were related to the students' professional growth, development of their skills, and specific business related knowledge.

She has gained more confidence and courage to lead a high profile management development program, design and implementation. She has grown in knowledge and confidence. She has matured into her role and become a very talented Account Manager and overall salesperson. She will be able to use her knowledge in her work. She has grown a lot during the project. The thesis work has benefitted her personal growth. She has developed during this thesis. The project enabled her to develop herself. It has been a real pleasure to see her grow and learn during this project.

His communication skills have developed considerably during the project. She has developed her research skills. She has improved her presentation and communication skills. He had skills of documenting the business model. I appreciated her ability to listen to others and to express herself.

She developed her understanding of customer relationship management. She was able to develop her project management skills. She has developed her skills of leading and following up the process. The student has built a deep understanding of the new service development and reverse logistics. He understands how not to lead a unit holistically across all elements that influence future performance. She has learned a lot about selling digital products and about the business model. The student learned about start-ups.

Summing up, in this part of the paper first, the theoretical practice ecosystem of knowledge co-creation framework (Figure 2) was applied to the planning phase and its seven actions of the thesis writing process (Table 1) to demonstrate how it could be applied for capturing knowledge co-creation. Then, the analysis of the managerial feedback on knowledge development during all four phases of the thesis project in the business and academia ecosystem (Figure 1) was illustrated by few quotations. Next, in the final part of the paper the conclusions and discussion of implications, limitations, theoretical contributions, and novelty of this research paper are presented.

Conclusions and Discussion

This paper presents how co-creation of knowledge is captured with the practice ecosystem framework in a business and academia ecosystem. This ecosystem (Figure 1) is a collaborative context where students and organizations capture each other knowledge and where knowledge is co-created during the thesis project actions. In addition, the knowledge co-creation is supported by 91 managers' feedback. This feedback as collected through the period of 2007–2016. The paper presents the theoretical model (Figure 2), and demonstrates the application of this model for the planning phase actions of the work development project (Table 1).

Next, the practical implications for businesses, students, and educators, limitations and future research directions, and the theoretical contribution and novelty of the paper are discussed.

Practical Implications

The paper suggests implications for both managers and educators. *First*, a managerial implication is an increased awareness of the contributions

of students' work to businesses. In Finland, at the Universities of Applied Sciences (UAS) it is required to do the master's thesis as a work development project. This practice, however, is not common at the Universities of Sciences (USC). *Second*, the collaboration of businesses and academia has benefits for all participants as a learning takes place. *Third*, infusing theoretical knowledge into business practices has several benefits: it helps businesses to make sense of their practices, it helps them to create new concepts and to come up with innovative solutions during the knowledge co-creation process. Combining practical and theoretical knowledge in solving business problems is an advantage too because it leads to addressing current challenges, as well as to future business opportunities. Collaboration could lead to competitive advantage in business.

On the other hand, the paper proposes implications for educators and students, as well. Educators (e.g., thesis supervisors) involved directly in the project learn from businesses, they learn about their current concerns and, through the students, they help business to address the challenges. The contribution of educators in this process is very valuable because they guide the students, suggest them relevant theories, sources, support and encourage them (in many cases emotionally as well) during the process. They also provide guidelines for the thesis report writing and ethical rules (e.g., how to handle confidentiality, business secrets, how to conduct empirical research professionally). Nevertheless, the students are those who mostly benefit from business and academia collaboration. They learn new theories, approaches during their studies and they directly apply them in a business context. They learn about business practices, strategies, values, and specific topics. Students develop their business knowledge and acquire useful skills. This way they increase their employability and career opportunities.

Limitations and Research Implications

The scope of this research paper is limited to the educational sector, to one UAS and to one master's degree programme in Finland. Therefore, this limitation could lead to several further research opportunities, such as examining other master programmes at the same UAS, or other UAS in Finland, as well as to researching other UAS in other countries. Furthermore, it would be an interesting future research area to study the master's thesis ecosystem of USC, to compare them and to find out the differences in their knowledge co-creation ecosystems in Finland and internationally. In addition, another future research could apply the theoretical framework not only in the educational context but also in another practice ecosystem. This way, the model could be proved as a useful tool for capturing and understanding the dynamics of knowledge co-creation practices in general.

Theoretical Contribution and Novelty

The paper demonstrates the viability of the practice ecosystem of knowledge co-creation theoretical framework in an authentic ecosystem. The paper contributes to the knowledge co-creation theory and to the practice view of knowledge. It demonstrates the dynamic, evolutionary character of knowledge co-creation. It provides an example of development of knowing in a real ecosystem. The novelty of the paper lies in the application of this theoretical model for the first time into practice.

