



# Filling the skills gap in Cambodian IT industry

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# Research Objectives

- **Provide an understanding of the current market drivers** within the IT, Digital and Technology industry, and their relevance to the skills that are needed currently, and within the next 3 to 5 years.
- **Identify skills gaps** in the sector driven by the needs of employers - mapping both technical knowledge and experience as well as necessary soft and language skills.
- **Provide recommendations** for job market re-alignment, including provision of skills training, soft skills development, recruitment and career progression pathways.
- **Inform decision makers** and industry experts in order to prioritise human resource and monetary investment, ensuring continued growth of in the sector.

# Research methodology

- **Interviews – Employers – 21 businesses** - Input from IT and technology employers was collected via one-to-one interviews during the spring/summer of 2016. Data was collected using face to face verbal interviews based on a standardised questionnaire. Interviewers read each question to the respondent and noted the answer.
- **Focus groups – Students – 63 students** - In order to gather data about the aspirations of new staff entering the industry, the research team conducted face-to-face focus groups with current ICT students, with 10-25 people in each group. In total 4 focus groups were held. The workshops took approximately 2 hours and were facilitated by the researcher with support from a professional translator or translating individual from the target group itself. Within each session a range of methods were used including questionnaires to explore future professional aspirations and work readiness.
- **Interviews - training providers - 4** - In addition to students' focus groups, the researcher also conducted one-to-one interviews with universities and specialised IT training providers.

# Background – IT ASEAN region



## How ASEAN nations rank in terms of competitiveness

The Global Competitiveness Index, 2014-2015

Global rank\*

Singapore	2
Malaysia	20
Thailand	31
Indonesia	34
Philippines	52
Vietnam	68
Lao PDR	93
Cambodia	95
Myanmar	134
Brunei Darussalam	n/a

Source: The World Economic Forum, 2015

Note: \*2014-2015 rank out of 144 economies

# Background – IT ASEAN region

## The 3 Stages of Economic Zone investment

- Stage 1 – Factor Driven (Industrial Parks) - Cambodia, Lao, Myanmar
- Stage 1-2 Transition (Special Economic Zones) - Philippines, Vietnam
- Stage 2 – Efficiency Driven (Eco-Industrial Parks) - Indonesia, Thailand
- Stage 2-3 Transition (Technology Parks) - Malaysia
- Stage 3 – Innovation Driven (Innovation Districts) - Brunei, Singapore

## Technology growth factors

There are 3 factors that are unique to SEA that are expected to drive growth:

- A burgeoning young population with ~70% under the age of 40
- Lack of big-box retail (SEA retail stores per capita ~1/3rd of US); access particularly difficult in remote islands which are abundant in PH and ID
- Rapidly growing middle-class (forecasted GDP growth of 5.3% over next 10 years)

# Background – IT industry in Cambodia

- Cambodia is seeing sustained growth, 7.0% in 2015. As a key milestone in July 2016, Cambodia saw its transition from a Low-Income country to a Lower-Middle-Income country as its GNI per capita was published as being \$1,070 in 2015.
- Consistent message - Cambodia in the Stage 1 development of economic zones. Currently, there are twenty one Special Economic Zones's approved, but only eleven have commenced operations so far.
- 88% of people in Cambodia now access the internet via their phones, compare to 71% in 2014.
- 68% of the population is under the age of 30, this high youth ratio means that human resources development and education are critical.
- As of this morning there are 161 Jobs being advertised for IT Staff on Bongthom.com