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Abstracts in Slovene

Izdelava skupnega portfelja proizvodov v podporo trgovinskemu sodelovanju

Erno Mustonen, Arto Tolonen, Janne Härkönen in Harri Haapasalo

Cilj študije je najti način za oblikovanje skupnega, v stranke usmerjenega portfelja tržnih proizvodov za več neodvisnih podjetij, z namenom omogočiti učinkovitejše delovanje na trgu in hkrati tudi prepoznati vse povezane izzive. Ugotovitve kažejo, da je skupen, v stranke usmerjen portfelj tržnih proizvodov mogoče oblikovati s pomočjo petstopenjskega pristopa. Ob tem se pojavljajo izzivi, v glavnem povezani s produktizacijo, razumevanjem tega, kakšno vrednost predstavljajo neodvisni proizvodi za stranke in razumevanjem nujnega vidika. Včasih se je literatura o upravljanju portfeljev proizvodov osredotočala zgolj na portfelje neodvisnih proizvodov. Ta študija je prva, ki predstavlja razvoj produktizacije skupnega portfelja komercialnih proizvodov.

Ključne besede: produktizacija, upravljanje proizvodov, upravljanje portfelja proizvodov, medpodjetniško trženje, so-trženje

IJMKL, 8(1), 3–23

Uporaba utemeljene teorije: primer političnega marketinga v povezavi s kandidatkami na parlamentarnih volitvah v Kraljevini Bahrajn leta 2014

Abdul Wahab Yusuf Al Jawder

Prispevek obravnava postopek uporabe utemeljene teorije za analiziranje vedenja kandidatke na parlamentarnih volitvah leta 2014 v Kraljevini Bahrajn. V borbi za zmago so se posluževale politične tržne strategije. Podatki izhajajo iz dveh virov: poglobljenih polstrukturiranih intervjujev in dokumentacije. Na parlamentarnih volitvah v KB leta 2014 je kandidiralo dvaindvajset kandidatke. Deset izmed njih je bilo izbranih za informatorko po metodi namernega vzorčenja. Ugotovitve raziskave kažejo, da je vedenje kandidatke nadzirala in nanj vplivala kultura Sveta za sodelovanje v Zalivu, za katero so značilni predvsem: moškost, plemenska pripadnost, stereotipi in izogibanje negotovosti. Prav tako je ugotovljeno, da kandidatke lahko zaobidejo kulturne dejavnike tako, da razširijo svoje mreže deležnikov. Še več: ugotovitve kažejo, da je kandidatke mogoče opisati kot usmerjene v odnos.

Ključne besede: utemeljena teorija, politični marketing, kandidatke

IJMKL, 8(1), 25–42

Revizija upravljanja industrijske varnosti: študija primera

Sondre L. Bjelle in Are K. Sydnes

Industrijske panoge postajajo vse bolj samoregulativne, zato se večja pomen zunanje revizije pri zagotavljanju skladnosti industrijskih praks s predpisi in javnim dobrim. Ta študija postavlja vprašanje, ali obstaja skladnost med praksami upravljanja varnosti v industriji in zunanjo revizijo. Mogoče je sklepati, da kljub dejstvu, da podjetja v veliki meri zagotavljajo varnost na podlagi izkušenj na operativni ravni in z nizko stopnjo formalizacije, glavni poudarek revizij ostaja na uradni dokumentaciji in zbiranju revizijskih dokazov na strateški in taktični ravni znotraj organizacij. To omejuje učinkovitost revizije kot orodja tako za učenje kot tudi za urejanje upravljanja varnosti.

Ključne besede: industrijska varnost, upravljanje varnosti, revizija
IJMKL, 8(1), 43–59