# Findings

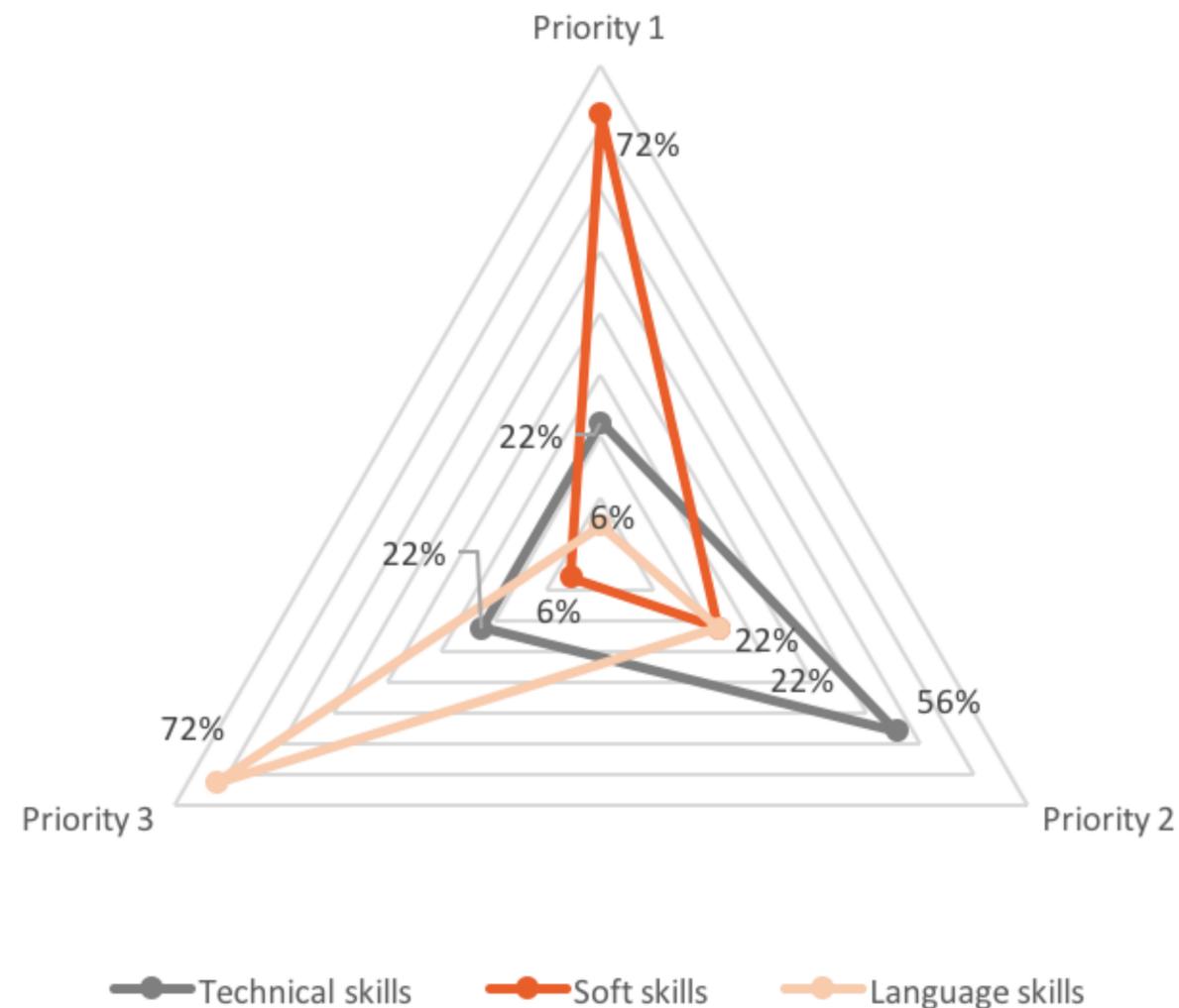
- Recruitment of technical IT staff
- Skills gap
  - Technical skills
  - Soft skills
  - Language skills
  - Skills for innovation
- On-the-job training for technology specialists
- Future challenges for IT technology industry

# Recruitment of IT industry in Cambodia

- 74% of businesses interviewed find it difficult to recruit their IT staff, with 58% saying that it is very difficult to find the staff they are looking for. This clearly shows significant gap in the IT job market. The remaining research participants stated that there are plenty of applicants, but the level of skills is very low.
- The vast majority of the research participating businesses (85%) stated that they exclusively hire university graduates or students at the last year of their IT training. The main reason stated by the companies for this practice, is a lack of suitable and qualified candidates to meet the job requirement while having the necessary soft skills to work within their teams.
- Due to the limited size of the IT industry and relatively small pool of potential Cambodian candidates, recruiting mid-level management staff has been difficult for companies and therefore whenever possible, most employers have developed comprehensive strategies to advance their own existing staff into senior management and project leader roles.
- 100% of the sample group stated that they would always hire local Cambodian staff rather than expat staff if possible.

# Recruitment of IT industry in Cambodia

- 72% of the employers said that the most important selection priority are **soft skills**, compared to 22% who prioritised technical skills over all others. 55% of business see technical skills as their second highest priority, with an equal amount of participants seeing the priority as soft skills and language skills.

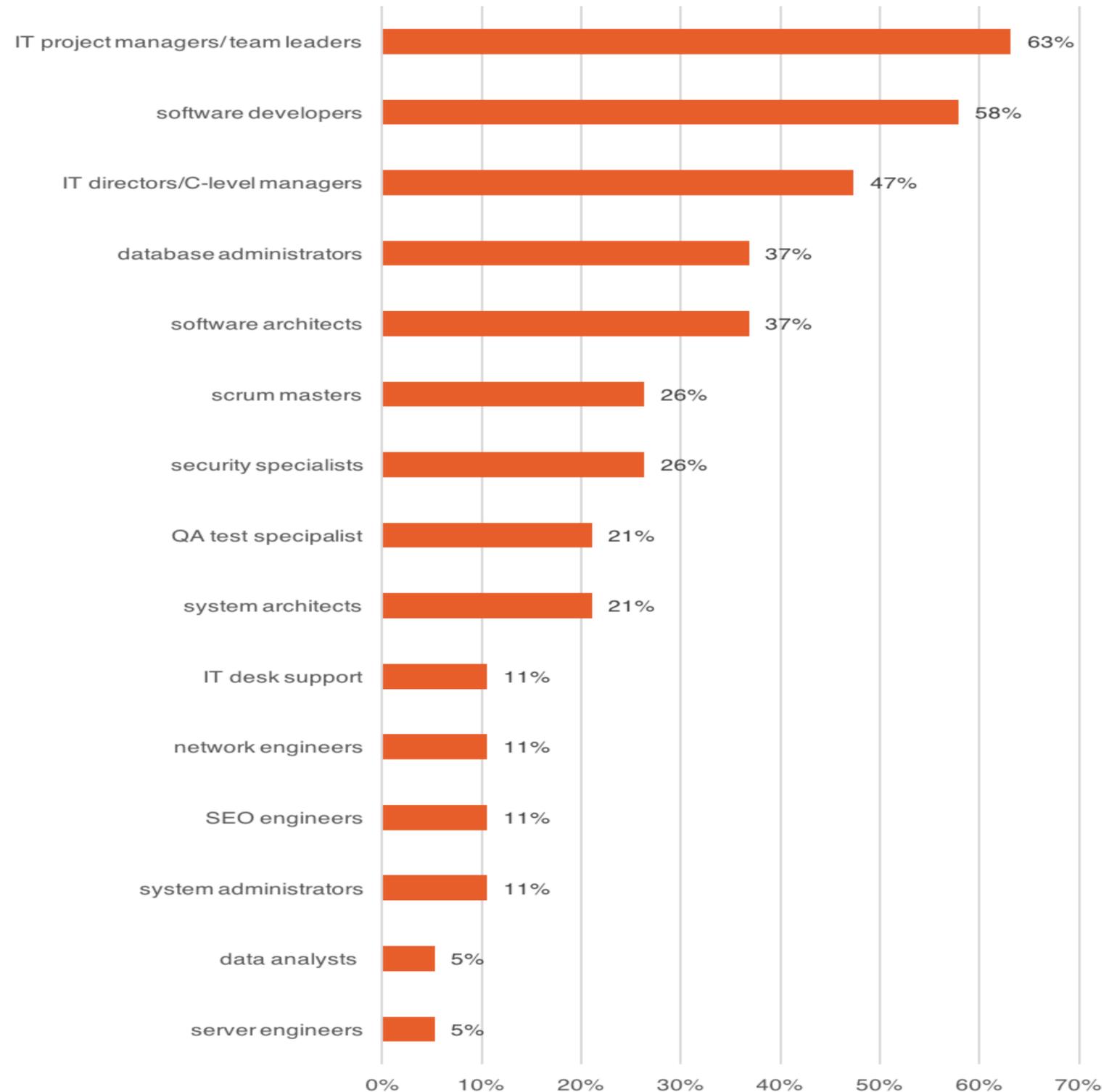


# Students understanding of the job market

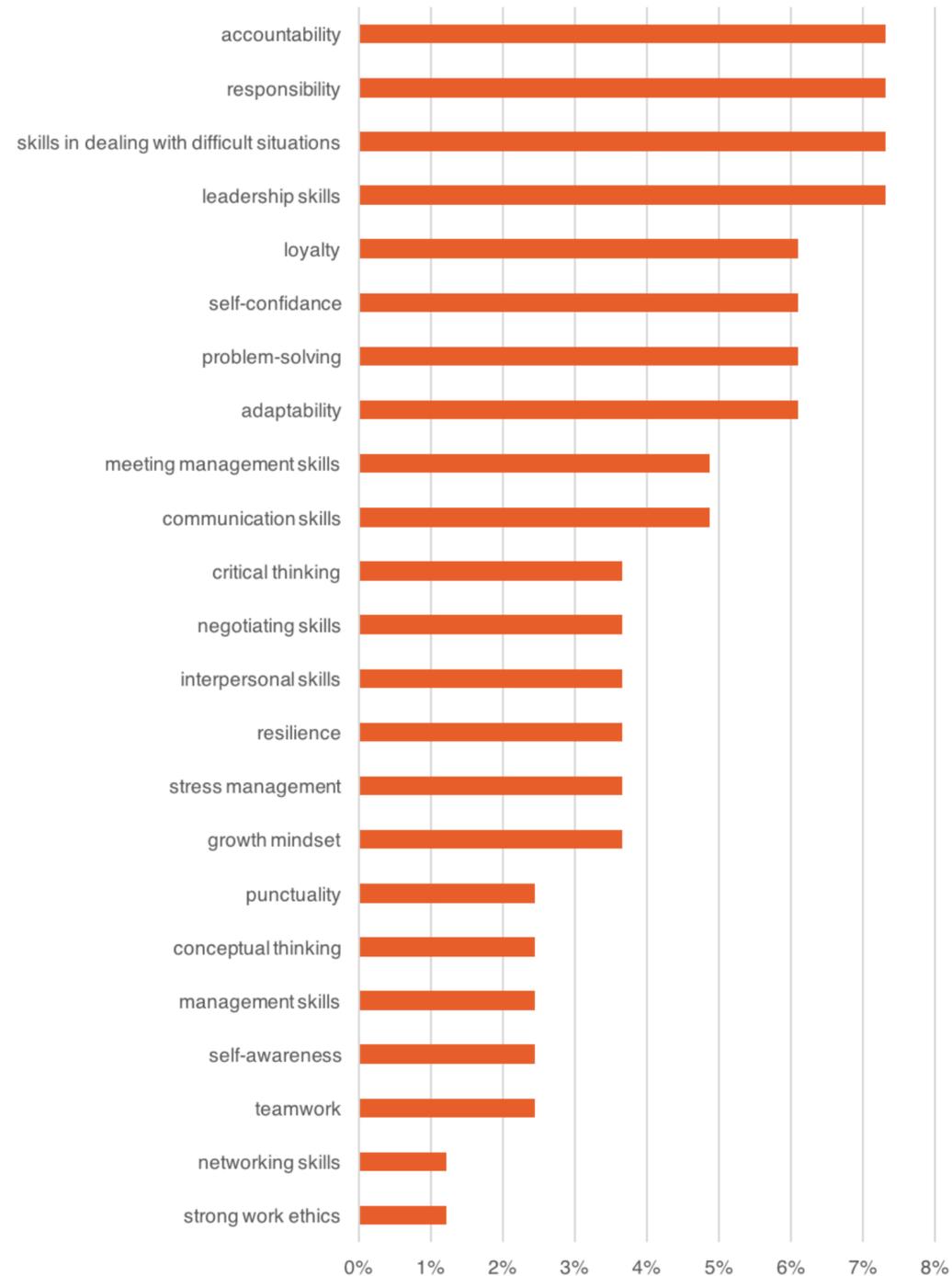
- Students' understanding priorities - the highest priority for employers are soft skills (54% rated it as priority number one), followed by technical skills (57% rated it as priority number two) followed by language skills (75% rated it as priority number three). This broadly matches the employers' reported priorities in this research.
- In total 47.6% of students stated that they expected it to be semi-difficult to find work after they completed their studies, this compares to 1.6% of them thinking that it will be very easy and 9.5% stating that it will be very difficult.
- Salary expectations - 36.5% hoping to earn in the range of \$300-400 in their first job after graduation and second (25.4%) hoping for \$200-300. Surprising is the large number of students that hope to earn over \$600 in their first job after graduating from university, 12.7%, and some students expecting to earn over \$800 per month in their first job.
- **Students** understanding of the sector is minimal and their expectations can be at times seen to be **out of touch with the current job market**, especially in terms of earning potential after graduation.