Digitalna pismenost v prvih treh letih osnovne šole: študija primera v Sloveniji

Ksenija Uršej

Prispevek obravnava pomen digitalne pismenosti ter vlogo šole in učiteljev pri razvoju digitalne pismenosti med osnovnošolci. Teorija digitalne pismenosti vstopa v šolski učni načrt v različnih oblikah, kot samostojni ali medpredmetni predmet. Razlike v znanju učencev na tem področju so zelo velike, obstajajo pa tudi razlike med kvalifikacijami učiteljev in njihovo motivacijo. Študija se osredotoča na digitalno opismenjevanje na primeru slovenskih osnovnih šol (prva tri leta, otroci od 6 do 9 let). Digitalna pismenost predstavlja del didaktičnih priporočil za obvezne učne predmete. Uporaba računalnika pri pouku je odvisna od iznajdljivosti učitelja in njegove sposobnosti uporabe računalnika ali interneta, kar posledično pomembno vpliva na razvoj digitalnih spretnosti učencev. V raziskavi so bile uporabljene kvalitativne metode študija, s katerimi je bilo zagotovljeno razumevanje pomena integracije digitalne pismenosti v razredih med udeleženci. K sodelovanju v raziskavi so bile povabljene tri osnovne šole in na vsaki so bili opravljeni trije razgovori (anketirani so bili učitelji, starši in učenci). Ugotovljeno je bilo, da učitelji in učenci razlike v digitalni pismenosti povezujejo z znanjem učenca, učnimi spretnostmi in uporabo informacijske in komunikacijske tehnologije (IKT). Starši razlike povezujejo z uporabo IKT, v odnosu na socio-ekonomsko ozadje posameznih družin. Poučevanje z uporabo IKT ima pomembno vlogo pri vzpodbujanju digitalne pismenosti v osnovnih šolah, čeprav je v veliki meri odvisno od motivacije učiteljev in nadaljnega izobraževanja. Zaključki študije kažejo, da bodo morali oblikovalci izobraževalne politike razmisliti o spremembi vloge digitalne pismenosti v šolskem učnem načrtu.

Ključne besede: računalniška znanja, digitalna pismenost, osnovna šola, poučevanje IKT, učni načrt, Slovenija
IJMKL, 8(1), 61–77

Vpliv delovnih pogojev in nadzor zadovoljstva pri delu med akademskim kadrom na univerzi Dilla

Getachew Alene Chekol

Organizacije v 21. stoletju se soočajo z več izzivi kot kadarkoli prej. Zadovoljstvo pri delu je med zaposlenimi v akademskem svetu pomemben dejavnik in naj bi bilo prisotno kot osnovno počutje na delovnem mestu. Avtorica je bila zelo motivirana za izvedbo raziskave, saj so različne interesne skupine opažale, da na univerzi Dilla primanjkuje zadovoljstva pri delu. Namen študije je bil raziskati vpliv delovnih pogojev in nadzorovati zadovoljstvo pri delu zaposlenih na omenjeni univerzi. Študija je poskušala opredeliti povezavo med delovnimi pogoji, nadzorom in zadovoljstvom pri delu. S tem namenom je bil sprejet opisni korelacijski raziskovalni načrt. Za zbiranje podatkov so bili uporabljeni tako vprašalniki kot intervju. Uporabljena je bila tudi tehnika stratificiranega vzorčenja, ter kvantitativni in kvalitativni pristop. Študija je pokazala, da obstaja pozitivno pomemben odnos med delovnimi pogoji, nadzorom in zadovoljstvom pri delu. Razkrila je tudi, da je pomanjkanje opreme in orodij za izvajanje nalog eden glavnih izzivov, s katerimi so se srečevali akademiki. Na podlagi tega je bilo podano priporočilo, da mora vodstvo izboljšati delovne pogoje v organizaciji. Delovni pogoji morajo biti ugodni za zdravje in varnost akademskega osebja na univerzi. Odločevalci na univerzi morajo več pozornosti posvetiti fizičnemu vidiku delovnega okolja, torej zgradbam, opremi, pohištvu, razsvetljavi in klimatskim napravam.

Gljučne besede: delovni pogoji, nadzor, zadovoljstvo pri delu, akademsko osebje

IJMKL, 8(1), 79–93

Povzemanje soustvarjanja znanja v okviru ekosistemske prakse s poslovno-akademskim sodelovanjem

Maria Jakubik

Ta prispevek prikazuje, kako se evolucijski procesi soustvarjanja znanja ujemajo z okvirom ekosistemske prakse v poslovnem in akademskem sodelovanju. Podatki so pridobljeni v 91 organizacijah na Finskem v obdobju 2007–2016. Obseg raziskave je omejen na izobraževalno področje in na en magistrski študijski program Univerze uporabnih znanosti na Finskem. Izsledki so večinoma empirični, a kljub temu prispevajo k teoriji soustvarjanja znanja s prikazom vrednosti in uporabnosti teoretičnega okvira. Novost pri raziskavi predstavlja dejstvo, da je ta teoretični okvir prvič uporabljen v pristnem ekosistemu.

Gljučne besede: upravljanje znanja, soustvarjanje znanja, okvir ekosistemske prakse, sodelovanje med poslovnim in akademskim področjem, Univerza uporabnih znanosti (University of Applied Sciences) na Finskem

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