# Technical skills gap

- The most difficult roles to fill were **IT project managers and team leaders**.
- **Software engineers** came second, even though many interviewees previously said that they found it easy to train, or recruit software programmers.
- Students' own understanding of the range of roles within the IT sector is limited. From a very simplistic point of view, students might only view roles as **software = programming/developer roles** and **hardware = networking, routing etc.** = lost opportunity.



# Soft skills gap



## Higher Order Thinking Skills

- Dealing with difficult situations
- Problem solving
- Critical thinking
- Conceptual thinking
- Leadership Skills
- Management skills

## Social Skills

- Negotiation skills
- Interpersonal skills
- Teamwork
- Networking skills

## Communication

- Communication
- Meeting management

## Self-control

- Adaptability
- Resilience
- Stress management
- Punctuality
- Strong work ethics
- Accountability
- Responsibility

## Positive Self-concept

- Self-awareness
- Growth mindset
- Self-confidance

# Soft skills

With the use of clustering we can conclude that higher order thinking skills and self-control are the two groups of soft skills currently missing within the job market:

- **Higher order thinking (HOT)** is thinking on a level that is higher than memorising facts or relaying something back to someone exactly the way it was told to them. HOT takes thinking to higher levels than restating the facts and requires students to do something with the facts — understand them, infer from them, connect them to other facts and concepts, categorise them, manipulate them, put them together in new or novel ways, and apply them as we seek new solutions to new problems.
- **Self-control**, an aspect of inhibitory control, is the ability to control one's emotions and behaviour in the face of temptations and impulses. As an executive function, self-control is a cognitive process that is necessary for regulating one's behaviour in order to achieve goals. Rather than responding to immediate impulses, we can plan, evaluate alternative actions, and, often avoid doing things we'll later regret. It is what allows us to direct our attention, and it underlies all kinds of achievement. Self control is a learned behaviour that is developed over time as experience grows. The reasons why graduates and new employees struggle with self-control might be linked to the fact that it is a learned behaviour, demanding the ability to analyse situations and reflect on one's own behaviour.

# Soft skills – students' data

- Responsibility: The skill with the highest mismatch between what employers' data shows and students' perceptions of their own skills is responsibility. Students rated themselves to have high level of responsibility (both PNC and ICT 88%), while employers' experiences show a low level of this soft skill within the workplace
- Skills in dealing with difficult situations, stress and problems solving skills: This cluster of skills is rated both by students and employers as currently missing. The fact that these soft skills are missing means that there is a negative impact on organisational work flow, ability to deal with complex technical issues and ability to deal with day to day stress.
- Loyalty: Within both groups of students only 50% said they were loyal.
- A strong work ethic: Most students did not rate their work ethics very highly (PNC 42% and ICT 62%).

# Language skills

- It is widely recognised that English is the main communication language for the Cambodian IT industry, even though there are several leaders within the sector who are Francophone. Other languages from the ASEAN region have not penetrated the market, leaving English to be the main business language across South East Asia.
- Other languages spoken in the ASEAN region are not seen as priority for any of the employers we interviewed.

# On-the-job training for technology specialists

- IT businesses in Cambodia make a **significant investment** in the Continued Professional Development (CPD) of their staff.
- The cost of extensive CPD is currently fully absorbed by each business, however the value gets lost once the employee chooses to leave; resulting in poor return on investment for those with a high staff turn-over. From the long term perspective, it is not only a cost issue but also a resource utilisation and **a distraction from delivering the core business activities**.
- Most IT business acknowledge the need for a greater level of soft skills, and clearly identified that new graduates lack these skills. However there is a poor understanding and **very little use of recognised methodologies for soft skills training and development**.
- The most popular on-job-training offered is mentoring, closely followed by the use of in-house training. The least utilised methodologies currently used are online courses and peer-to-peer training. **Online training is not suitable as this group of learners tend to lack independent learning skills**.
- Our research indicates that the outcome of CPD activities of sample group is not being measured through any specific monitoring and evaluation method. **Therefore, there is little evidence based data to offer any understanding of the impact, usefulness and cost effectiveness**. Only anecdotal evidence and individual success stories provide some insight into the current benefits the CPD provides.
- There is close co-operation between some businesses and local universities as well as other IT training providers. **However, there is a lack of harmonisation and synchronisation of each others efforts in delivering more holistic learning opportunities for staff**.

# Future challenges

## Lack of specialised technical skills and senior managers – limitation to growth

- The growth of the Cambodian economy is expected to remain strong in 2017 and following years. With the increasing Cambodian prosperity and growth of both manufacturing and agricultural industry, the demands of technology will increase to provide modern IT solutions for businesses. In addition, the technology industry also extensively markets itself as the new place for outsourcing and innovation.
- This growth will require more experienced staff to lead new teams, to manage clients' expectations and to provide leadership in times of transition and growth. The body of this research clearly shows a current lack of experienced developers, lack of specialised skills within the current job workforce and very limited number of senior project leader/managers and CO level staff.

# Future challenges

## Cambodia as a low cost option

Current data from Cambodia shows that the starting salary of new computer developer (after graduating from university) is around US\$ 3,250 with the salary rising to \$7,800 for a programmer who has been coding for 3-5 years. At the bottom of the job market, Cambodia is highly competitive and offers great value to international clients; being able to achieve the same level of human capital cost as India and the Philippines. However, due to the relative under-development of the sector and short history of large contracts being awarded to local companies, the challenge is in the lack of senior developers, team leaders and CO level staff. A local senior developer/team leader expects to earn between \$13,000 to \$19,500, and even with this level of income he/she can easily shop around for more lucrative opportunities. This is higher than what Indian or Filipino employees could hope to earn. In addition, these markets have a greater pool to select their talents from.

Country	Meridian average Annual salary US\$	Minimum Annual salary US\$	Senior level Annual salary US\$
USA	59,950	34,950	92,250
Philippines	6,000	3,250	12,350
India	5,500	3,650	12,027

# Future challenges

## The future of technology

- One of the main challenges faced by the Cambodian IT industry is the way it keeps up with modern computer science, increasingly focused on innovative solutions, internet of things, big data and artificial intelligence.
- With more complex IT solutions and use of artificial intelligence, there is increasing need for specialised workers to adopt new innovations. Technical but also soft skills are required in the adoption process. Therefore, advanced computer skills will be required in the following years to keep up with increasingly complex algorithms and product development with integrated artificial intelligence.
- With the process of programming becoming easier, and more tools becoming available to further streamline this process, we will need more graduates able to analyse extensive data and work with complex algorithms to adapt and imitate new technologies.

# Future challenges

## Cultural shift towards innovation and solution development

- Innovation is integrally linked to change – the disruption of the status quo and the existing method of doing things, whether with regard to the technologies or processes deployed to create value for customers or constituents.
- A key component of an organisation or nation's innovation culture is not only how creative it is to imagine, develop, and commercialize new technologies, products, or services, but also how it reacts and adapts to change and manifests its willingness to take risks as well as how its members view the likely impacts of scientific or technological change.
- Successful innovative culture needs an environment that is flexible, empowering, welcomes ideas, tolerates risk, reduces hierarchy, enables failure to be acceptable, celebrates success, fosters respect, and encourages fun.

# Future challenges

## Cultural shift towards innovation and solution development (2)

- A body of research also analyses the impact of national cultures on levels of innovation. There is significant support for the argument that the capability of a country or region to initiate innovation is related to its culture. Evidence suggests that cultures that excessively value the family tend to be more conservative and less open to new and creative ideas, while cultures focusing more on relationships with persons outside families are more open, in part because relationships with people with different backgrounds enable a broader world view as a powerful source of new ideas.
- Given the historical and cultural background of the region, Cambodian IT businesses striving for innovation and development of new products, will have to work together to collectively overcome some of the cultural and social barriers that stand in the way of a truly innovative culture within their industry that is exible, empowering, welcomes ideas, tolerates risk, celebrates success, fosters respect, and encourages fun.
- Cambodian innovation sector predominantly focuses on technology adoption and imitation rather than technology innovation, and therefore developing skills for adoption rather than innovation and more work needs to be done to introduce innovation research and methodology into their programmes.

# Recommendations

- **Economic diversification** will be critical for the ongoing growth of the Cambodian IT sector. The Royal Government and its partners might want to consider boosting support for the industry by providing grants and technical advice, enabling new technology products and services to be developed for both domestic use and driving export to new international markets. Diversification of the industry will require additional targeted sectoral strategies; some of those are already being developed in areas such as e-commerce and on-line payment gateways.
- The IT industry and technology training providers will be required to work in close collaboration with these sectors to anticipate and plan for **technology introduction in these traditionally non-IT sectors**. In addition, there is a need to conduct a short and mid-term IT workforce audit within other non-IT sectors to anticipate needs and prevent brain-drain from an already under-resourced IT industry.
- To enhance growth and productive employment, it is necessary to ensure that **the skills supplied by the Cambodian workforce match skills demanded by the IT and technology industry**. Emphasis should be given to the design of IT and technology courses, ensuring that employment based skills can actually be acquired and that students have the minimal technical and soft skills required by employers, at the entry point to the job market.

# Recommendations

- The current soft skills gap needs to be bridged through a **holistic approach to developing a soft skill framework for the industry**. The focus should be on skills acquisition and ongoing soft skills development; with methodology to measure the skills outcomes. Currently, most soft skills training opportunities are provided by the private sector and NGOs, formally and informally. An inter-sectoral approach is needed to create a joint agenda to allow for a long-term plan to match soft skills with employment opportunities. Emphasis should be given to acquisition of Higher order thinking skills (HOT) and self-management skills with a review of curricula and teaching methods, as well as to upgrade the skills of teaching staff, for the successful development of soft skills education.
- The IT sector needs to **reduce the knowledge gap and the current lack of understanding by young people**, of the employment and growth opportunities available within the sector. A better overview of the IT sector, its makeup, and the identity of individual roles and responsibilities within it, needs to be provided to young people and their families, so they can make well informed decisions on their educational choices. A better flow of information needed for efficient job/skills matching.
- The **ongoing upgrade of skills for the current workforce needs to be enhanced** by promoting continued professional development (CPD), with non-formal education and lifelong learning opportunities. Due to the rapid growth of the industry, the low educational attainment and low skills level of the current workforce, it is important to provide opportunities for continuing education for those who are already working in the industry.

# Recommendations

- Individual companies, and the sector itself would benefit greatly from **increased co-operation, and sharing of costs for training courses and other CPD support**. There are potentially large gains from working together to provide continued professional development and education and address the relatively low level of skills in the existing workforce.
- A broader range of CPD programmes needs to be developed to meet a **wide range of learning styles and preferences**. A greater emphasis should be on **learner-directed opportunities**, (where learning is self-directed and encourages ownership and personal growth), as global development in technology and science demands a workforce with a culture of life-long learning. Peer-to-peer learning and action learning are examples of such learning methodology.
- The current lack of local senior IT project managers and CO level staff (that leads to higher than average costs and high turn-over of staff) should be addressed through **development of a sector-wide leadership programme**. A new generation of local leaders will need access to a training programme that offers technical and leadership skills in a creative, flexible and empowering environment which tolerates risk and enables a cultural shift towards greater innovation within the sector

# Recommendation

- Within the next 10 years the Cambodian IT industry anticipates a **move from technology adoption and imitation toward technology innovation**. This will enable development of new technologies and regional focussed solutions that will in turn lead to greater opportunities for their return on investment. This shift will require a novel approach (rooted in academic research and innovation theories) to workforce and organisational development. The current growth of incubator hubs and innovation initiatives that mainly focus on technology imitation, will have to be evaluated and further developed to meets the needs of the industry in the years to come.

# The Full Report

- A copy of the full report can be found here:

[digitalrain.agency/britcham/](https://digitalrain.agency/britcham/)

Questions?

Thank You





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